REVISED REPORT
Volume 4 – Appendix L (Human Health Risk Assessment)

Willis Avenue Chlorobenzene Site
Remedial Investigation
Geddes, New York

Honeywell

July 2010

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Christopher C. Calkins
Vice President

July 2010

O'BRIEN & GERE

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4.10a CT Values used for daily intake calculations – Lakeshore Area, Surface Soils (Current/Future Receptors)
4.10b CT Values used for daily intake calculations – Lakeshore Area, Upper Soils (Future Receptors)
4.10c CT Values used for daily intake calculations – Lakeshore Area, Shallow Groundwater, (Current/Future Receptors)
4.11a CT Values used for daily intake calculations – Tributary 5A, Surface Water, (Current/Future Receptors)
4.11b CT Values used for daily intake calculations – Tributary 5A, Surface Sediment, (Current/Future Receptors)
4.11c CT Values used for daily intake calculations – Tributary 5A, Upper Sediment, (Current/Future Receptors)
4.12 CT Values used for daily intake calculations – Petroleum Storage Area, Surface Soils (Current/Future Receptors)
4.13a CT Values used for daily intake calculations – Petroleum Storage Area, Surface Soils (Future Receptors)
4.13b CT Values used for daily intake calculations – Petroleum Storage Area, Upper Soils (Future Receptors)
4.13c CT Values used for daily intake calculations – Petroleum Storage Area, Shallow Groundwater, (Current/Future Receptors)
4.14 CT Values used for daily intake calculations – Chlorobenzene Hot-Spot Area, Surface Soils (Current/Future Receptors)

4.15a CT Values used for daily intake calculations – Chlorobenzene Hot-Spot Area, Surface Soils (Future Receptors)
4.15b CT Values used for daily intake calculations – Chlorobenzene Hot-Spot Area, Upper Soils (Future Receptors)
4.15c CT Values used for daily intake calculations – Chlorobenzene Hot-Spot Area, Shallow Groundwater, (Current/Future Receptors)
4.16 CT Values used for daily intake calculations – Hypothetical Drinking Water Source Area, Groundwater (Future Receptors)
4.16 CT Supplement A – Values used for daily intake calculations – Hypothetical Drinking Water Source Area, Groundwater (Future Receptors)
4.16 CT Supplement B – Age-Dependent Adjustment Factor – Exposure Parameters

Table 5 Series: Non-cancer toxicity data
5.1 Non-cancer toxicity data – oral/dermal
5.2 Non-cancer toxicity data – inhalation

Table 6 Series: Cancer toxicity data
6.1 Cancer toxicity data – oral/dermal
6.2 Cancer toxicity data – inhalation

Table 7 Series: Calculation of cancer risks and non-cancer hazards
7.1a RME: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Plant Area (Current/Future)
7.1b RME: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, On-Site Ditches (Current/Future)
7.1c RME: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Former Chlorination Building (Current/Future)
7.1d RME: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Southwest Off-Site/Outfall 006 Exposure Area (Current/Future)
7.1e RME: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
7.1f RME: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Lakeshore Area (Current/Future)
7.1g RME: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Petroleum Storage Area (Current/Future)
7.1h RME: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Chlorobenzene Hot-Spot Area (Current/Future)
7.1i RME: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Tributary 5A (Current/Future)
7.1 RME Supplement A: Calculation of Chemical Cancer Risks for COPC with a Mutagenic Mode of Action
7.2a RME: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Plant Area (Current/Future)
7.2b RME: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, On-Site Ditches (Current/Future)
7.2c RME: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Former Chlorination Building (Current/Future)

7.2d RME: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Southwest Off-Site/Outfall 006 Exposure Area (Current/Future)
7.2e RME: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
7.2f RME: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Lakeshore Area (Current/Future)
7.2g RME: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Petroleum Storage Area (Current/Future)
7.2h RME: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Chlorobenzene Hot-Spot Area (Current/Future)
7.2i RME: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Tributary 5A (Current/Future)
7.3a RME: Calculation of chemical cancer risks and non-cancer hazards – Surveillance Worker, Plant Area (Current/Future)
7.3b RME: Calculation of chemical cancer risks and non-cancer hazards – Surveillance Worker, On-Site Ditches (Current/Future)
7.3c RME: Calculation of chemical cancer risks and non-cancer hazards – Surveillance Worker, Former Chlorination Building (Current/Future)
7.4a RME: Calculation of chemical cancer risks and non-cancer hazards – Industrial Worker, Plant Area (Future)
7.4b RME: Calculation of chemical cancer risks and non-cancer hazards – Industrial Worker, On-Site Ditches (Future)
7.4c RME: Calculation of chemical cancer risks and non-cancer hazards – Industrial Worker, Former Chlorination Building (Future)
7.4d RME: Calculation of chemical cancer risks and non-cancer hazards – Industrial Worker, Southwest Off-Site/Outfall 006 Exposure Area (Future)
7.4e RME: Calculation of chemical cancer risks and non-cancer hazards – Industrial Worker, Petroleum Storage Area (Future)
7.4f RME: Calculation of chemical cancer risks and non-cancer hazards – Industrial Worker, Chlorobenzene Hot-Spot Area (Future)
7.5a RME: Calculation of chemical cancer risks and non-cancer hazards – Construction Worker, Plant Area (Future)
7.5b RME: Calculation of chemical cancer risks and non-cancer hazards – Construction Worker, On-Site Ditches (Future)
7.5c RME: Calculation of chemical cancer risks and non-cancer hazards – Construction Worker, Former Chlorination Building (Future)
7.5d RME: Calculation of chemical cancer risks and non-cancer hazards – Construction Worker, Southwest Off-Site/Outfall 006 Exposure Area (Future)
7.5e RME: Calculation of chemical cancer risks and non-cancer hazards – Construction Worker, Petroleum Storage Area (Future)
7.5f RME: Calculation of chemical cancer risks and non-cancer hazards – Construction Worker, Chlorobenzene Hot-Spot Area (Future)
7.6 RME: Calculation of chemical cancer risks and non-cancer hazards – Transient Trespasser, State Fair Blvd/Northwest Off-Site/Off-Site Outfall 004 Exposure Area (Current/Future)
7.7a RME: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, Plant Area (Future)
7.7b RME: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, On-Site Ditches (Future)

7.7c RME: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, Former Chlorination Building (Future)
7.7d RME: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, State Fair Blvd/Northwest Off-Site/Off-Site Outfall 004 Exposure Area (Current/Future)
7.7e RME: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, Lakeshore Area (Current/Future)
7.7f RME: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, Petroleum Storage Area (Future)
7.7g RME: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, Chlorobenzene Hot-Spot Area (Future)
7.7h RME: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, Tributary 5A (Current/Future)
7.8 RME: Calculation of chemical cancer risks and non-cancer hazards – Adult Resident, Hypothetical Potable Water (Future)
7.9 RME: Calculation of chemical cancer risks and non-cancer hazards – Child Resident, Hypothetical Potable Water (Future)
7.9 RME Supplement A: Calculation of Chemical Cancer Risks for COPC with a Mutagenic Mode of Action

7.1a CT: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Plant Area (Current/Future)
7.1b CT: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, On-Site Ditches (Current/Future)
7.1c CT: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Former Chlorination Building (Current/Future)
7.1d CT: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Southwest Off-Site/Outfall 006 Exposure Area (Current/Future)
7.1e CT: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
7.1f CT: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Lakeshore Area (Current/Future)
7.1g CT: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Petroleum Storage Area (Current/Future)
7.1h CT: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Chlorobenzene Hot-Spot Area (Current/Future)
7.1i CT: Calculation of chemical cancer risks and non-cancer hazards – Adolescent Trespasser, Tributary 5A (Current/Future)
7.1 CT Supplement A: Calculation of Chemical Cancer Risks for COPC with a Mutagenic Mode of Action
7.2a CT: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Plant Area (Current/Future)
7.2b CT: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, On-Site Ditches (Current/Future)
7.2c CT: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Former Chlorination Building (Current/Future)
7.2d CT: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Southwest Off-Site/Outfall 006 Exposure Area (Current/Future)

7.2e CT: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
7.2f CT: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Lakeshore Area (Current/Future)
7.2g CT: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Petroleum Storage Area (Current/Future)
7.2h CT: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Chlorobenzene Hot-Spot Area (Current/Future)
7.2i CT: Calculation of chemical cancer risks and non-cancer hazards – Adult Trespasser, Tributary 5A (Current/Future)
7.3a CT: Calculation of chemical cancer risks and non-cancer hazards – Surveillance Worker, Plant Area (Current/Future)
7.3b CT: Calculation of chemical cancer risks and non-cancer hazards – Surveillance Worker, On-Site Ditches (Current/Future)
7.3c CT: Calculation of chemical cancer risks and non-cancer hazards – Surveillance Worker, Former Chlorination Building (Current/Future)
7.4a CT: Calculation of chemical cancer risks and non-cancer hazards – Industrial Worker, Plant Area (Future)
7.4b CT: Calculation of chemical cancer risks and non-cancer hazards – Industrial Worker, On-Site Ditches (Future)
7.4c CT: Calculation of chemical cancer risks and non-cancer hazards – Industrial Worker, Former Chlorination Building (Future)
7.4d CT: Calculation of chemical cancer risks and non-cancer hazards – Industrial Worker, Southwest Off-Site/Outfall 006 Exposure Area (Future)
7.4e CT: Calculation of chemical cancer risks and non-cancer hazards – Industrial Worker, Petroleum Storage Area (Future)
7.4f CT: Calculation of chemical cancer risks and non-cancer hazards – Industrial Worker, Chlorobenzene Hot-Spot Area (Future)
7.5a CT: Calculation of chemical cancer risks and non-cancer hazards – Construction Worker, Plant Area (Future)
7.5b CT: Calculation of chemical cancer risks and non-cancer hazards – Construction Worker, On-Site Ditches (Future)
7.5c CT: Calculation of chemical cancer risks and non-cancer hazards – Construction Worker, Former Chlorination Building (Future)
7.5d CT: Calculation of chemical cancer risks and non-cancer hazards – Construction Worker, Southwest Off-Site/Outfall 006 Exposure Area (Future)
7.5e CT: Calculation of chemical cancer risks and non-cancer hazards – Construction Worker, Petroleum Storage Area (Future)
7.5f CT: Calculation of chemical cancer risks and non-cancer hazards – Construction Worker, Chlorobenzene Hot-Spot Area (Future)
7.6 CT: Calculation of chemical cancer risks and non-cancer hazards – Transient Trespasser, State Fair Blvd/Northwest Off-Site/Off-Site Outfall 004 Exposure Area (Current/Future)
7.7a CT: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, Plant Area (Future)
7.7b CT: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, On-Site Ditches (Future)
7.7c CT: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, Former Chlorination Building (Future)

7.7d CT: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, State Fair Blvd/Off-Site Outfall 004 Exposure Area (Current/Future)
7.7e CT: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, Lakeshore Area (Current/Future)
7.7f CT: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, Petroleum Storage Area (Future)
7.7g CT: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, Chlorobenzene Hot-Spot Area (Future)
7.7h CT: Calculation of chemical cancer risks and non-cancer hazards – Utility Worker, Tributary 5A (Current/Future)
7.8 CT: Calculation of chemical cancer risks and non-cancer hazards – Adult Resident, Potable Hypotethical Water (Future)
7.9 CT: Calculation of chemical cancer risks and non-cancer hazards – Child Resident, Potable Hypothetical Water (Future)
7.9 CT Supplement A: Calculation of Chemical Cancer Risks for COPC with a Mutagenic Mode of Action

Table 9 series: Summary of receptor risks and hazards for COPCs
9.1a RME: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Plant Area (Current/Future)
9.1b RME: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, On-Site Ditches (Current/Future)
9.1c RME: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Former Chlorination Building (Current/Future)
9.1d RME: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Southwest Off-Site/Outfall 006 Exposure Area (Current/Future)
9.1e RME: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, State Fair Blvd/Outfall 004 Exposure Area (Current/Future)
9.1f RME: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Lakeshore Area (Current/Future)
9.1g RME: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Petroleum Storage Area (Current/Future)
9.1h RME: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Chlorobenzene Hot-Spot Area (Current/Future)
9.1i RME: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Tributary 5A (Current/Future)
9.2a RME: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Plant Area (Current/Future)
9.2b RME: Summary of receptor risks and hazards for COPCs – Adult Trespasser, On-Site Ditches (Current/Future)
9.2c RME: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Former Chlorination Building (Current/Future)
9.2d RME: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Southwest Off-Site/Outfall 006 Exposure Area (Current/Future)
9.2e RME: Summary of receptor risks and hazards for COPCs – Adult Trespasser, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
9.2f RME: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Lakeshore Area (Current/Future)

9.2g RME: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Petroleum Storage Area (Current/Future)
9.2h RME: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Chlorobenzene Hot-Spot Area (Current/Future)
9.2i RME: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Tributary 5A (Current/Future)
9.3a RME: Summary of receptor risks and hazards for COPCs – Surveillance Worker, Plant Area (Current/Future)
9.3b RME: Summary of receptor risks and hazards for COPCs – Surveillance Worker, On-Site Ditches (Current/Future)
9.3c RME: Summary of receptor risks and hazards for COPCs – Surveillance Worker, Former Chlorination Building (Current/Future)
9.4a RME: Summary of receptor risks and hazards for COPCs – Industrial Worker, Plant Area (Future)
9.4b RME: Summary of receptor risks and hazards for COPCs – Industrial Worker, On-Site Ditches (Future)
9.4c RME: Summary of receptor risks and hazards for COPCs – Industrial Worker, Former Chlorination Building (Future)
9.4d RME: Summary of receptor risks and hazards for COPCs – Industrial Worker, Southwest Off-Site/Outfall 006 Exposure Area (Future)
9.4e RME: Summary of receptor risks and hazards for COPCs – Industrial Worker, Petroleum Storage Area (Future)
9.4f RME: Summary of receptor risks and hazards for COPCs – Industrial Worker, Chlorobenzene Hot-Spot Area (Future)
9.5a RME: Summary of receptor risks and hazards for COPCs – Construction Worker, Plant Area (Future)
9.5b RME: Summary of receptor risks and hazards for COPCs – Construction Worker, On-Site Ditches (Future)
9.5c RME: Summary of receptor risks and hazards for COPCs – Construction Worker, Former Chlorination Building (Future)
9.5d RME: Summary of receptor risks and hazards for COPCs – Construction Worker, Southwest Off-Site/Outfall 006 Exposure Area (Future)
9.5e RME: Summary of receptor risks and hazards for COPCs – Construction Worker, Petroleum Storage Area (Future)
9.5f RME: Summary of receptor risks and hazards for COPCs – Construction Worker, Chlorobenzene Hot-Spot Area (Future)
9.6 RME: Summary of receptor risks and hazards for COPCs – Transient Trespasser, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
9.7a RME: Summary of receptor risks and hazards for COPCs – Utility Worker, Plant Area (Future)
9.7b RME: Summary of receptor risks and hazards for COPCs – Utility Worker, On-Site Ditches (Future)
9.7c RME: Summary of receptor risks and hazards for COPCs – Utility Worker, Former Chlorination Building (Future)
9.7d RME: Summary of receptor risks and hazards for COPCs – Utility Worker, State Fair Blvd/Off-Site Outfall 004 Exposure Area (Current/Future)
9.7e RME: Summary of receptor risks and hazards for COPCs – Utility Worker, Lakeshore Area (Current/Future)

9.7f RME: Summary of receptor risks and hazards for COPCs – Utility Worker, Petroleum Storage Area (Future)
9.7g RME: Summary of receptor risks and hazards for COPCs – Utility Worker, Chlorobenzene Hot-Spot Area (Future)
9.7h RME: Summary of receptor risks and hazards for COPCs – Utility Worker, Tributary 5A (Current/Future)
9.8 RME: Summary of receptor risks and hazards for COPCs – Adult Resident, Hypothetical Potable Water (Future)
9.9 RME: Summary of receptor risks and hazards for COPCs – Child Resident, Hypothetical Potable Water (Future)

9.1a CT: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Plant Area (Current/Future)
9.1b CT: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, On-Site Ditches (Current/Future)
9.1c CT: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Former Chlorination Building (Current/Future)
9.1d CT: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Southwest Off-Site/Outfall 006 Exposure Area (Current/Future)
9.1e CT: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
9.1f CT: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Lakeshore Area (Current/Future)
9.1g CT: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Petroleum Storage Area (Current/Future)
9.1h CT: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Chlorobenzene Hot-Spot Area (Current/Future)
9.1i CT: Summary of receptor risks and hazards for COPCs – Adolescent Trespasser, Tributary 5A (Current/Future)
9.2a CT: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Plant Area (Current/Future)
9.2b CT: Summary of receptor risks and hazards for COPCs – Adult Trespasser, On-Site Ditches (Current/Future)
9.2c CT: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Former Chlorination Building (Current/Future)
9.2d CT: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Southwest Off-Site/Outfall 006 Exposure Area (Current/Future)
9.2e CT: Summary of receptor risks and hazards for COPCs – Adult Trespasser, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
9.2f CT: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Lakeshore Area (Current/Future)
9.2g CT: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Petroleum Storage Area (Current/Future)
9.2h CT: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Chlorobenzene Hot-Spot Area (Current/Future)
9.2i CT: Summary of receptor risks and hazards for COPCs – Adult Trespasser, Tributary 5A (Current/Future)

9.3a CT: Summary of receptor risks and hazards for COPCs – Surveillance Worker, Plant Area (Current/Future)
9.3b CT: Summary of receptor risks and hazards for COPCs – Surveillance Worker, On-Site Ditches (Current/Future)
9.3c CT: Summary of receptor risks and hazards for COPCs – Surveillance Worker, Former Chlorination Building (Current/Future)
9.4a CT: Summary of receptor risks and hazards for COPCs – Industrial Worker, Plant Area (Future)
9.4b CT: Summary of receptor risks and hazards for COPCs – Industrial Worker, On-Site Ditches (Future)
9.4c CT: Summary of receptor risks and hazards for COPCs – Industrial Worker, Former Chlorination Building (Future)
9.4d CT: Summary of receptor risks and hazards for COPCs – Industrial Worker, Southwest Off-Site/Outfall 006 Exposure Area (Future)
9.4e CT: Summary of receptor risks and hazards for COPCs – Industrial Worker, Petroleum Storage Area (Future)
9.4f CT: Summary of receptor risks and hazards for COPCs – Industrial Worker, Chlorobenzene Hot-Spot Area (Future)
9.5a CT: Summary of receptor risks and hazards for COPCs – Construction Worker, Plant Area (Future)
9.5b CT: Summary of receptor risks and hazards for COPCs – Construction Worker, On-Site Ditches (Future)
9.5c CT: Summary of receptor risks and hazards for COPCs – Construction Worker, Former Chlorination Building (Future)
9.5d CT: Summary of receptor risks and hazards for COPCs – Construction Worker, Southwest Off-Site/Outfall 006 Exposure Area (Future)
9.5e CT: Summary of receptor risks and hazards for COPCs – Construction Worker, Petroleum Storage Area (Future)
9.5f CT: Summary of receptor risks and hazards for COPCs – Construction Worker, Chlorobenzene Hot-Spot Area (Future)
9.6 CT: Summary of receptor risks and hazards for COPCs – Transient Trespasser, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
9.9a CT: Summary of receptor risks and hazards for COPCs – Utility Worker, Plant Area (Future)
9.7b CT: Summary of receptor risks and hazards for COPCs – Utility Worker, On-Site Ditches (Future)
9.7c CT: Summary of receptor risks and hazards for COPCs – Utility Worker, Former Chlorination Building (Future)
9.7d CT: Summary of receptor risks and hazards for COPCs – Utility Worker, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
9.7e CT: Summary of receptor risks and hazards for COPCs – Utility Worker, Lakeshore Area (Current/Future)
9.7f CT: Summary of receptor risks and hazards for COPCs – Utility Worker, Petroleum Storage Area (Future)
9.7g CT: Summary of receptor risks and hazards for COPCs – Utility Worker, Chlorobenzene Hot-Spot Area (Future)
9.7h CT: Summary of receptor risks and hazards for COPCs – Utility Worker, Tributary 5A (Current/Future)

9.8 CT: Summary of receptor risks and hazards for COPCs – Adult Resident, Hypothetical Potable Water (Future)
9.9 CT: Summary of receptor risks and hazards for COPCs – Child Resident, Hypothetical Potable Water (Future)

Table 10 series: Risk Summary
10.1a RME: Risk Summary – Adolescent Trespasser, Plant Area (Current/Future)
10.1b RME: Risk Summary – Adolescent Trespasser, On-Site Ditches (Current/Future)
10.1c RME: Risk Summary – Adolescent Trespasser, Former Chlorination Building (Current/Future)
10.1d RME: Risk Summary – Adolescent Trespasser, Southwest Off-Site/Outfall 006 Exposure Area (Current/Future)
10.1e RME: Risk Summary – Adolescent Trespasser, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
10.1f RME: Risk Summary – Adolescent Trespasser, Lakeshore Area (Current/Future)
10.1g RME: Risk Summary – Adolescent Trespasser, Petroleum Storage Area (Current/Future)
10.1h RME: Risk Summary – Adolescent Trespasser, Chlorobenzene Hot-Spot Area (Current/Future)
10.1i RME: Risk Summary – Adolescent Trespasser, Tributary 5A (Current/Future)
10.2a RME: Risk Summary – Adult Trespasser, Plant Area (Current/Future)
10.2b RME: Risk Summary – Adult Trespasser, On-Site Ditches (Current/Future)
10.2c RME: Risk Summary – Adult Trespasser, Former Chlorination Building (Current/Future)
10.2d RME: Risk Summary – Adult Trespasser, Southwest Off-Site/Outfall 006 Exposure Area (Current/Future)
10.2e RME: Risk Summary – Adult Trespasser, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
10.2f RME: Risk Summary – Adult Trespasser, Lakeshore Area (Current/Future)
10.2g RME: Risk Summary – Adult Trespasser, Petroleum Storage Area (Current/Future)
10.2h RME: Risk Summary – Adult Trespasser, Chlorobenzene Hot-Spot Area (Current/Future)
10.2i RME: Risk Summary – Adult Trespasser, Tributary 5A (Current/Future)
10.3a RME: Risk Summary – Surveillance Worker, Plant Area (Current/Future)
10.3b RME: Risk Summary – Surveillance Worker, On-Site Ditches (Current/Future)
10.3c RME: Risk Summary – Surveillance Worker, Former Chlorination Building (Current/Future)
10.4a RME: Risk Summary – Industrial Worker, Plant Area (Future)
10.4b RME: Risk Summary – Industrial Worker, On-Site Ditches (Future)
10.4c RME: Risk Summary – Industrial Worker, Former Chlorination Building (Future)
10.4d RME: Risk Summary – Industrial Worker, Southwest Off-Site/Outfall 006 Exposure Area (Future)
10.4e RME: Risk Summary – Industrial Worker, Petroleum Storage Area (Future)
10.4f RME: Risk Summary – Industrial Worker, Chlorobenzene Hot-Spot Area (Future)
10.5a RME: Risk Summary – Construction Worker, Plant Area (Future)
10.5b RME: Risk Summary – Construction Worker, On-Site Ditches (Future)
10.5c RME: Risk Summary – Construction Worker, Former Chlorination Building (Future)
10.5d RME: Risk Summary – Construction Worker, Southwest Off-Site/Outfall 006 Exposure Area (Future)
10.5e RME: Risk Summary – Construction Worker, Petroleum Storage Area (Future)
10.5f RME: Risk Summary – Construction Worker, Chlorobenzene Hot-Spot Area (Future)

10.6 RME: Risk Summary – Transient Trespasser, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
10.7a RME: Risk Summary – Utility Worker, Plant Area (Future)
10.7b RME: Risk Summary – Utility Worker, On-Site Ditches (Future)
10.7c RME: Risk Summary – Utility Worker, Former Chlorination Building (Future)
10.7d RME: Risk Summary – Utility Worker, State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area (Current/Future)
10.7e RME: Risk Summary – Utility Worker, Lakeshore Area (Current/Future)
10.7f RME: Risk Summary – Utility Worker, Petroleum Storage Area (Future)
10.7g RME: Risk Summary – Utility Worker, Chlorobenzene Hot-Spot Area (Future)
10.7h RME: Risk Summary – Utility Worker, Tributary 5A (Current/Future)
10.8 RME: Risk Summary – Adult Resident, Hypothetical Potable Water (Future)
10.9 RME: Risk Summary – Child Resident, Hypothetical Potable Water (Future)

10.1a CT: Risk Summary – Adolescent Trespasser, Plant Area (Current/Future)
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Acronyms

ABS – Dermal absorption factor
ADAF – Age-dependent adjustment factors
AF – Soil to skin adherence factor
AOS – Area of study
AT – Averaging time
ATSDR – Agency for Toxic Substances and Disease Register
AVG – Average
BGS – Below ground surface
Blvd – Boulevard
BTEX – benzene, ethylbenzene, toluene, xylene
BTX – benzene, toluene, and xylene
BW – Body weight
C_{air} – COPC concentration in air
CalEPA – California Environmental Protection Agency
CDI – Chronic daily intake
CF - Conversion factor
CFR – Code of Federal Regulations
CHSA – Chlorobenzene Hot-Spot Area
COPC – Compound of potential concern
$C_{sediment}$ – Sediment exposure point concentration
CSF – Cancer slope factor
CSM – Conceptual Site Model
C_{sw} – Concentration of each constituent in surface water
CSX – CSX Corporation
CT – Central tendency
C_{water} - Concentration of each constituent in drinking water
DAD - Dermal absorbed dose
DNAPL – Dense non-aqueous phase liquid
DQO – Data quality objectives
ED - Exposure duration
EF - Exposure frequency
EMPC – Estimated Maximum Possible Concentration
EPC – Exposure point concentration
ET – Exposure time
FCB – Former chlorination building
FI – Fraction ingested from contaminated source
Ft – Feet
GA – Groundwater suitable for drinking
GC – Gas chromatograph
HASP – Health and Safety Plan
HEAST – Health Effects Summary Tables
HHRA – Human Health Risk Assessment
HI – Hazard index/indicies
HQ – Hazard quotient
InR – Inhalation rate

IR – Ingestion rate for soil or water
IRIS – Integrated Risk Information System
IRM – Interim Remedial Measure
IEUBK – Integrated Exposure Uptake Biokinetic Model for Lead in Children
Kg – kilograms
L – Liters
L/hr – Liters/hour
LOAEL – Lowest-observed-adverse-effects-level
µg/l – Micrograms per liter
MM – millimeters
MMOA – Mutagenic mode of action
MRL – Minimal Response Level
MW – Monitoring well
NA – Not applicable
NAPL – Non-aqueous phase liquid
NATO/CSS – North Atlantic Treaty Organization/Committee on Challenges of Modern Society
NCEA – National Center for Environmental Assessment
NCP – National Contingency Plan
NIMO – Niagara Mohawk Company
NOAEL – No-observed-adverse-effects-level
NYSDEC – New York State Department of Environmental Conservation
OCWA – Onondaga County Water Authority
ORNL – Oak Ridge National Laboratory
OSWER – Office of Solid Waste and emergency response
PA – Plant area
PAH – Polycyclic aromatic hydrocarbons
PbS – Lead exposure point concentration term
PC - Permeability Coefficient (cm/hour)
PCB – Polychlorinated biphenyls
PCDD/Fs - polychlorinated dibenzo-p-dioxins and dibenzofurans
PEF – Particle emission factor
PPRTV – Provisional Peer-reviewed Toxicity Values
PRGs – Preliminary remediation goals
PSA – Petroleum storage area
QAPP – Quality Assurance Project Plan
RAGS – Risk Assessment Guidance for Superfund
RAIS – Risk Assessment Information System
RBCs – Risk-based concentrations
RfC – Reference concentration
RfD – Reference dose
RI – Remedial Investigation
RI/FS – Remedial Investigation/Feasibility Study
RME – Reasonable maximum exposure
ROS – Regression on Order Statistics
SA - Skin surface area for dermal absorption
SCS – Soil classification and standards
SPDES – State Pollutant Discharge Elimination System
STSC – Superfund Technical Support Center

SVOC – Semi-volatile organic compound
TCDD - Tetrachlorodibenzo-p-dioxin
TEFs- Toxic Equivalency Factors
TEQ – Toxicity equivalent concentration
TPH – Total petroleum hydrocarbons
UCL – Upper confidence limit
USDA – United States Department of Agriculture
USEPA – United States Environmental Protection Agency
VF – Volatilization factor
VOCs – Volatile organic compounds
WHO – World Health Organization

Executive Summary

A human health risk assessment (HHRA) is performed to provide the necessary risk information needed to assist in the decision making process at remedial sites. The risk assessment is used to provide the following items (USEPA 1989):

- An analysis of baseline risks
- Evaluation of the need for remedial action at sites
- A basis for evaluating levels of constituents that can remain onsite and be adequately protective of public health, and
- A basis for comparing potential impacts of various remedial alternatives.

The Willis Avenue Chlorobenzene Site HHRA was performed to assess potential impacts to public health related to the presence of chemical substances at the Site in Geddes, New York. Health risks were evaluated for potential trespassers, workers, and residents under current and future exposure scenarios. Estimated current and future cancer risks are largely within the acceptable regulatory range (1×10^{-4} to 1×10^{-6}), except in the Former Chlorination Building exposure area, which was historically involved in the production of chlorinated benzene products. Estimated current and future non-cancer hazards are also highest in the Former Chlorination Building exposure area, with lesser regulatory exceedances found in other Site exposure areas. Across exposure areas, the construction worker, and to a lesser extent the industrial and utility workers, had higher hazard indices relative to other receptors, as a result of greater time spent in the area and greater potential exposure to contaminated media. Although Site ground water is not used for potable water and municipal water is supplied from the Onondaga County Water Authority (OCWA), potential future residential exposure to ground water as potable water was evaluated and found to pose unacceptable cancer risks and non-cancer hazards. Overall primary Site risk drivers include potential exposure to dioxins, mercury, PCBs, and benzene.

Risk drivers were evaluated on the basis of reasonable maximum exposure (RME) scenarios and are subject to uncertainty including but not limited to:

- Exposure point concentrations are based on the upper confidence limit of mean chemical concentrations.
- Exposure factors include conservative estimates of frequency and duration of exposure.
- Toxicity factors typically account for sensitive sub-populations.

In addition, risks are estimated separately for each exposure area. However, it is unlikely that a given receptor would spend all of their time in one exposure area. Thus the risks and hazards shown for a given exposure area are likely an overestimate, and the true risk to a receptor would likely be a weighted average of the risks from several exposure areas.

Site Background

This human health risk assessment (HHRA) was performed to assess potential impacts to public health related to the presence of chemical substances at the Willis Avenue Chlorobenzene Site (the

Site) in Geddes, New York, and related areas of study (AOS)[1]. The objective of the HHRA was to assess potential risks to human health associated with Site-related chemical substances under current and reasonably foreseeable future land uses and to facilitate the consideration and evaluation of possible future remedial actions. The HHRA was performed as part of the Remedial Investigation (RI) performed by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on behalf of Honeywell International Inc. (Honeywell) pursuant to Consent Order R7-0201-87-08 (Order) between AlliedSignal and the New York State Department of Environmental Conservation (NYSDEC) dated August 12, 1990.

An HHRA Report was originally submitted to the NYSDEC in June 1999 (Appendix L of the RI report; O'Brien & Gere 1999). The NYSDEC issued comments on that report on January 25, 2002 and the HHRA report was resubmitted in June 2002 (O'Brien & Gere 2002). Comments on the 2002 report were issued by the NYSDEC on July 19, 2004. The HHRA report was resubmitted in October 2004 (O'Brien & Gere 2004) and a summary of the revisions was provided to the NYSDEC in a letter from Honeywell dated December 2, 2004. The NYSDEC provided comments on the October 2004 HHRA in a letter to Honeywell dated March 13, 2007. This document presents the revised HHRA report that addresses the March 13, 2007 comments of the NYSDEC.

Site History

The principal activity of the plant was the production of chlorinated benzene products (monochlorobenzene and dichlorobenzene) from 1918 until production operations were discontinued in 1977; the Site has been inactive since 1977 except as a warehouse for various products produced at the Main Plant Site (1977-1986). Additional operations that reportedly took place at the plant included the production of caustic potash (potassium hydroxide), caustic soda (sodium hydroxide), and chlorine gas. Caustic potash and chlorine were produced by the electrolysis of potassium chloride brine solution. Initially, this was done in diaphragm cells, but in 1947, mercury cells were installed to manufacture these products. The process operations that took place at this facility have been described in detail in the History of the Willis Avenue Plant, Petroleum Storage Facility, and Associated "Hot-Spots" Report (O'Brien & Gere 1990).

Constituents related to former processes, primarily chlorinated benzene products and mercury, have been detected in surface soils (0-2 ft below ground surface (bgs)), subsurface soils (upper soils at 0-10 ft bgs and deep soils at > 10 ft bgs), and groundwater at the Site and related AOS. In addition, elevated mercury and chlorinated benzene concentrations have been detected in drainage ditches, outfalls, utility conduits, dredge spoils areas, and other migration pathways at and in the immediate vicinity of the General Plant Area. The objective of this HHRA was to evaluate current and reasonably foreseeable potential human exposures associated with these media and exposure pathways.

[1]Potential exposures in Onondaga Lake were not evaluated as part of the HHRA. These exposures will be assessed as part of the Onondaga Lake Study. The related areas of study included the Petroleum Storage Area (PSA), Chlorobenzene Hot-Spot Area (CHSA), and Tributary 5A.

Exposure Areas, Receptors, and Exposure Media

Currently, the Site is not in active use and there are no routine activities conducted On-Site. The General Plant Area, which consists of the Plant Area, the Former Chlorination Building, and On-Site Ditches, is surrounded by an eight-foot high fence and is monitored by Honeywell surveillance personnel during working hours. The Willis Avenue Plant Study Area also includes the State Fair Blvd./Northwest Off-Site/Outfall 004 and Southwest Off-Site/Outfall 006 Exposure Areas, as well as the Lakeshore Area. Three additional AOS (Tributary 5A, the Petroleum Storage Area, and the Chlorobenzene Hot-Spot Area) are included in the HHRA as well. Off-Site areas accessible by the public include Southwest Off-Site/Outfall 006 Exposure Area, State Fair Blvd./ Off-Site/Outfall 004 Exposure Area, the Lakeshore Area, Tributary 5A, PSA, and portions of the CHSA. The State Fair Blvd./ Off-Site/Outfall 004 is the most easily accessible, as many of the other areas have fences or railroad tracks on several sides. Based on historical observations, exposures at these areas are expected to be infrequent and of short duration. Based on current conditions at the Site and surrounding areas, the following current receptor populations were identified:

- Adolescent trespasser (Plant Area, On-Site Ditches, Former Chlorination Building, Tributary 5A, Southwest Off-Site/Outfall 006 Exposure Area, State Fair Blvd./ Off-Site/Outfall 004 Exposure Area, Lakeshore Area, Petroleum Storage Area, Chlorobenzene Hot-Spot Area)

- Adult trespasser (Plant Area, Former Chlorination Building, On-Site Ditches, Tributary 5A, Southwest Off-Site/Outfall 006 Exposure Area, State Fair Blvd./ Off-Site/Outfall 004 Exposure Area, Lakeshore Area, Petroleum Storage Area, Chlorobenzene Hot-Spot Area)

- Utility worker (State Fair Blvd./ Off-Site/Outfall 004 Exposure Area, Lakeshore Area, Tributary 5A)

- State Fair Boulevard transient (State Fair Blvd./ Off-Site/Outfall 004 Exposure Area)

- Surveillance worker (Plant Area, Former Chlorination Building, On-Site Ditches)

The Site and AOS are not expected to be developed as residential areas since the exposure areas are located in a heavily industrialized setting and are zoned industrial. Based on this consideration, the following receptors were identified under reasonably foreseeable future conditions.

- Adolescent trespasser (Plant Area, On-Site Ditches, Former Chlorination Building, Tributary 5A, Southwest Off-Site/Outfall 006 Exposure Area, State Fair Blvd./ Off-Site/Outfall 004 Exposure Area, Lakeshore Area, Petroleum Storage Area, Chlorobenzene Hot-Spot Area)
- Adult trespasser (Plant Area, On-Site Ditches, Former Chlorination Building, Tributary 5A, Southwest Off-Site/Outfall 006 Exposure Area, State Fair Blvd./ Off-Site/Outfall 004 Exposure Area, Lakeshore Area, Petroleum Storage Area, Chlorobenzene Hot-Spot Area)
- Adult transient (State Fair Blvd./ Off-Site/Outfall 004 Exposure Area)
- Surveillance worker (Plant Area, On-Site Ditches, Former Chlorination Building)
- Industrial worker (Plant Area, On-Site Ditches, Former Chlorination Building, Southwest Off-Site/Outfall 006 Exposure Area, Petroleum Storage Area)
- Construction worker (Plant Area, On-Site Ditches, Former Chlorination Building, Southwest Off-Site/Outfall 006 Exposure Area, Petroleum Storage Area, Chlorobenzene Hot-Spot Area)

- Utility worker (Plant Area, On-Site Ditches, Former Chlorination Building, Tributary 5A, State Fair Blvd./ Off-Site/Outfall 004 Exposure Area, Lakeshore Area, Petroleum Storage Area, Chlorobenzene Hot-Spot Area)
- Child (< 6 years) resident (Potable water)
- Adult resident (Potable water)

Exposure media considered in both current and future scenarios include soil, sediment, surface water, groundwater, and indoor air. Receptors that may be exposed to surface soils (0-2 ft) include trespassers, surveillance workers, industrial workers, and State Fair Boulevard transients. Construction workers and utility workers may contact upper soils (0-10 ft) and intermediate soils (0-20 ft), respectively. Trespassers and utility workers in the Tributary 5A area may be exposed to sediment and surface water. On-Site groundwater occurs at a depth of approximately 15-20 ft bgs while Off-Site it occurs at approximately 4-5 ft at the Chlorobenzene Hot-Spot Area, Petroleum Storage Area, and Lakeshore Area.

Groundwater at the Plant Study Area and at other AOS is not used as a drinking or industrial water supply and is highly unlikely to be used as a drinking or industrial supply in the future, since the area is supplied by municipal water from OCWA. However, the New York State groundwater classification for the Site and surrounding area is GA (*i.e.*, suitable for drinking use). In accordance with the NYSDEC's request, the hypothetical residential drinking water scenario was evaluated for future receptors in the risk assessment.

Hazard indices (HI) and cancer risks were derived based on the reasonable maximum exposure (RME) and central tendency (CT) concentrations for the identified receptor scenarios. Summaries of current and future receptors HI's and CT's are presented in Tables 7.1 and 7.2, respectively.

Risk Discussion

In general, under current conditions, cancer risks for receptors in all exposure areas are within the acceptable regulatory range of 10^{-4} to 10^{-6}, except for the Former Chlorination Building, and hazard indices for receptors in the Plant Area, State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area, and the Petroleum Storage Area are within the threshold of 1.

Under future conditions, cancer risks for receptors in all exposure areas are within the acceptable regulatory range of 10^{-4} to 10^{-6}, except for the Southwest Off-Site/Outfall 006 Exposure Area and the Former Chlorination Building. Under future conditions, hazard indices for receptors in the State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area are within the threshold of 1.

It should be noted that it is unlikely that a given receptor would spend all of their time in one exposure area. Thus the risks and hazards shown for a given exposure area are likely an overestimate, and the true risk to a receptor would likely be a weighted average of the risks from several exposure areas.

All receptors at the Former Chlorination Building (FCB) Exposure Area had estimated cancer risk values in excess of 1×10^{-4}, driven primarily by high concentrations of 2,3,7,8-TCDD equivalent in soils; this was responsible for the high HI values as well. In contrast, receptors associated with the

State Fair Blvd./Northwest Off-Site/Outfall 006 Exposure Area, as well as trespassers associated with the Lakeshore Area, had HI and cancer risks below the acceptable regulatory thresholds.

Across all applicable Exposure Areas, the construction worker, and to a lesser extent the industrial and utility workers, had higher HI values relative to the other receptors. This is a function of the assumptions of greater time spent in the area and greater exposure to contaminated media for these receptors relative to others.

The calculated RME HI for the future adult resident and child resident at the hypothetical drinking water source area were 2×10^{2} and 4×10^{2}, while the RME cancer risks were 1×10^{-2} and 7×10^{-3}, respectively. These values were attributable primarily to exposure to the maximum detected concentration of benzene in groundwater. Groundwater at the Site is not suitable for use as a drinking water supply irrespective of any contributions related to waste at the Site. The drinking water pathway was included in this section at the request of NYSDEC; however, this is considered to be an incomplete pathway under reasonably foreseeable land use scenarios.

Risk Drivers

A summary of risk drivers is presented in the RAGS Table 10 series and below.

Plant Area

Current/Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for current/future Site-receptors (adolescent trespasser, adult trespasser, and surveillance worker).

Future Receptors

Under the future exposure scenarios, there are no unacceptable cancer risks associated with any receptor in this exposure area. Non-cancer hazard exceeding the threshold for the future construction worker is driven primarily by exposure to:

- Nickel (HQ = 20)

Non-cancer hazards for the future utility worker is driven primarily by exposure to:

- Mercury (HQ = 3).

On-Site Ditches

Current/Future Receptors

There are no unacceptable cancer risks for current/future Site-receptors. Likewise, there are no unacceptable chemical-specific hazards for the current/future adult trespasser or surveillance worker. The non-cancer hazards for the adolescent trespasser are driven primarily by exposure to:

- 2,3,7,8-TCDD Equivalents (HQ = 3)
- Mercury (HQ = 3).

Future Receptors

There are no unacceptable cancer risks for future Site-receptors. Non-cancer hazards for the future construction worker are driven by exposure to:

- 2,3,7,8-TCDD Equivalents (HQ = 10)
- Mercury (HQ = 30).

Non-cancer hazards for future utility workers is also driven primarily by exposure to:

- 2,3,7,8-TCDD Equivalents (HQ = 9)
- Mercury (HQ = 5).

To a lesser extent, non-cancer hazards for future industrial workers is also driven primarily by these constituents.

Former Chlorination Building

Current/Future Receptors

Cancer risk to the adolescent trespasser, adult trespasser, and surveillance worker was estimated at the higher end of the regulatory threshold range of 10^{-4} to 10^{-6}. This risk was driven primarily by potential exposure to:

- 2,3,7,8-TCDD Equivalents (CR = 4×10^{-4})

Non-cancer hazards for these receptors also exceeded the regulatory threshold and are also driven by potential exposure to:

- 2,3,7,8-TCDD Equivalents (HQ = 20).

Future Receptors

Cancer risks to the future industrial worker, construction worker, and utility worker exceeded the regulatory threshold range of 10^{-4} to 10^{-6}. These risks are driven primarily by potential exposure to:

- 2,3,7,8-TCDD Equivalents (CR range = 1.7×10^{-3} to7.6×10^{-4})

Non-cancer hazards for these receptors also exceeded the regulatory threshold and are also driven by potential exposure to:

- 2,3,7,8-TCDD Equivalents (HQ ranges from 30 to 400).

Southwest Off-Site/Outfall 006 Exposure Area

Current/Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for current/future Site-receptors in the Southwest Off-Site/Outfall 006 Exposure Area.

Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for future industrial worker. Cancer risk to the future construction worker exceeded the regulatory threshold range of 10^{-4} to 10^{-6}. Cancer risk was driven primarily by exposure to:

- Benzene (CR = 1.5×10^{-4})

Non-cancer hazards for the future construction worker exceeded the regulatory threshold of 1 and was driven primarily by exposure to:

- Benzene (HQ = 40)
- Mercury (HQ = 10)
- Xylenes (HQ = 9)

State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area

Current/Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for the current/future receptor in this exposure area.

Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for anticipated future receptors in this exposure area.

Lakeshore Property Area

Current/Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for the adolescent trespasser or adult trespasser. There are also no unacceptable cancer risks for the utility worker in this exposure area;

however non-cancer hazards for this receptor exceeded the regulatory threshold. The non-cancer hazard was driven primarily by potential exposure to:

- Benzene (HQ = 9)
- Chlorobenzene (HQ = 3)

Petroleum Storage Area

Current/Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for the adolescent trespasser or adult trespasser in this exposure area.

Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for future industrial or utility worker. There are also no unacceptable cancer risks to the future construction worker; however, non-cancer hazards for the future construction worker exceeded the regulatory threshold of 1 and was driven primarily by exposure to:

- Manganese (HQ = 5)

Chlorobenzene Hot-Spot Area

Current/Future Receptors

There are no unacceptable cancer risks for the adolescent trespasser or the adult trespasser in the CHSA. Non-cancer hazard, however, did exceed the regulatory threshold and was driven by exposure to:

- PCBs (HQ = 4 and 3, respectively)

Future Receptors

There are no unacceptable cancer risks for future industrial worker in the CHSA. Non-cancer hazard, however, did exceed the regulatory threshold and was driven by exposure to:

- PCBs (HQ = 6)

There are no unacceptable cancer risks for future construction worker in the CHSA. Non-cancer hazards, however, did exceed the regulatory threshold and were driven primarily by exposure to:

- Manganese (HQ = 4)
- PCBs (HQ = 6)

There are no unacceptable cancer risks for future utility worker in the CHSA. Non-cancer hazard, however, did exceed the regulatory threshold and was driven primarily by exposure to:

- PCBs (HQ = 7)

Tributary 5A

Current/Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for the adolescent trespasser or the adult trespasser in this exposure area.

Hypothetical Drinking Water Source Area

Groundwater at the Site is not suitable for use as a drinking water supply irrespective of any contributions related to waste at the Site. However, the following section describes the risk drivers that would be expected if it groundwater was used as drinking water source.

Future Receptors

Both cancer risk and non-cancer hazards exceeded their respective regulatory thresholds for future child and adult residents. The cancer risks are driven primarily by exposure to:

- Benzene CRs = 5×10^{-3} and 1×10^{-2}, respectively)
- Arsenic (CRs = 1×10^{-3} and 2×10^{-3}, respectively)
- 1,4-Dichlorobenzene (CR = 2×10^{-4} and 4×10^{-4}, respectively)
- Benzo(b)fluoranthene (CR = 2×10^{-4} and 4×10^{-4}, respectively)

Non-cancer hazards for the future child and adult residents are driven primarily by:

- Benzene (HQ = 300 and 100, respectively)
- Chlorobenzene ((HQ = 50 and 20, respectively)
- Arsenic (HQ = 30 and 10, respectively)
- Toluene ((HQ = 10 and 5, respectively)
- Chromium (HQ = 8 and 4, respectively)
- Iron (HQ = 6 and 2, respectively)
- 1,4-Dichlorobenzene (HQ = 5 and 2, respectively)

Hypothetical Future Indoor Air

Based on the high vapor pressure of many of the compounds detected, a vapor intrusion evaluation will need to be conducted prior to the construction of occupied buildings at the site. Based on the vapor intrusion evaluation, preventative measures may be included in the design and construction of buildings at the Site to mitigate the risk of exposure to on-Site soil gas. Such measures may include the use of a vapor barrier or the installation of a venting system, such as at the groundwater treatment plant.

1. Introduction

This report presents the results of a human health risk assessment (HHRA) of potential impacts to public health related to the presence of chemical substances at the Willis Avenue Chlorobenzene Site (the Site) in Geddes, New York. The objective of the HHRA was to assess potential risks to human health associated with Site-related chemical substances under current and reasonably foreseeable future land uses and to facilitate the consideration and evaluation of possible future remedial actions.

The HHRA was performed as part of the Remedial Investigation (RI) performed by O'Brien & Gere Engineers, Inc. (O'Brien & Gere) on behalf of Honeywell International Inc. (Honeywell) pursuant to Consent Order R7-0201-87-08 (Order) between AlliedSignal and the New York State Department of Environmental Conservation (NYSDEC) dated August 12, 1990. An HHRA Report was submitted to NYSDEC in June 1999 (Appendix L of the RI/FS report; O'Brien & Gere 1999). The NYSDEC issued comments on that report on January 25, 2002 and the HHRA report was resubmitted in June 2002 (O'Brien & Gere 2002). Comments on the 2002 report were issued by the NYSDEC on July 19, 2004. The HHRA report was resubmitted in October 2004 (O'Brien & Gere 2004) and a summary of the revisions was provided to NYSDEC in a letter from Honeywell dated December 2, 2004. NYSDEC provided comments on the October 2004 HHRA in a letter to Honeywell dated March 13, 2007. This document presents the revised HHRA report that addresses the March 13, 2007 comments of NYSDEC, as well as subsequent comments on RAGS D Tables submitted as interim deliverables.

The HHRA focuses on chemical substances detected in soil, sediment and groundwater at and down gradient of the Site. The assessment does not address Site-related chemical substances that may have migrated to Onondaga Lake since Onondaga Lake was investigated and evaluated under a separate Consent Order.

1.1. Risk Assessment Guidance

The following United States Environmental Protection Agency (USEPA) documents were used as principal guidance in the preparation of the HHRA:

- *Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A) Interim Final* (USEPA 1989a)

- *Guidance for Risk Characterization* (USEPA 1995)

- *Exposure Factors Handbook* (USEPA 1997a)

A chemical substance may pose a risk to human health only if receptor populations have the potential to be exposed to the chemical substance in sufficient quantities to affect the health of exposed individuals. As such, a Site-specific health risk assessment involves the following:

- identification of Site-related chemical substances;
- identification of potential mechanisms by which human receptors may be exposed;
- estimation of the concentrations of the chemicals that may be present at locations where receptors may contact them (exposure point concentrations); and

- evaluation of potential adverse effects that may result from the estimated dose of the chemicals if absorbed by receptors.

1.2. Approach

Consistent with the cited guidance, the HHRA was conducted in the following phases:

- *Description of Site Areas (Section 2)*. The first step in the assessment was to identify and describe the physical locations and general characteristics of the Site and related AOS.

- *Conceptual Site Model (Section 3)*. The goal of the conceptual Site model was to characterize the Site with respect to its physical characteristics as well as those of the human populations at or near the Site. The output of this step was a qualitative evaluation of the Site and surrounding populations with respect to those characteristics that potentially influence exposure.

- *Data Evaluation (Section 4)*. The objective of the data evaluation step was to organize the data into a form appropriate for use in the assessment, to evaluate the quality of the data for HHRA purposes, and identify chemicals of potential concern (COPCs).

- *Exposure Assessment (Section 5).* In the exposure assessment, the pathways by which receptors may be exposed to On-Site chemical substances were identified and exposure point concentrations of COPCs were estimated for each complete exposure pathway.

- *Toxicity Assessment (Section 6).* In the toxicity assessment, available toxicological data for Site-related compounds were gathered and reviewed. Dose-response relationships between the extent of potential exposure and the occurrence/severity of potential adverse health effects were evaluated.

- *Risk Characterization (Section 7).* In the risk characterization step, the toxicity and exposure assessments were integrated into quantitative estimates of potential human health risk.

- *Uncertainty Analysis (Section 8).* In this section, the major uncertainties in the calculated risk estimates were discussed.

2. Description of Site Areas

The Willis Avenue Chlorobenzene Site is comprised of the Willis Ave Plant Study Area and three additional Areas of Study (AOS), which are presented in Figures L-1 and L-2. The AOS were either associated with the former production processes but were not located on or immediately adjacent to the Site, or have been included in the study at the request of the NYSDEC. The Willis Avenue Plant Study Area consists of:

- Plant Area
- Former Chlorination Building
- On-Site Ditches
- Southwest Off-Site/Outfall 006 Exposure Area
- State Fair Blvd./Northwest Off-Site/Outfall004 Exposure Area
- Lakeshore Area

The additional AOS consist of:

- Petroleum Storage Area,
- Chlorobenzene Hot-Spot Area,
- Tributary 5A.

A brief description of the various areas comprising the Site is presented below. A more detailed discussion is presented in Section 1 of the RI Report (O'Brien & Gere 2002).

2.1. Willis Avenue Plant Study Area

The Willis Ave Plant Study Area consists of the Willis Ave Plant Area (Plant Area); the On-Site Ditches; the Former Chlorination Building (FCB); Outfall 006 and the associated drainage ditch and mounded area; Outfall 004 and the associated drainage ditch; and the Lakeshore Area (Figure L-2).

Plant Area, On-Site Ditches, and FCB. The Plant Area (Figure L-3) is bounded by State Fair Boulevard to the north, Willis Avenue to the east, CSX railroad tracks to the south, and the Honeywell Semet Residue Ponds to the west. The FCB (Figure L-4) two On-Site Ditches (Figure L-5) are located within the Plant Area, but are treated as separate Exposure Areas in this HHRA to account for potential localized areas of contamination in the On-Site Ditches or FCB. Except for the grassy area near the former office/laboratory, the former plant area is sparsely vegetated. Surface materials consist primarily of concrete building foundations, associated debris, asphalt and gravel. Shallow subsurface materials (approximately 0 to 30 ft) consist of fill materials composed of sand and gravel, ash, cinders, brick fragments, and Solvay Waste. The former office/laboratory is the only building remaining in the plant area and is currently vacant. The Plant Area is completely surrounded by an eight-foot high chain link fence and the only point of access is a gate, which can only be opened by Honeywell personnel. Due to these security measures, there has been no evidence of trespassing or dumping On-Site.

The principal activity of the plant was the production of chlorinated benzene products (monochlorobenzene and dichlorobenzenes) from 1918 until production operations were discontinued

in 1977. The Site has been inactive since 1977 except as a warehouse for various products produced at the Main Plant Site (1977-1986). A fire occurred at the chlorination building in 1930 making it a potential site for the formation of dioxins and furans (Syracuse Herald Journal, July 4th, 1930). Additional operations that reportedly took place at the plant included the production of caustic potash (potassium hydroxide), caustic soda (sodium hydroxide), and chlorine gas. Caustic potash and chlorine were produced by the electrolysis of potassium chloride brine solution. Initially, this was done in diaphragm cells, but mercury cells were installed to manufacture these products in 1947. The process operations that took place at this facility have been described in detail in the *History of the Willis Avenue Plant, Petroleum Storage Facility, and Associated "Hot-Spots" Report* (O'Brien & Gere 1990; Appendix A of the RI Report).

Outfall 006, drainage ditch and mounded area (Southwest Off-Site/Outfall 006 Exposure Area). Outfall 006 is situated to the southwest of the fenced Plant Area and approximately 30 ft north of the CSX railroad tracks (Figure L-6). A shallow drainage ditch extends from the outfall north towards the Plant Area. The above ground portion of the drainage ditch is approximately 75 ft in length and the remainder is below ground. Historic information gathered from State Pollutant Discharge Elimination System (SPDES) discharge permit sampling data indicates that the ditch is dry throughout the year, with the exception of heavy rainfall or snowmelt events. The mounded area is the area extending from the southern plant area boundary back to the CSX railroad tracks. The area is approximately 350 ft by 200 ft in area and vegetation is patchy with scattered pioneer grasses, wild flowers, and tree saplings (brushy cleared land). Access to this area is not restricted; however, the area is remote and generally only accessed by railroad workers or utilities workers.

Outfall 004, drainage ditch, and Niagara Mohawk Utility Line Area (State Fair Blvd./Northwest Off-Site/Outfall 004 Exposure Area)[1]. This area contains three key aspects: proximity to State Fair Boulevard, presence of Outfall 004 and a drainage ditch, and a Niagara Mohawk utility line.

- State Fair Boulevard is situated immediately adjacent to this Exposure Area and is a regularly driven road with minimal pedestrian traffic.

- Outfall 004 is situated approximately 25 ft north and 200 ft west of the northwest corner of the Plant Area fence and near State Fair Boulevard (Figure L-7). The outfall is located along a shallow drainage ditch (approximately 1 to 1.5 ft in depth) that runs in the east-west direction parallel to, and approximately 10 ft south of, State Fair Boulevard. The ditch starts at the corner of Willis Avenue and continues west until it terminates at Tributary 5A near Crucible Specialty Metals. The ditch is dry throughout the year, with the exception of heavy rainfall or snowmelt events.

- A Niagara Mohawk (NIMO) utility line extends along the length of the Exposure Area.

- Cover type in this area is classified as mowed roadside/pathway, which consists of grasses and sedges and vines and low shrubs. Access to this area is not restricted.

[1] Site "Northwest Off-Site/Outfall 004 Exposure Area" was called "State Fair Boulevard/Outfall 004 area" in previous revisions. This represents a change in naming conventions, not a change in the description of the site itself.

Lakeshore Area. The Lakeshore Area is situated to the north of the plant area and between the southern shore of Onondaga Lake and the westbound lane of I-690. The Lakeshore Area is bounded by Onondaga Lake to the north and the fence along I-690 to the south. The Lakeshore Area is presented in Figure L-8. The extent of the Lakeshore Area to the west is defined by the 84-inch water intake at the lake, and the eastern extent is defined by the PA sewer and western end of the East Flume. The area consists of a narrow strip of mowed lawn to the north of I-690 and a concrete pier along the lake, which is accessible by boat from Onondaga Lake. The Lakeshore Area widens as it approaches the Upper East Flume. An eight-foot high chain fence with a locking gate surrounds the area, but boaters can access the area. As described in the RI report, a chlorobenzene dense non-aqueous phase liquid (DNAPL) recovery Interim Remedial Measure (IRM) is on-going at the Lakeshore Area.

2.2. Other Areas of Study

Tributary 5A. Tributary 5A is a small stream that courses for about 3000 ft and discharges into Onondaga Lake (Figure L-9). The stream contains a three-foot diameter culvert (approximately 300 ft long) under I- 690 and a two-foot diameter culvert (over 200 ft long) under a set of railroad tracks. The stream is generally six inches deep and contains several small pools with an average depth of one to two feet. Access to the area is limited by thick vegetation and steep-sided banks; there is also limited open water for fishing in Tributary 5A.

The fish sampling survey conducted in November 2001 by O'Brien & Gere indicated that the game fish present in Tributary 5A are insufficient in size or palatable quality for consumption. Specifically, the largest game fish collected was a largemouth bass, which was 160 mm in length and therefore below the current legal size limit. This fish could not be legally retained for personal consumption. The largest sunfish (pumpkinseed) collected was 123 mm and too small for cleaning and personal consumption. The pumpkinseed may be considered a game fish but does not have a regulated size limit. In addition to the game fish, a creek chub collected was 305 mm long and carp were observed to be eight to twelve inches long. Sport fishermen do not generally consider these fish for personal consumption.

Based on the shallow stream depth and lengthy culverts, upstream migration of the relatively larger fish is considered unlikely. The relatively larger fish that were collected or observed (described above) are likely residents of the small pools. These fish have potentially reached an optimal adult size for the habitat provided in Tributary 5A.

Petroleum Storage Area. The Petroleum Storage Area (PSA) is located to the southwest of the Plant Area. It is bounded to the north by the CSX railroad tracks, to the southeast by a railroad siding and to the west by the Salt City soft coal storage area (Figure L-10). The PSA is mostly covered by concrete and asphalt; access to the area is restricted by fencing and Honeywell surveillance.

Chlorobenzene Hot-Spots Area. The Chlorobenzene Hot-Spot Area (CHSA) is situated to the south of the Plant Area and the PSA, and adjacent to the Suez Power Plant, formerly Trigen (Figure L-11). The area is covered with industrial buildings, concrete, and asphalt; access is restricted by fencing to the north. The southern portion of the CHSA, between the fencing and Industrial Drive, is an accessible piece of sparsely vegetated land. This area contained an underground pipeline that leaked historically creating the present contamination issues.

3. Conceptual Site Model

This section presents the conceptual site model (CSM) for the Site. The CSM describes the Site and additional AOS. The CSM presents hypotheses regarding the contaminants present, their routes of migration, and their potential impact on human receptors, forming the basis for the HHRA approach and assumptions. A general CSM for the Site is presented in Section 3.1 below. The CSM is based on information and analytical data presented in Sections 1 through 4 of the RI report (O'Brien & Gere 2002).

To facilitate the HHRA, the Site and additional AOS were organized into Exposure Areas based on the likely current and future land uses and potential current and future receptor populations.

A conceptual model for each of the defined Exposure Areas is presented in Sections 3.2 through 3.9 and summarized on RAGS D Tables 1.1a through 1.1h.

3.1. General CSM

General descriptions of the Site Areas that support the CSM were provided in Section 2. Process-related constituents, primarily chlorinated benzene products and mercury, have been detected in surface soils, subsurface soils, sediment, and groundwater at the Site. In addition, elevated mercury and chlorinated benzene concentrations have been detected in drainage ditches, outfalls, utility conduits, dredge spoils areas, and other migration pathways at and in the immediate vicinity of the Plant Area.

Currently, there are no routine activities conducted on-site. The Plant Area, FCB, and one of the On-Site Ditches are surrounded by an eight-foot high fence and are monitored by Honeywell surveillance personnel during working hours. Off-Site areas accessible by the public include the Southwest Off-Site/Outfall 006 Exposure Area, Sate Fair Blvd./Northwest Off-Site/Outfall 004 Exposure Area, Tributary 5A, the Lakeshore Area, PSA, and portions of the CHSA. However, based on historical observations, exposures at these areas are expected to be infrequent and of short duration. Based on current conditions at the Site, the current receptor populations per Exposure Area were identified:

Table 3.1. *Identified receptors for the Exposure Areas*.

	Current receptors			**Future Receptors**					
Exposure Area	T/Tr	SW	UW	T/Tr	SW	IW	CW	UW	R
Plant Area	A/Ad[1]	Ad		A/Ad[1]	Ad	Ad	Ad	Ad	
FCB	A/Ad[1]	Ad		A/Ad[1]	Ad	Ad	Ad	Ad	
On-Site Ditches	A/Ad[1]	Ad		A/Ad[1]	Ad	Ad	Ad	Ad	
Southwest Off-Site/Outfall 006	A/Ad[1]			A/Ad[1]		Ad	Ad		
Northwest Off-Site/Outfall 004	A/Ad[2]		Ad	A/Ad[2]				Ad	

Table 3.1. *Identified receptors for the Exposure Areas*.

	Current receptors			Future Receptors					
Lakeshore Area	A/Ad[1]		Ad	A/Ad[1]				Ad	
Tributary 5A	A/Ad[1]		Ad	A/Ad[1]				Ad	
PSA	A/Ad[1]			A/Ad[1]		Ad	Ad	Ad	
CHSA	A/Ad[1]			A/Ad[1]		Ad	Ad	Ad	
Drinking Water Source area									C/Ad

NOTES:

A = adolescent; Ad = adult; C = Child

CW = construction worker; IW = industrial worker

SW = surveillance worker; T/Tr = trespasser/transient;

UW = utility worker, R = resident

[1] = adolescent and adult trespasser; [2] = adolescent and adult trespasser/adult transient

Source: O'Brien & Gere Engineers, Inc.

The adolescent trespasser is assumed to be on foot for all Exposure Areas except the State Fair Blvd./Northwest Off-Site/Outfall 004 Exposure Area, where bicycle traffic is possible. The other Exposure Areas are either surrounded by a security fence, have a remote location, or are highly industrialized. This is discussed in Sections 5.2 through 5.8. It should be noted that no evidence of trespassing has been observed at the Site.

The Site is not expected to be developed into residential areas, since the areas are located in heavily industrialized settings and are zoned industrial (Town of Geddes Zoning Maps). Based on this consideration, additional receptors were identified under reasonably foreseeable future conditions and included in the table above.

Receptors may be exposed to surface soils (0-2 ft; trespassers, transients, industrial workers), upper soils (0-10 ft; construction workers, utility worker), or deep soils (> 10 ft; utility workers). In addition, future industrial workers may also be exposed to volatile organic compounds (VOCs) in upper soils and groundwater that may infiltrate indoor air via soil vapor migration. Recreational fishermen may be exposed to surface water and sediment from Tributary 5A.

Groundwater occurs at a depth of approximately 15 to 20 ft bgs for the Plant Area, On-Site Ditches, and FCB, while it occurs at approximately 4 to 5 ft at the CHSA, PSA, and Lakeshore Area. Groundwater at the Site is not used as a drinking or industrial water supply and is highly unlikely to be used as a drinking or industrial supply in the future, since the area is supplied by municipal water from OCWA. Furthermore, the yield of the overburden groundwater unit is inadequate for water supply wells, and the high salinity of the bedrock aquifer (approximately 3,000 mg/l chlorides)

precludes its use as drinking water. However, as discussed previously in section 2.2 and in accordance with the NYSDEC's request, the hypothetical drinking water scenario for the Site is evaluated in the risk assessment.

3.2. Plant Area, On-Site Ditches, and Former Chlorination Building

Because the On-Site Ditches and FCB are located within the boundary of the Plant Area, all three areas have the same receptors and media (discussed below). Chemical residues detected in these areas are chlorinated benzenes in surface soils, upper soils, deep soils, and groundwater and mercury in surface soils, upper soils, deep soils, groundwater, and drainage ditches (RAGS D Tables 2.1 to 2.3 and 2.8). Chlorinated dioxins and furans (dioxins and furans) were detected in the surface soils in the vicinity of the FCB[2] (RAGS D Tables 2.4 and 2.5; Section 4.3 of the RI report).

The surface of these areas is mostly covered by concrete building foundations, which limited the number of surface soil samples. Non-concrete portions have been covered by approximately three feet of crushed stone and soil cover following discontinuation of production operations. It should be noted that soil samples collected from 0 to 2 ft bgs are considered surface soil, while samples collected from 0 to 2 ft below the concrete building foundations are considered upper soils (0-10 ft).

Groundwater at Plant Area, On-Site Ditches, and FCB occurs at a depth of approximately 25 - 30 ft bgs. Groundwater is not used as a potable or industrial water supply and is highly unlikely to be used as a potable or industrial supply in the future, since the area is supplied by municipal water from OCWA.

The plant area may be developed as an industrial facility in the future. It is highly unlikely that the plant area would be developed as a residential area, since the area is zoned industrial; the surrounding area is highly industrialized and is expected to remain as such in the reasonably foreseeable future (Town of Geddes Zoning Maps).

Potential current receptors at the Plant Area, On-Site Ditches, and FCB are identified as trespassers who may occasionally climb the fence and access the Site and surveillance workers monitoring the area. Potential future receptors are identified as construction workers, On-Site industrial workers, and utility workers.

3.3. Southwest Off-Site/Outfall 006 Exposure Area

As discussed in Section 2.1, the southwest Off-Site area includes the location of Outfall 006 and mounded area. This area is situated to the south of the fenced plant area and approximately 30 ft north of the CSX railroad tracks and the plant area (Figure L-6).

Chemical residues detected in Outfall 006 surface soils include mercury, chlorobenzene, and polychlorinated biphenyls (PCBs) including Aroclor 1260, as well as concentrations of chlorinated VOCs. Constituents detected in the upper soils from the mounded area include mercury, benzene and

2 Soils were sampled and analyzed for dioxins and furans at the direction of the NYSDEC to evaluate the potential formation of dioxins and furans following a fire at the chlorination building in 1930. (Syracuse Herald Journal, July 4th, 1930)

substituted benzenes (petroleum-based constituents), dichlorobenzenes, and chlorinated VOCs (RAGS D Tables 2.12 and 2.13; Section 4.3 of the RI report).

Potential current receptors at the Southwest Off-Site/Outfall 006 Exposure Area are identified as trespassers who may occasionally be present at the area, as well as railroad or utility workers. Potential future receptors are identified as construction workers and industrial workers.

3.4. State Fair Blvd./Northwest Off-Site/Outfall 004/ Exposure Area

As discussed in Section 2.1, Outfall 004 is situated approximately 25 ft north and 200 ft west of the northwest corner of the plant area fence and near State Fair Boulevard (Figure L-3).

Chemical residues detected in the Exposure Area surface soils include mercury, chlorobenzenes, and PCBs consisting of Aroclor 1260, as well as low concentrations of chlorinated VOCs. Chemical residues detected in upper soils around the NIMO utility line include mercury, chlorobenzenes, Aroclor 1260, as well as chlorinated VOCs and petroleum constituents (Tables 2.14 and 2.15; Section 4.3 of the RI report).

Potential current and future receptors for this area are identified as:

- adolescent trespassers
- adult transients (during the State Fair)
- NIMO utility workers

These exposure pathways are discussed in RAGS D Table 1.1c (Attachment L).

3.5. Lakeshore Area

As discussed in Section 2.1, the Lakeshore Area is situated to the north of the plant area, between the south shore of Onondaga Lake and the westbound lane of I-690 (Figure L-2).

Chemical residues, notably chlorobenzenes and naphthalene, have been detected in upper soils and surface soils on the Lakeshore Area. Constituents detected in groundwater on the Lakeshore Area included benzene, toluene, and chlorinated benzenes.

Additional current and future receptors in this area are utility workers and adolescent and adult trespassers. Current and future receptors at this area are identified as Honeywell workers who are operating the product recovery system. However, these workers are working under an approved health and safety plan (HASP) and are required to utilize appropriate personal protective equipment as specified in the HASP. As such, these receptors were not evaluated in the risk assessment.

3.6. Tributary 5A

As discussed in Section 2.2, Tributary 5A is a small stream that courses through the Site for approximately 3000 ft and discharges into Onondaga Lake (Figure L-9).

Chemical residues detected in Tributary 5A sediment include select metals, polycyclic aromatic hydrocarbons (PAHs), and PCBs (Aroclor 1254). Chemical residues from the surface water include chlorinated VOCs and select metals.

The current and future receptors considered for Tributary 5A are the adolescent and adult trespasser and a utility worker. Based on the potential for fish migration, consideration of the habitat, fish sampling data and limited access for fishermen (Section 2.2.4), edible fish are not likely to be caught in Tributary 5A. The fisherman/fish consumer scenario is not considered probable and, this, was not evaluated.

3.7. Petroleum Storage Area

As discussed in Section 2.2, the PSA is located to the southwest of the former Willis Avenue Plant (Figure L-10).

Three monitoring wells were installed by Groundwater Technology in the early 1980s to detect possible petroleum product leakage. No. 2 fuel oil was not detected in the groundwater during the study; however, benzene, toluene, and xylenes (BTX) and naphthalene were detected. In addition, PCBs (Aroclor 1254), PAHs, and mercury were detected in surface and upper soils. In addition, total petroleum hydrocarbons (TPH) concentrations were detected in 0 to 2 ft soil (100 to 600 mg/kg) and in 2 to 10 ft soil (100 to 800 mg/kg).

Potential current receptors at the PSA are identified as adult and adolescent trespassers who may occasionally be present at the area. In addition, potential future receptors are identified as trespassers, construction workers, industrial workers, and utility workers.

3.8. Chlorobenzene Hot-Spot Area

As discussed in Section 2.2, the CHSA is situated to the south of the plant area and the PSA, adjacent to the Suez Power Plant, formerly Trigen (Figure L-11).

Previous reports have identified benzene and chlorobenzene at monitoring well MW-111 (Blasland & Bouck 1987). Depth to groundwater in this area is approximately 4 to 5 ft bgs. Blasland & Bouck (1987) attributed the source of these compounds to leakage from the chlorobenzene pipeline, which is approximately 5 ft bgs. In addition, chlorobenzenes, PAHs, and mercury were detected in surface and upper soils.

Potential current receptors at the CHSA are identified as adult and adolescent trespassers who may occasionally be present at the area. In addition, potential future receptors are identified as trespassers, construction workers, industrial workers, and utility workers.

3.9. Hypothetical Drinking Water Source Area

On-Site groundwater occurs at a depth of approximately 15 to 20 ft bgs, while Off-Site it occurs at approximately 4 to 5 ft at the CHSA, PSA, and Lakeshore Area. The location of the hypothetical Drinking Water Source Area (on-site and off-site groundwater wells) is presented in Figure L-12.

Groundwater is not used as a drinking or industrial water supply and is highly unlikely to be used as a drinking or industrial supply in the future, since the area is supplied by municipal water from OCWA. Furthermore, the yield of the overburden groundwater unit is inadequate for water supply wells, whereas the high salinity of the bedrock aquifer (approximately 3,000 mg/l chlorides) precludes its use as drinking water.

However, the New York State groundwater classification for the Site and surrounding area is GA (*i.e,*. suitable for drinking use). In accordance with NYSDEC's request, the hypothetical drinking water scenario is therefore evaluated in the risk assessment, which assumes residential development of portions of the Site. The HHRA includes a quantitative evaluation for both child and adult residents hypothetically ingesting groundwater as potable water.

3.10. Evaluation of Soil Vapor Intrusion Pathway

3.10.1. General Considerations

As discussed above, VOCs, notably chlorobenzene and benzene, and elemental mercury, have been detected in soil and groundwater at the Site. VOCs may volatilize from soil and groundwater sources into the unsaturated zone above the water table (soil vapor). If current or future buildings are located above or near contaminated soil or groundwater source, volatile constituents in soil vapor may intrude into the indoor air of buildings via cracks or seams in the foundation. Soil vapor intrusion may occur via the two principal mechanisms of advection or diffusion. Advection refers to the bulk movement of soil gas from the unsaturated zone to indoor air due to a pressure differential between the soil gas and the indoor space. Typically, in temperate climates, advective transport may occur during the winter months when a negative pressure environment is created indoors as a result of indoor heating in well insulated and sealed structures. Since advection requires the bulk movement of air through the soils, advective transport is negligible in very low permeability soils but may be the operative transport pathways in high permeability soils (Johnson and Ettinger 1991).

Diffusive transport reflects the movement of VOCs from the source to the indoor air due to the concentration gradient between the source and the indoor space. Since diffusive transport does not require the bulk movement of air, it may be the operative transport mechanism in low permeability soils or if there is no pressure gradient between the indoor space and the soil vapor. Because molecular diffusion of VOCs occurs much more rapidly in air than in water, the extent of diffusive transport in soils is primarily dependant on the moisture content of the soil as well as the total porosity. VOCs volatilizing from groundwater must first diffuse through the capillary fringe, which is the semi-saturated zone above the water table, before migrating to the unsaturated zone. The capillary fringe has a high moisture content and therefore, the height of the capillary fringe is an important factor in determining the rate of migration of VOCs from groundwater to soil gas. Low permeability "tight" soils, such as clays and silts, typically have significantly larger capillary fringes as compared with high permeability soils such as sands. As such, the rate of diffusive transport is lower in low permeability soils as compared with high permeability soils (Little *et al*. 1992).

3.10.2. Site-Specific Considerations

As part of the HHRA, the potential future migration of VOCs in groundwater to the indoor air of future On-Site industrial buildings was screened.

Screening of groundwater concentrations against vapor intrusion screening values: Groundwater screening values protective of potential vapor intrusion to indoor air were taken from *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance*, USEPA 2002a). For each VOC constituent, SVOC constituent, and mercury the maximum groundwater concentration was compared to screening values in USEPA (2002a) Table 2c. For most chemicals, these are the groundwater concentrations corresponding to target indoor air concentrations where the soil gas to indoor air attenuation factor is 0.001. However, when this attenuation factor results in a groundwater concentration that is below the MCL, the screening value in Table 2c defaults to the MCL. The screening process for this site did not use these MCL-defaulted values; rather the groundwater concentration based on the attenuation factor was used regardless of whether it is less than the MCL. Constituents were also retained in if no screening value was available The results of the groundwater screening protective of indoor air are summarized in RAGS D Tables 2.5, 2.24, and 2.28.

Because of the lack of occupied structures on the property at the time of sampling, there is no complete human exposure through the vapor intrusion pathway at this time. In the future, however, a building may be erected on the property (such as the groundwater treatment plant) that potentially could be impacted by the migration of vapors from the subsurface. Because the impact of the vapor intrusion pathway can be affected by a wide a variety of factors, including building size, ventilation rate, integrity of the foundation, *etc*., it is not possible to estimate the potential risks associated with vapor intrusion. Therefore, at this stage of evaluation, only COPCs can be identified. As noted above COPCs were identified by comparing groundwater concentrations to groundwater screening values protective of potential vapor intrusion to indoor air. Constituents detected in groundwater above screening levels include; naphthalene and mercury in the Petroleum Storage Area; benzene, chlorobenzene, methylene chloride, and mercury in the Plant Area intermediate ground water; and hexachlorobenzene, 1,2-dichlorobenzene, 1,4-dichlorobenzene, benzene, chlorobenzene, and mercury in the Chlorobenzene Hot-spot Area shallow groundwater. These constituents are present in groundwater at levels that have the potential to impact the quality of indoor air in a future building if erected on the Site.

4. Data Evaluation

The results of the risk assessment are used to assess if remedial actions are necessary at a site and to identify remedial action objectives and medium-specific remedial goals, if necessary. Therefore, it is important that the risk assessment is based on high quality, technically defensible analytical data with respect to the identification and quantification of site-related chemicals. The objectives of the data evaluation were to:

- Evaluate the quality of existing analytical data with respect to risk assessment needs;
- Evaluate the quantity, spatial coverage, and appropriateness of sample locations;
- Evaluate the appropriateness of analytical methods and detection limits'
- Identify data gaps; and,
- Identify COPCs for the Site.

The data evaluation process was conducted in three steps:

A. Data compilation and general review
B. Data usability assessment
C. Identification of COPCs.

4.1. Data Compilation and General Review

4.1.1. Data Sources

The data collected during the RI were used as the input data for the risk assessment. As discussed in the RI report, Site samples were collected from groundwater, surface soils, upper soils, deep soils, and sediments at the Exposure Areas (Appendix A). A summary of the remedial investigation sampling activities (including the 1999 Baseline Ecological Risk Assessment sample collection) is presented in Table 1. Table 2 presents a summary of samples collected from each Exposure Area. The entire data set used in this HHRA is provided as Appendix B. It should be noted that the Exposure Areas for each sample are included in the data set provided in Appendix B.

Data from surface soils, sediments, upper soils, and deep soils were used in the HHRA and are discussed below. A detailed discussion of the analytes detected in those media is presented in Section 4.3 of the RI report.

4.1.2. Chemical Analyses

Consistent with the agreed Work Plan, the RI sampling activities focused on VOCs, semi volatile organic compounds (SVOCs), PCBs/pesticides, and mercury analyses. Metals other than mercury were analyzed in select samples specified by the NYSDEC. The Site is covered with fill material mixed with Solvay waste, which contains elevated metals concentrations (Table 16 of the RI report). The metals concentrations detected in soil samples collected from the Site are comparable to the concentrations reported for Solvay waste (Table 16 of the RI report). As such, the available metals data provide representative estimates of metals concentrations across the Site.

A brief discussion of available data from each of the previously identified Exposure Areas is presented below. Summaries of the detected analytes are presented in the RAGS D Table 2 series.

4.1.3. Plant Area

A sampling summary is provided in Appendix A, and a summary of the constituents detected in soils is presented on RAGS D Tables 2.1 through 2.3. Surface, upper, and deep soil samples were collected from the Plant Area and analyzed as follows:

- Surface soil samples were analyzed for VOCs, SVOCs, PCBs/pesticides, and metals and 16 for polychlorinated dibenzo-p-dioxins and furans (PCDD/Fs).
- Additional upper soil samples were analyzed for VOCs and 10 for mercury.
- Deep soil samples were analyzed for VOCs, SVOCs, and metals.

It should be noted that both mercury and methyl mercury were analyzed in subsurface (upper and intermediate) soil samples collected from the vicinity of the former mercury cell building at the Plant Area. The treatment of unspeciated mercury in the HHRA is described in Section 4.3.3.

In addition, 18 groundwater samples were collected from 11 wells at the Plant Area and analyzed for VOCs, SVOCs, and metals (RAGS D Tables 2.4 and 2.5).

4.1.4. Former Chlorination Building

A sampling summary is provided in Appendix A and a summary of the constituents detected in soils is presented in RAGS D Tables 2.6 through 2.8. Surface, upper, and intermediate soil samples were collected from the FCB and analyzed as follows:

- Surface soil samples were analyzed for PCBs/pesticides, metals and PCDD/Fs.
- Additional upper soil samples were analyzed for PCDD/Fs.
- No intermediate soil samples were collected.

4.1.5. On-Site Ditches

A sampling summary is provided in Appendix A and a summary of the constituents detected in soils is presented on RAGS D Tables 2.9 through 2.11. Surface, upper, and intermediate soil samples were collected from the FCB and analyzed as follows:

- Surface soil samples were analyzed for PCDD/Fs and one sample was analyzed for VOCs, SVOCs, PCBs/pesticides, and metals; these samples provide a representative estimate of conditions at this area based on the dimensions of the On-Site Ditches and will also be used as representative of the upper soils (0-10 ft bgs).

- No additional upper soil samples or intermediate soil samples were collected.

4.1.6. Southwest Off-Site/Outfall 006 Exposure Area

A sampling summary and summary of the constituents detected in surface and upper soils at Southwest Off-Site/Outfall 006 Exposure Area are presented in Appendix A and RAGS D Tables 2.12 and 2.13, respectively. Based on the dimensions of the subsite, the samples provide a representative characterization of surface soil conditions at this location and are as follows:

- Surface soil samples were analyzed for VOCs, PCBs/pesticides, and mercury and two for PCDD/Fs.

- Additional upper soil samples were analyzed for VOCs and PCBs/pesticides and mercury.
- No intermediate soil samples were collected.

4.1.7. State Fair Blvd./Northwest Off-Site/Outfall 004 Exposure Area

A sampling summary and summary of the constituents detected in surface and upper soils at Northwest Off-Site/Outfall 004 Exposure Area are presented in Appendix A and RAGS D Tables 2.14 and 2.15, respectively. Based on the dimensions of the subsite, the samples provide a representative characterization of constituent concentrations at the outfall location and are as follows:

- Four surface soil samples were analyzed for VOCs, PCBs/pesticides, and mercury and two for PCDD/Fs.
- Additional samples from the upper soils were analyzed for VOCs, SVOCs, PCBs/pesticides, and metals.
- No intermediate soil samples were collected.

The samples from the upper soils were collected based on field observations of materials in the test pits. As such, the samples provide a conservative representation of potential conditions around the NIMO utility line. It should be noted that a non-aqueous phase liquid (NAPL) was observed along State Fair Boulevard during the excavations around the NIMO gas pipeline.

4.1.8. Tributary 5A

Surface water and sediment samples were analyzed for VOCs, SVOCs, PCB/pesticides, metals, PCDD/Fs, and methyl mercury from four locations (5A-SED/SW-1 through 4). A sampling summary and summary of the detected constituents in Tributary 5A sediment and surface water are presented in Appendix A and RAGS D Tables 2.19 and 2.20, respectively.

4.1.9. Lakeshore Area

A sampling summary and summary of the detected constituents in the Lakeshore Area surface and upper soils are presented in Appendix A and RAGS D Tables 2.16 and 2.17. A summary of constituents detected in groundwater is presented in RAGS D Table 2.18. These samples are briefly summarized below.

- Surface soil samples were analyzed for VOCs, SVOCs, PCBs/ pesticides, metals, PCDD/Fs.
- No additional upper soil samples or intermediate soil samples were collected, but the surface soils were considered representative of the upper soils (0-10 ft bgs).
- Groundwater samples were analyzed for VOCs, SVOCs, and metals.

4.1.10. Petroleum Storage Area

A sampling summary and summary of the constituents detected at the PSA surface and upper soils are presented in Appendix A and RAGS D Tables 2.21 and 2.22, respectively. A summary of constituents detected in groundwater is presented in RAGS D Tables 2.23 and 2.24. Based on the dimensions of the subsite, the samples provide a representative characterization of constituent concentrations at the PSA and are as follows:

- Four surface soil samples were analyzed for VOCs, PCBs/pesticides, and metals and one sample for PCDD/Fs.

- Additional soil samples were analyzed for VOCs, SVOCs, PCBs/pesticides, and metals.
- No intermediate soil samples were collected.
- Groundwater samples were analyzed for VOCs, SVOCs, and metals.

4.1.11. Chlorobenzene Hot-Spots Area

A sampling summary and summary of the constituents detected in surface and upper soils at the CHSA are presented in Appendix A and RAGS D Tables 2.25 and 2.26, respectively. A summary of the detected constituents in groundwater is presented in RAGS D Tables 2.27 and 2.28. Based on the dimensions of the subsite, the samples provide a representative characterization of constituent concentrations at the CHSA and are as follows:

- Surface soil samples were analyzed for VOCs, SVOCs, PCBs/pesticides, and metals and one sample for VOCs, PCBs/pesticides, metals, mercury, and PCDD/Fs.
- Additional upper soil samples were analyzed for VOCs, SVOCs, PCBs/pesticides, and metals.
- No intermediate soil samples were collected.
- Groundwater samples were analyzed for VOCs, PCBs/pesticides, and metals.

4.1.12. Hypothetical Drinking Water Source Area

In order to assess the hypothetical drinking water scenario, analytical data from groundwater samples at or down gradient of the General Plant Area, CHSA, PSA, and Lakeshore Area were compiled and reviewed. A total of 30 wells, shown on Figure L-12 were identified as being appropriate for the hypothetical drinking water assessment. The selected wells have been sampled and analyzed over multiple rounds for various analytical parameters consisting of VOCs, SVOCs, and metals. The total number of samples for different analytes across the monitoring events conducted between 1991 and 2002 are summarized on RAGS D Table 2.29. Based on an initial review of the available data, no systematic increasing time-related trends are evident in the constituent concentrations. Therefore, for the purposes of the risk assessment, the data were analyzed as a single dataset (*i.e.*, the data were not segregated by monitoring event). The total number of samples by constituent from the 30 wells sampled is presented on RAGS D Table 2.29. This dataset consists of all groundwater samples collected from the Plant Area, Lakeshore Area, PSA, and CHSA, as these are the most recent samples collected.

4.2. Data Usability Assessment

The data usability assessment was conducted in general conformance with *Guidance for Assessing Data Usability for Risk Assessment* (USEPA 1992a).

4.2.1. Data Quality Objectives

Data quality objectives (DQOs) for the Site investigation were developed as part of the approved Work Plan for the RI (O'Brien and Gere 1990). Data quality objectives are qualitative or quantitative measures of the minimum required *sensitivity, accuracy, precision,* and *representativeness* of the collected data for risk assessment purposes. Sensitivity reflects the ability of the chemical analysis to detect chemical residues at concentrations, which allow the quantitative assessment of human health risk. Precision is a measure of the uncertainty in the reported concentration due to variability in the sample collection and analysis process and spatial variability in the chemical concentrations. Accuracy is a measure of the extent to which the reported chemical concentrations in a sample are

consistent with the actual concentrations. Representativeness is a more subjective measure and refers to the extent to which the collected data represent actual conditions at the Site. Representativeness is a function of the sampling locations, number of samples collected, the types of chemical analyses performed, and the accuracy and precision of the collected data.

The objective of the Data Usability Assessment was to evaluate the quality of the analytical data generated as part of the RI relative to the DQOs.

4.2.2. Data Validation

Data validation is an evaluation of the accuracy and precision of the reported analytical measurements. Data validation involves the reconstruction of the analytical process and an evaluation of whether the analysis has been performed correctly. Data validation qualifiers, which reflect the accuracy, precision, and usability of the data, are then applied to individual data points based on USEPA specified guidelines.

The data were validated as described in Appendix I of the RI report. As described in the data validation report, 100% of the pesticide/PCB data, 100% of the dioxin data, 97.3% of the VOC data, 98.4% of the SVOC data, 98.2% of the metals data, and 100% of the PCDD/F data were determined to be usable for qualitative and quantitative purposes.

The following actions were taken with respect to assigned data validation qualifiers:

- R - The data were qualified as unusable for qualitative and quantitative purposes according to data validation guidance. “R”-qualified data were not utilized in the risk assessment.

- J - The analyte was positively identified; the associated numerical value was the approximate concentration of the analyte in the sample. The analytical data were not adjusted to compensate for potential high or low bias in the analytical result, due to uncertainty regarding the magnitude of the bias.

4.3. Identification of Constituents of Potential Concern

The goal of the COPC selection process was to streamline the assessment by focusing on Site-related analytes that may contribute to potential human health risks. Consistent with USEPA procedures (USEPA 1997a) chemical constituents detected at concentrations which are highly unlikely to result in adverse human health effects were not selected as COPCs (*i.e.*, they were not carried through the quantitative risk assessment process).

A list of COPCs for the HHRA was developed based on the data evaluation. Consistent with HHRAs performed previously for Superfund sites in New York State and as approved by USEPA and NYSDEC (O’Brien & Gere 1997), a sequence of comparisons was performed to identify the COPCs for the Site; these are outlined in section 4.3.2.

4.3.1. Media Definitions

This section describes the media that are relevant to this assessment. Appendix A provides a comprehensive list of samples used in this deliverable. Appendix B provides the Site database

organized by Exposure Area and medium. Only data with acceptable qualifiers ("U", "J", "UJ", or no qualifier) were utilized in the RAGS D Table 2 series.

Surface Soil – Surface soil is defined as soil collected from 0 to 2 ft bgs. The soil database contains a start depth and an end depth for a given sample. Surface soil was sorted from the entire soil database by selecting samples with an end depth that was less than or equal to 2 ft. Thus, a sample collected from 1 ft (start depth) to 3 ft (end depth) would not have been included in the RAGS 2 Tables that evaluated surface soils, but rather in tables that evaluated Upper and Intermediate Soils (see below).

Upper and Intermediate Soil – Three exposure scenarios (construction worker, and utility worker,) required the evaluation of surface and subsurface soil combined. This exposure medium was defined as soil collected from 0 to 10 ft bgs (upper soil) with the exception of the Former Chlorination Building, Plant Area, and On-Site Ditches, where the utility worker reaches a depth of up to 20 ft bgs. In these latter Exposure Areas for the utility worker receptor, the exposure medium is considered 0 to 20 ft bgs (intermediate soil). Upper and intermediate soil was sorted from the entire soil database by selecting samples with an end depth that was less than or equal to 10 or 20 ft bgs, respectively

Shallow and Intermediate Groundwater – Two exposure scenarios (construction worker and utility worker scenarios) required the evaluation of direct exposure to shallow or intermediate groundwater. This exposure medium was defined as groundwater samples collected from monitoring wells that contained a depth to water from 0 to 10 ft bgs (shallow groundwater), with the exception of the Former Chlorination Building, Plant Area, and On-Site Ditches, where the PA sewer occurs at a depth of up to 20 ft bgs. For these latter Exposure Areas for the utility worker receptor, the exposure medium was 0 to 20 ft bgs (intermediate groundwater). Shallow and intermediate groundwater was sorted from the Site database by selecting data with a start depth less than or equal to 10 ft bgs or 20 ft bgs, respectively. The start depth was used to sort for shallow and intermediate groundwater samples because of the abundance of samples with start depth less than or equal to 10 ft bgs and 20 ft bgs, respectively.

Sediment - Sediment collected from the 0 to 1 ft bgs interval was sorted from the entire sediment database by selecting samples with an end depth that was less than or equal to 1 ft. Thus, a sample collected from 0 ft (start depth) to 2 ft (end depth) would not have been included in the RAGS Part D Table 2 series that evaluate surface sediment.

Surface Water - Surface water present in water bodies (Tributary 5A) of the Site were evaluated in this assessment.

Site-Wide Groundwater – One exposure scenario (hypothetical drinking water scenario) required the evaluation of all Site groundwater collected from monitoring wells, regardless of depth. This scenario was evaluated for the adult and child resident.

4.3.2. Comparison with Risk-Based Screening Values

Consistent with USEPA guidance (USEPA 1989a), a conservative screening process was applied to select COPCs. To develop the COPC list, the maximum detected concentrations of the detected constituents in surface soil, subsurface soil, surface water, surface sediment, shallow groundwater, and Site-wide groundwater were compared to conservative screening values for the protection of human health.

The screening values utilized were the lowest of the USEPA Region 9 Preliminary Remediation Goals (PRGs) or the USEPA Region 3 Risk Based Concentrations (RBCs) (USEPA October 2007a). RBC and PRGs for tap water were applied to screen surface water and groundwater detections. RBCs and PRGs for residential soils were applied to screen the soil and sediment concentrations. RBCs and PRGs utilized in the screening process corresponded to a cancer risk of 10^{-6} or a hazard quotient of 0.1.

If the maximum detected concentration was less than the identified screening values, it was concluded that exposure to the constituent does not represent an unacceptable risk to human health, and no further evaluation of that exposure was necessary. If the maximum detected concentration exceeded the selected screening value, the constituent was selected as a COPC and retained for further evaluation in this assessment. All Class A carcinogens were retained as COPCs regardless of the levels at which they were found.

Naturally occurring compounds were eliminated from the COPC list if they were essential nutrients. Based on this consideration, calcium, magnesium, potassium, and sodium were not carried forward as COPCs for the risk assessment.

Constituents detected in media that do not have established RBCs or PRGs were carried forward for further evaluation in the risk assessment. Constituents that were not detected in a given Exposure Area were not included in the quantitative evaluation for that Exposure Area.

Risk-based screening values were applied in order to select the COPCs for further evaluation in the HHRA process. The risk-based screening was conducted as follows:

Region III Risk Based Concentrations (RBCs) and Region 9 Preliminary Remediation Goals (PRGs): USEPA Region III (USEPA 2007a) and USEPA Region 9 (USEPA 2004a) have published analyte-specific risk-based screening concentrations. If the maximum detected concentration of a chemical in Site media is less than the published screening value it is highly unlikely that the chemical may represent a significant risk to human health and may be deleted as a COPC. The lower of the Region 3 RBCs or Region 9 PRGs were selected as the screening values for COPC selection. Consistent with previously approved risk assessments in New York State (O'Brien and Gere 1997), the screening values correspond to an excess lifetime cancer risk of 10^{-6} for carcinogens and a hazard quotient of 0.1 for non-carcinogens. If the maximum detected concentration in the Exposure Area was less than the screening level, the analyte was not retained as a COPC. For soils and sediments, the residential soil screening values were used. For groundwater and surface water, the published RBCs and PRGs for tap water were used. The chemical-specific health-based screening values applied in selecting the COPCs are presented in the RAGS D Tables 2 series.

Vapor Intrusion Screening Values for groundwater: Groundwater screening values protective of potential vapor intrusion to indoor air were taken from *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance;* USEPA 2002a).For each VOC and SVOC constituent, the representative groundwater concentration was compared to screening values in USEPA (2002a) Table 2c. USEPA (2002a) Table 2c provides screening concentrations for VOCs that represent a 10^{-6} cancer risk. Constituents are also screened in if no screening value is available.

Background - In accordance with USEPA (2003a) guidance, background concentrations were not used to screen Site-related compounds for the baseline human health risk assessment. However, the USEPA (2003a) guidance allows for the use of background concentrations, based on statistical evaluation, to be considered for the development of remedial options. In the future, background concentrations may be used in the development of remedial options, as appropriate.

Evaluation of Essential Nutrients - Naturally occurring compounds were eliminated from the COPC list if they were essential nutrients, present at concentrations only slightly elevated above naturally occurring levels, and toxic only at very high doses. Based on this consideration, calcium, sodium, potassium, and magnesium were not included as COPCs for the risk assessment and these compounds were eliminated from the screening tables.

The list of selected COPCs for each Exposure Area is presented in the RAGS D Tables 2 series. At most Exposure Areas, mercury, dioxin toxicity equivalents (TEQs), polychlorinated biphenyls (PCBs), and chlorobenzenes were identified as COPCs. In addition, certain petroleum constituents were identified as COPCs in the Southwest Off-Site/Outfall 006 Exposure Area.

4.3.3. Notes on Specific Constituent Groups

Dioxins: Dioxin congeners were detected in some Site media. During the development of the RAGS D Table 2 series, toxic equivalency factors (TEFs) were applied to individual congeners to extrapolate a combined toxicity equivalent to that of 2,3,7,8-tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD), with TEFs obtained from Van den berg *et al*. (2006). The concentration of each dioxin/furan congener was multiplied by the TEF to derive the 2,3,7,8-TCDD equivalent concentration. Once this approach was applied to all congeners, the 2,3,7,8-TCDD equivalents were summed for each sample location and the resulting total 2,3,7,8-TCDD equivalent value was treated as a unique constituent for that location. The maximum TEQ from all sample locations within the Exposure Area was compared to USEPA Region 3 RBCs (USEPA 2007a) and Region 9 PRGs (USEPA 2004a) values for 2,3,7,8-TCDD.

Polychlorinated Biphenyls: Calculation of PCB concentrations for use in determining exposure point concentrations combined individual Aroclors into two groups. "Less chlorinated" PCBs (Aroclor 1016, 1221, 1232, and 1242) were combined for analysis and determination of the exposure point concentration, and were screened in the RAGS D Table 2 series against the screening values for Aroclor 1016. "Highly chlorinated" PCBs (Aroclor 1248, 1254, and 1260) were combined for analysis and determination of the exposure point concentration, and were screened in the RAGS D Table 2 series against the screening values for Aroclor 1254.

Group A Carcinogens: All detected Group A carcinogens (arsenic, benzene, and hexavalent chromium) were retained as COPCs even if their maximum detected concentration did not exceed their respective screening criterion.

Unspeciated mercury and chromium: In cases where chromium was not speciated, RBCs and PRGs values for hexavalent chromium (Cr^{+6}) were utilized. Unspeciated mercury in soil and sediment was screened against RBC and PRG values for mercury compounds, while unspeciated mercury in groundwater was screened against values for methyl mercury.

Chlordane constituents: All chlordane constituents were summed and screened against the chlordane RBC and technical chlordane PRG criteria.

5. Exposure Assessment

The exposure assessment identifies the mechanisms by which receptors may be exposed to site COPCs. The assessment derives the chemical concentrations to which receptors may be exposed and the chronic daily intake of constituents by receptors.

A summary of the receptor populations and complete exposure pathway for each area is also presented in the RAGS D Table 1 series. For each Exposure Area, the following elements are included:

1. Potentially exposed populations
2. Identification and evaluation of exposure pathways
3. Quantification of exposure
4. Exposure point concentrations (EPCs)
5. Intake equations and parameter estimates
6. Calculation of chemical intakes

5.1. Land Use Assumptions

The risk assessment assumes that future land use at the Plant Area, FCB, On-Site Ditches, and the Southwest Off-Site/Outfall 006 Exposure Area will be industrial (*i.e.*, the areas will not be developed as residential areas). This assumption is based on the consideration that the areas are located in heavily industrialized settings and are zoned industrial.

5.2. Exposure Pathway Analysis

An exposure pathway analysis for the Site is provided in the RAGS D Table 1 series. An exposure pathway describes the course a chemical takes from the source to the exposed individual. An exposure pathway analysis links the sources, locations, and types of environmental releases with population locations and activity patterns to determine the significant pathways of human exposure.

An exposure pathway consists of four elements:

- a source and mechanism of chemical release;
- a retention or transport medium;
- a point of potential human contact with the contaminated medium (referred to as the exposure point); and
- an exposure route (*e.g.*, ingestion) at the contact point.

A pathway is considered to be complete if all of the conditions listed above are satisfied for that pathway. If one or more of these conditions are not met, there is no physical means by which a receptor may be exposed to the compounds of potential concern, and the pathway is classified as incomplete. Incomplete pathways are not considered further in the HHRA.

5.3. Quantification of Exposure

The next step in the exposure assessment is to quantify the magnitude, frequency, and duration of exposure for the complete exposure pathways. General considerations and considerations for Site-specific calculations are presented below.

General Considerations - The exposure quantification was performed in accordance with the following USEPA guidance for exposure assessment activities:

- *Guidelines for Exposure Assessment* (USEPA 1992b)
- *Risk Assessment Guidance for Superfund* (USEPA 1989a)
- *RAGS Volume I: Human Health Evaluation Manual Supplemental Guidance* (USEPA 1991)
- *Supplemental Guidance to RAGS: Calculating the Concentration Term* (USEPA 1992c)
- *Exposure Factors Handbook* (USEPA 1997a)
- *RAGS Volume I: Human Health Evaluation Manual, Part D* (USEPA 2001a)
- *Calculating the Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites* (USEPA 2002b).

For each complete exposure pathway, the chronic daily intake (CDI) was estimated for the COPCs. There may be considerable uncertainty relating to the estimated CDI for a given receptor group. This uncertainty results from the random variability in exposure parameters, including the estimated exposure point concentrations (EPCs). Uncertainty in the *exposure point concentration* may arise from spatial and temporal variations in the chemical concentration at the exposure point. Variability in the *exposure parameters* occurs because each individual in the population has differences in activity patterns, behavior, and physical and biological characteristics. To account for this inherent variability, USEPA discusses the "average" and "high end" or "upper bound" *exposure estimates* (USEPA 1992b).

Average exposures refer to the estimated CDI for most of the individuals in the exposed population. The average estimate can be derived by using an average value (usually the median value) as the exposure factor. This results in Central Tendency (CT) estimates. Reasonable Maximum Exposure (RME) estimates represent a conservative scenario for the risk estimate. The RME estimate may be used to develop a statement that the risk "is unlikely to exceed" the calculated bounding value. The RME estimate is derived by combining a series of default average and upper bound exposure factor estimates in calculating the CDI. If the calculated RME risks exceed acceptable levels, the CT exposure estimates may be derived and considered in risk management decisions for the Site.

Consideration for Site-Specific Calculations - Consistent with USEPA guidance, RME and CT exposure estimates were derived for the HHRA, as discussed in Section 5.6. The methods, assumptions and results of the exposure assessment are presented below for each of the previously discussed Exposure Areas at the Site. The potential uncertainties inherent in the derived exposure estimates are discussed qualitatively in Section 8 - Uncertainty Assessment

5.4. Derivation of Exposure Point Concentrations

5.4.1. Calculating Exposure Point Concentrations for Soil, Sediment, Surface Water, and Groundwater

Statistical and procedural methods were applied to the data in order to develop an estimate of the EPC for COPCs selected for each Exposure Area, on a medium-specific basis. The general approach is as follows:

- Where a given data set contained less than five sample points or only one unique detected sample, the maximum value for each analyte in that data set was used as the EPC.
- For data sets with five or more data points, and at least two unique detected samples, statistical methods were applied.

In the latter case, the ProUCL statistical software package (Version 4.0; USEPA, 2007b) was used to examine the data distribution and develop an upper confidence level on the arithmetic mean (UCL).

ProUCL was run using Regression on Order Statistics (ROS), which is a method for accounting for non-detect samples in the data set. ROS infers values for non-detect samples based on the distribution of detected data. ProUCL recommends the most appropriate UCL to use given the distribution type. The UCL recommended by ProUCL was subsequently applied as the EPC.

It should be noted that in some cases the 95% UCL is less than the reported average concentration. This is because the arithmetic average reported in the Table 3 series is the mean detected concentration. In instances where the detection frequency is low and non-detect samples largely outnumber detected samples, the 95% UCL recommended by ProUCL V.4 can be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.

5.4.2. EPCs for Air Exposures

The inhalation of air particulates and volatile compounds arising from Site soils will be evaluated in the Site HHRA. The calculation of the particle emission factor (PEF) and the volatilization factors (VFs) are discussed in this section.

Because the methods used to develop the USEPA Region 9 PRG screening values included the inhalation exposure pathway (both particulate and volatile compounds), any soil constituent that screened out during the RAGS D Table 2 series process will not be considered as a COPC for these air pathways. Of those soil constituents that were retained, a VF was calculated for compounds listed in the USEPA Region 3 RBC Table as volatile (Appendix C). The remainder of these constituents will be evaluated as particulate emissions (Appendix C). The derivation of EPCs for evaluating these two pathways is discussed in turn.

5.4.3. Derivation of EPCs for Volatile Compounds

The following equation was used to derive EPCs of volatile compounds in outdoor air for inhalation exposure pathways:

$$C_{air} = \left(\frac{C_{soil}}{VF} \right)$$

where:

C_{air}: Concentration of volatiles in air (mg/m^3)
C_{soil}: Concentration in soil (UCL, mg/kg)
VF: Soil-to-air Volatilization Factor (m^3/kg)

The VF is used for defining the relationship between the concentration of volatile organic constituents in soil and the volatilized constituents in outdoor air. A VF is specific to each volatile compound and each Exposure Area. VFs for this assessment were calculated using Equation 4-8 from the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (USEPA 2002c) and can be found in Appendix C.

5.4.4. Derivation of EPCs for Fugitive Dust

The PEF is required to calculate the constituent concentration in fugitive dust. The following equation will be used to derive concentrations of inorganics, semi volatiles, PCBs, and pesticides in outdoor air for inhalation exposure pathways (see Appendix C for proposed dust constituent list):

$$C_{air} = \left(\frac{C_{soil}}{PEF} \right)$$

where:

C_{air}: Concentration of inorganic particulates in air (mg/m^3)
C_{soil}: Concentration in soil (mg/kg)
PEF: Particle Emission Factor (m^3/kg)

The PEF is used to convert concentrations of constituents in soil to concentrations in air as a result of fugitive dust emissions from bare surface soils. The USEPA provides the methodology required to calculate the PEF in Appendix C of the *Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites* (USEPA 2002c). Equation 5-5 (USEPA 2002c) was used to derive a PEF for the construction worker scenario. The details of these calculations can be found in Appendix D of this submittal.

5.4.5 Derivation of EPCs for Lead in Site-Wide Groundwater

USEPA (2007d) provides guidance on how to derive a value for the lead exposure point concentration term (PbS) for the child resident exposure scenario. The PbS is the only input parameter of the

Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK) for which a Site-specific value is always required. As stated in the Guidance Manual for the IEUBK Model (USEPA, 2002d), the average, or arithmetic mean lead concentration should be used for the PbS. The water concentrations obtained by these averaging procedures give appropriate central tendency exposure concentration estimates for use in estimating blood lead levels for residential children.

5.5. Intake Equations

The next step in the assessment was to generate estimates of chronic daily intakes (CDIs) based on the magnitude, frequency, and duration of exposure for each identified complete exposure pathway. In accordance with USEPA guidance (USEPA 1989a), RME exposure factors were applied to estimate the CDI from the incidental ingestion, dermal contact, and inhalation pathways. The intake equations applied in the assessment are presented below. The specific variables used in each calculation and their values are defined in the subsections that follow.

Incidental ingestion of COPC from soil or sediment

$$CDI = \frac{C_{soil} \times CF \times IR \times FI \times EF \times ED}{BW \times AT}$$

Dermal uptake of COPC from soil or sediment

$$DAD = \frac{C_{soil} \times CF \times SA \times ABS \times AF \times EF \times ED}{BW \times AT}$$

Incidental ingestion of COPC in surface, ground, or drinking water

$$CDI = \frac{C_{water} \times IR \times EF \times ED}{BW \times AT}$$

Dermal uptake of COPC in surface or groundwater

$$DAD = \frac{C_{water} \times CF \times SA \times PC \times ET \times EF \times ED}{BW \times AT}$$

Inhalation of airborne constituents in the Exposure Area

$$CDI = \frac{C_{air} \times InR \times ET \times EF \times ED}{BW \times AT}$$

where:

ABS = Dermal absorption factor (unitless)

AF = Soil to skin adherence factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
C_{air} = COPC concentration in air (mg/m^3) (Derivation is presented in Section 2.4.7)
$C_{sediment}$ = Sediment exposure point concentration (mg/kg)
C_{sw} = Concentration of each constituent in surface water (mg/L)
C_{water} = Concentration of each constituent in drinking water (mg/L)
CDI = Chronic daily intake (mg/kg-day)
CF = Conversion factor (10^{-6} kg/mg for soil and 10^{-3} L/mL for water)
DAD = Dermal absorbed dose (mg/kg-day)
ED = Exposure duration (years)
EF = Exposure frequency (days/year)
ET = Exposure time (hours/day)
FI = Fraction ingested from contaminated source (unitless)
IR = Ingestion rate for soil (mg/day) or water (L/day)
InR = Inhalation rate (m^3/hour)
PC = Permeability Coefficient (cm/hour)
SA = Skin surface area for dermal absorption (cm^2)

5.6. RME and CT Parameter Estimates

The RAGS D Table 4 series and Appendix E present the parameter values used for each receptor and the rationale for selecting each value. The parameters are also summarized below.

ABS: Dermal absorption factor (unitless). The dermal absorption factor represents the fraction of the constituent in soil that may be absorbed through the skin over each exposure event. These values are chemical-specific and are presented in Appendix F.

AF: Soil to skin adherence factor (mg/cm^2). Soil to skin adherence factors (AF) represent the average mass of soil which adheres to the skin over each exposure event. Based on the July 19, 2004 comments from NYSDEC on the 2002 HHRA report, the adherence factors for particular receptors were updated to reflect conditions under the RME and CT scenarios. These new values were taken from *RAGS E Supplemental Guidance for Dermal Risk Assessment* (USEPA 2004b). These values are presented in RAGS D Tables 4.1 RME through 4.16 CT.

AT: Averaging time (days). The averaging time is the period of time over which exposure is averaged. In accordance with USEPA guidance (USEPA 1989a), the averaging time for exposure to potential carcinogenic compounds is 25,550 days. This accounts for averaging of exposure to a carcinogenic substance over a 70-year lifetime. For exposure to non-carcinogens, the averaging time is calculated as the exposure duration (years) multiplied by 365 days per year. Therefore, the averaging time for exposure to non-carcinogenic substances varies for receptors based on their exposure duration. These values are presented in RAGS D Tables 4.1 RME through 4.16 CT.

BW: Body weight (kg). The body weight estimates are receptor-specific for adults, adolescents, and children. For adults, the body weight of 70 kg (USEPA 1991) was applied as a default, which is slightly less than the mean body weight for men and women aged 18 to 74 years in the United States (71.8 kg). For adolescents, a body weight of 45 kg was used, which is the value recommended by

USEPA based on body weight for males aged 7 to 16 in the United States (USEPA 2000). For children, a body weight of 15 kg was used which corresponds to the average body weight for males and females aged 6 months to 6 years in the United States (USEPA 1997a). These values are presented on RAGS D Table 4 Series.

C_{water} and $C_{soil/sed}$: Concentration of each constituent in ground/surface water (µg/L) and soil/sediment (mg/kg). The lower of the 95 percent upper confidence limit (UCL) and the maximum concentration was selected as the RME exposure point concentration. These values are presented in the RAGS D Tables 3 Series.

C_{air}: Inhalation exposure point concentration (mg/m^3). The concentrations of constituents in ambient air were estimated using the algorithms presented by USEPA for exposure to airborne VOCs and dust (USEPA 1996, 2002a). The PEF and VF values used to calculate the inhalation EPC from the soil EPC are derived in Appendices F and G, respectively. The C_{air} values are presented on RAGS D Table 7.5.

ED: Exposure duration (years). The exposure duration estimates the time period over which a receptor is exposed. This parameter is receptor-specific. These values are presented in the RAGS D Table 4 series and Appendix E.

EF: Exposure frequency (days/year). The exposure frequency is a receptor-specific parameter that estimates the time period over which the receptor exposure occurs. These values are presented in the RAGS D Table 4 series and Appendix E

ET: Exposure time (hours/day). This parameter is receptor-specific for dermal contact with water. These values are presented in the RAGS D Table 4 series and Appendix E

IR_{water}: Ingestion rate for water (L/hour). The ingestion rate applied to the adolescent trespasser at Tributary 5A is for incidental ingestion during temporary contact with water. These values are presented on RAGS D Table 4.11a RME and CT, and Appendix B. Since the Site is also being considered as a hypothetical drinking water source area, an incidental ingestion rate was applied for the hypothetical adult and child resident. These values are presented on RAGS D Table 4.16 RME and CT and Appendix E.

IR_{soil}: Incidental ingestion rate for soil (mg/day). Incidental ingestion rates were applied to the potential receptors for incidental ingestion during activities on the Exposure Areas. These values are presented in the RAGS D Table 4 series and Appendix E.

InR: Inhalation rates (m^3/hour). InR are affected by several individual characteristics, including age, gender, weight, health status, and activity level (sitting, running, walking, etc.). These values are presented in the RAGS D Table 4 series and Appendix E.

PC: Permeability Coefficient (cm/hour). The permeability coefficient represents the rate at which dissolved constituents in water migrate across the skin into the bloodstream. Chemical specific dermal permeability coefficients compiled and published by USEPA (2004a) were applied. The constituent specific values are presented in Appendix F.

SA: Skin surface area for dermal absorption (cm^2). This parameter represents the exposed surface area of the skin, which may contact water or soil. These values are presented in the RAGS D Table 4 series and Appendix E.

The revised RAGS D Table 4 series reflects Honeywell's September 5, 2007 letter detailing responses to NYSDEC comments on the Revised 2004 HHRA (Appendix G1) as well as Honeywell's 2008 responses to NYSDEC comments (Appendix G2). The revised RAGS D Table 4 series also reflects specific comments discussed during a conference call with NYSDEC, USEPA, Honeywell, and O'Brien & Gere on May 30, 2007. The exposure factors utilized for the selected receptors for this assessment are presented in the RAGS D Table 4 series and are summarized in Appendix E. For those exposure factors that could not be easily explained in Appendix E, further justification for selection of these factors is provided below.

5.6.1. Mutagenic Mode of Action Constituents

Chemicals exhibiting a mutagenic mode of action (MMOA) were addressed in the HHRA using Age-Dependent adjustment factors (ADAFs) as described in USEPA's "Supplemental Guidelines for Assessing Susceptibility From Early Life Exposure to Carcinogens" ("Supplemental Guidance") (USEPA 2005). This ADAF evaluation required the modification of the Table 4 Series to include the specific age categories (bins) identified in the Supplemental Guidance (0 to 2 years, 2 to 16 years, >16 years, and all subgroups within these age bins). This ADAF evaluation was derived specifically for this assessment by using the Wastebeds 1-8 Bike Trail HHRA (USEPA 2007c) as an example. The ADAF evaluation is also included in the RAGS D Table 7 series for the child and adolescent receptors.

5.6.2. Exposure Frequency for Industrial Worker

The revised RAGS D Table 4 series includes an exposure frequency for outdoor exposure to surface soil of 188 days per year for a reasonable maximum exposure (RME) scenario and 164 days per year for a central tendency (CT) exposure scenario. These values are departures from the recommended 250 days per year (RME) and 219 days per year (CT) value as noted in USEPA (2004b) RAGS Part E.

The RME EF of 188 days assumes 250 work days per year with exposure reduced by 25% due to snow cover. Similarly for the CT EF, 219 work days per year reduced by 25% due to snow cover yields a CT value of 164 days.

The snow cover percentage of 25% is derived from a thirty year (1972-2000) temperature and snowfall record for Syracuse, NY from the National Weather Service (available at http://www.erh.noaa.gov/bgm/climate/syr/syr_normals.shtml). During the months of December, January, and February, there is on average measurable snowfall (28.6, 33.2, and 24.0 inches, respectively), and average temperatures are below freezing (28.6, 22.7, and 24.5 °F, respectively). Therefore, it can be assumed that snow that falls during these months does not readily melt and provides continuous snow cover. Since the three months include 90 of the 365 days in a year, snow cover percentage of 25% is derived. This percentage is conservative in that the months of March and November are not included. March and November on average have measurable snowfall (18.8 and 11.1 inches, respectively), but also have average temperatures above freezing (33.6 and 39.7 °F, respectively).

The Climate of New York issued by the New York State Climate Office (http://nysc.eas.cornell.edu) also describes a three month period of snow cover for the Syracuse area: "The Southern Plateau, Great Lakes Plain in southern portions of western upstate New York, and the Hudson Valley experience a continuous snow cover from about mid-December to mid-March, with maximum depths usually occurring in February."

5.6.3. Exposure Frequency for Adolescent Trespasser

The RME and CT exposure frequencies for the adult and adolescent trespassers are 42 and 32 days/year, respectively. These values are consistent with the Wastebed B/Harbor Brook HHRA. The 42-day EF is based on the assumption that the trespassing occurs twice per week during the ten summer weeks and once per week during the 22 weeks when the temperature is above 50°F (Appendix G2).

5.6.4. Exposure Frequency for Surveillance Worker

The exposure frequency for the surveillance worker is 31 days/year for the RME scenario and 5 days per year for the CT exposure scenario. These values are adjusted for the amount of time per day spent on the Site outside the vehicle. The RME scenario assumes that the surveillance worker is outside of his or her vehicle for one hour each day. The RME for industrial workers is 250 days/year. This value (250 days/year) is multiplied by 0.125 (1/8 or one hour of exposure divided by an eight hour workday) yielding an exposure frequency of 31 days/year. The exposure frequency for the CT scenario was developed in a similar manner but assumes that the surveillance worker is exposed to Site-related constituents for 10 minutes a day. This approach is consistent with NYSDEC comment 49 in Honeywell's December 2, 2004 response letter to NYSDEC (Honeywell 2004; Appendix H), as well as NYSDEC (2008) comment 11.

5.6.5. Incidental Ingestion of Water for the Construction Worker, Utility Worker, and Adolescent Trespasser

With regard to the incidental ingestion of water for the construction worker, utility worker, adolescent trespasser, and adult trespasser the RME and CT ingestion rates are 0.03 and 0.01 L/day, respectively. Section 6.6.1 of RAGS Part A presents an incidental ingestion rate of 0.05 L/hr for a swimmer (USEPA 1989a). For a non-swimmer, the RME incidental ingestion rate has been estimated to be lower (0.03 L/hr for 1 hr/day), resulting in an ingestion rate of 0.03 L/day. For the CT incidental ingestion rate, a value of 0.01 L/day is used based on best professional judgment.

5.7. Site Exposure Pathway Analyses

The receptor populations, exposure medium, exposure frequencies, and duration are discussed for current and future land uses below.

Current/Future Adolescent and Adult Trespassers: The adolescent and adult trespasser receptors may be exposed to constituents in surface soils via incidental ingestion and dermal contact in all the Exposure Areas except Tributary 5A and groundwater. In the Tributary 5A, they may be exposed to sediment and surface water through ingestion and dermal contact.

Current/Future Surveillance Workers: Surveillance workers in the Plant Area, On-Site Ditches, and FCB may ingest or have dermal contact with surface soils.

Current/Future Utility Workers: Utility workers in the State Fair Blvd./Northwest Off-Site/Outfall 004 Exposure Area may have dermal contact or incidental ingestion of upper soils. Utility workers at the Lakeshore Area may have dermal contact or incidental ingestion of upper soils or shallow groundwater.

Current/Future Transient Adult: The State Fair Blvd./Northwest Off-Site/Outfall 004 area includes a transient adult receptor that may be exposed to surface soil through dermal contact or incidental ingestion.

Future Construction Workers: Construction workers in the Plant Area, On-Site Ditches, FCB, Southwest Off-Site/Outfall 006, PSA, and CHSA may be exposed to constituents in upper soils via dermal contact, incidental ingestion, or inhalation. In addition, construction workers in the PSA and CHSA may be exposed to shallow groundwater through dermal contact or incidental ingestion.

Future Industrial Workers. Future industrial workers in the Plant Area, On-Site Ditches, FCB, SW Off-Site/Outfall 006, PSA, and CHSA may be exposed to constituents in surface soils via incidental ingestion or dermal contact. In addition, a soil vapor survey performed at the Site detected concentrations of chlorobenzenes, benzene, and mercury in soil vapor at certain locations of the Site. Constituents in soil vapor may migrate to indoor air of buildings constructed at the Plant Area, PSA, and CHSA in the future.

Future Utility Workers: Utility workers at the Plant Area, On-Site Ditches, and FCB may be exposed to intermediate soils as well as intermediate groundwater through dermal contact and incidental ingestion. Utility workers in the PSA and CHSA may be exposed to constituents in upper soils and shallow groundwater through dermal contact and incidental ingestion. Utility workers in Tributary 5A may have dermal contact or ingestion of upper sediment or surface water.

Future Adult and Child Residents: Adult and child residents could be exposed to constituents through ingestion of site-wide groundwater as potable water.

6. Toxicity Assessment

In the toxicity assessment, available toxicological data summaries for Site-related compounds are reviewed and the relationships between the extent of exposure to a specific contaminant and the increased likelihood and/or severity of adverse effects are estimated. The potential toxicological effects induced by a given dose of a chemical are classified according to two criteria: 1) carcinogenic effects and 2) non-carcinogenic effects.

6.1. Non-Carcinogenic Effects

Non-carcinogenic health effects occur as a result of damage to cells in one or more human organ, which cause the organ(s) to function less efficiently. Due to the ability of the body to cope with small doses of a chemical, a non-cancer health effect will not occur if intake of a chemical is less than a certain critical dose. This is referred to as a no-observed-adverse-effect-level (NOAEL) for a constituent. If the calculated intake of a chemical is less than the NOAEL for that constituent in a given species, no adverse non-cancer health effects are expected as a result of that exposure.

The specific non-carcinogenic toxic effects that may occur depend on the exposure concentration and the duration of exposure. If an individual is exposed to very high concentrations of a constituent, severe organ dysfunction can occur in a short period of time. This is termed an acute toxic effect. If an individual is exposed to lower levels of a chemical regularly for a long period of time, smaller amounts of repeated damage to the organ can accumulate and ultimately cause the organ to malfunction. These are termed sub-chronic or chronic toxic effects (depending on the exposure duration).

6.1.1. Reference Doses

In order to evaluate potential non-carcinogenic effects following exposure of human populations to chemicals, the USEPA derives chemical-specific “reference doses” (RfDs). If the calculated intake of a chemical is less than the published RfD, no adverse non-carcinogenic effects are expected in the exposed population. A brief discussion of the methods by which RfDs are derived is presented below.

For some constituents, RfDs are derived directly from data on human exposures. Such data includes data relating to occupational exposures that are known to have no adverse effects, normal dietary levels of certain chemicals, therapeutic doses of certain chemicals and epidemiological data relating to populations with background exposures. For most constituents, the USEPA derives RfDs based on laboratory studies, which exposes experimental animals to different concentrations of a constituent and estimates a NOAEL. If data from several animal studies are available, the USEPA seeks to identify the species that is most comparable to humans based on knowledge of specific biologic properties. However, if adequate comparative data is not available, the USEPA selects the study on the most sensitive animal species as the critical study for the basis of the NOAEL. The NOAEL is then used to derive an RfD for potential adverse effects in human populations.

6.1.2. RfD Uncertainty Factors

In most cases, there is considerable uncertainty regarding the extension of toxicological data from animal studies to humans. In other words, the actual RfD for humans or sensitive sub-populations of humans would not be precisely known based on data in animal species. This uncertainty arises because there may be differences between the animal and human species regarding factors such as the metabolism of the chemical, the distribution and clearance rate of the chemical from the body, and the sensitivity of specific organ systems to the chemical. Therefore, the USEPA derives RfDs that are designed to be protective of the public at large, including sensitive sub-populations. The USEPA applies a series of "uncertainty" factors to calculate the final RfD values. Depending on the data, the NOAEL may be divided by an uncertainty factor ranging from 1 to 10,000. Specifically, uncertainty factor values may be used to account for one or more of the following sources of uncertainty:

- to account for variation in the general population and to protect sensitive subpopulations;
- to extrapolate from animal bioassays to human populations (interspecies variability);
- when a NOAEL derived from a subchronic study instead of a chronic study is used as a basis for a chronic RfD; and
- when a LOAEL is used instead of a NOAEL.

6.2. Carcinogenic Effects

The other health effect of concern in the exposure of humans to chemicals in the environment is the induction of cancer. Carcinogenic effects are discussed by weight of evidence (Section 6.2.1) and slope factors (Section 6.2.2).

6.2.1. Weight of Evidence

The USEPA classifies chemicals according to their potential to induce cancer in humans. In general, the USEPA reviews and evaluates available data regarding the potential carcinogenic effects of a constituent, and assigns a "carcinogenicity" classification according to a weight of evidence classification (RAGS D Tables 6.1 and 6.2; Attachment A). A constituent may be classified into one of five groups with respect to the weight of evidence for human carcinogenicity.

- Group A - Known Human Carcinogen. A constituent is classified as Group A if there is sufficient[3] evidence from human observations (epidemiological studies) to support an association between exposure to a chemical agent and cancer in humans.

- Group B - Probable Human Carcinogen. A constituent may be classified as a B1 or a B2 carcinogen. An agent is classified as a B1 carcinogen if there is sufficient evidence for carcinogenicity based on animal studies and limited[3] (suggestive but not conclusive) evidence based on human observations. A B2 carcinogen is an agent for which there is sufficient evidence for carcinogenicity in animals and inadequate evidence for carcinogenicity in humans.

3 The definition of the terms “sufficient”, limited, and adequate are given in USEPA 1986, Guidelines for Carcinogenic Risk Assessment, (51 FR 33992).

- Group C - Possible Human Carcinogen. An agent is classified as a Group C carcinogen if there is limited evidence for carcinogenicity in animals and inadequate evidence for carcinogenicity in humans.

- Group D - An agent is classified as a Group D agent if there is insufficient data available with which to evaluate the carcinogenicity of the chemical.

- Group E - An agent is classified as a Group E agent if there is no evidence for carcinogenic effects based on at least two technically adequate animal studies.

6.2.2. Slope Factors

For group A, B, or C constituents, the USEPA derives chemical-specific cancer slope factors (RAGS D Tables 6.1 and 6.2; Attachment A). A cancer slope factor (CSF) is a number which, when multiplied by the estimated chemical-specific CDI, provides an estimate of the "excess cancer risk" associated with that exposure. Theoretically, the excess cancer risk represents the probability (greater than background) that a carcinogenic event would occur in an individual as a result of a given exposure or pattern of exposures. However, it is important to note that for many constituents the excess cancer risk as calculated by the USEPA procedure may result in a highly conservative estimate of the potential cancer risk. As acknowledged by USEPA (Federal Register 1986), the procedure "does not necessarily give a realistic prediction of the risk. The true value of the risk is unknown, and may be as low as zero."

6.3. Toxicity Summaries

For each constituent that was retained as a COPC, human toxicological effects, including chronic RfDs and CSFs were compiled from the following hierarchy of sources as outlined in the OSWER Directive 9285.7-53, *Human Health Toxicity Values in Superfund Risk Assessments* (USEPA 2003b):

- Tier 1 - EPA's Integrated Risk Assessment System (IRIS).
- Tier 2 - Provisional Peer-Reviewed Toxicity Values (PPRTV) used in USEPA's Superfund Program.
- Tier 3 - Other (peer-reviewed) toxicity values, including:
  - Minimal Risk Level produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
  - California Environmental Protection Agency (CalEPA) values, and
  - EPA Health Effects Assessment Summary Table (HEAST) values.

Third tier toxicological values were not used in this assessment unless these values were supplied by the USEPA Superfund Technical Support Center (STSC).

The non-cancer toxicity values applied in the risk characterizations of oral/dermal exposures evaluated in this report are presented in RAGS D Table 5-1. Non-cancer toxicity values applied for the inhalation of outdoor air is presented in RAGS D Table 5-2. The CSF applied in the risk characterizations of oral/dermal exposures evaluated in this document are presented in RAGS D Table 6-1. Cancer Unit Risk factors used to evaluate the exposure to outdoor air through the inhalation pathway are presented in RAGS D Table 6-2. All values in RAGS D Tables 5 and 6 were

taken either from IRIS or were supplied by the STSC. Toxicity profiles for select COPCs, which significantly contribute to the derived risk estimates, are presented in Attachment L-D.

The values provided by the STSC can be divided into two groups. The first group of toxicity values provided by the STSC is labeled as "PPRTV" in RAGS D Tables 5 and 6. The PPRTV label indicates that the value was presented in a PPRTV Information report supplied to Honeywell by the USEPA. The date associated with the PPRVT value is the date of the specific report for that constituent (*e.g.*, RfC for aluminum, PPRTV report dated October 23, 2006).

The second group of toxicity values provided by the STSC is labeled in RAGS D Tables 5 and 6 according to their original source (ATSDR, HEAST, CalEPA, *etc*.). The use of these toxicity values was approved by the USEPA in electronic mail communications to Honeywell (Appendix I) but there are no PPRTV reports associated with these toxicity values. For example, a March 27, 2008 email (USEPA 2008) from R. Nunes (US EPA Region II) to T. Conklin and P. Sinha (O'Brien & Gere) contained a spreadsheet that endorsed values for several constituents from these sources (ATSDR, HEAST, and CalEPA). This spreadsheet lists a CalEPA value for the arsenic RfC. The source of the RfC is listed as CalEPA (STSC) in the RAGS D Table 5.2 to indicate that this value originated from the CalEPA website and was approved by the STSC as per the March 27, 2008 email. The dates listed on RAGS D Tables 5 and 6 series for the toxicity values selected from these sources follows USEPA protocol (current dates for electronic sources (CalEPA) and date of publication for non-electronic sources).

6.3.1. Constituents with a Mutagenic Mode of Action

Those constituents listed in the USEPA's 2006 Memorandum (USEPA 2006a) as having a MMOA are subject to adjustment by an ADAF, which will be applied to the risk calculations performed for the RAGS D Table 7 series. It should be noted that other PAHs are considered toxicologically related to benzo(a)pyrene, based on the *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons* (USEPA 1993a). Although these are not included on the list of chemicals with a MMOA (USEPA 2006a), they are subject to an ADAF as well.

6.3.2. Adjustment for Dermal Toxicity

Assessing toxicity associated with dermal exposure to constituents in soil and water requires special considerations. Dermal toxicity of a substance depends on factors including the analyte concentration, the potential dose, the area of skin surface exposed, the exposure duration, the absorption of the analyte through the skin, the absorbed dose, and the amount of analyte that can be delivered to a target organ (*i.e.*, biologically effective dose) (USEPA 1997a).

In most instances, it was necessary to use oral toxicity data to estimate dermal toxicity. The dermal chronic daily intake (CDI) represents the absorbed dose of the analyte. However, for many constituents, the oral toxicity data is based on the administered dose rather than the absorbed dose. Therefore, in order to assess dermal exposures, the oral toxicity values were adjusted to reflect the absorbed dose in accordance with USEPA guidance (USEPA 2004b) as follows:

$$RfD_{dermal} = RfD_{oral} \times \text{Gastrointestinal Absorption Efficiency}$$

$$CSF_{dermal} = CSF_{oral} / \text{Gastrointestinal Absorption Efficiency}$$

The absorption efficiency data used for evaluating dermal exposures were obtained from Exhibit 4-1 in RAGS Part E (USEPA 2004b).

6.4. Evaluation of Toxicity for Special Constituent Classes

Special constituent classes that required additional evaluation include chlorinated dioxins and furans (Section 6.4.1), PCBs (Section 6.4.2), PAHs (Section 6.4.3), and chromium (Section 6.4.4), as discussed below. The approach used to apply surrogate compounds for the evaluation of compounds that do not have toxicity data is also discussed (Section 6.4.5). IRIS provides toxicity reference values for mercuric chloride, which is a more toxic form of mercury than elemental mercury. For the assessment of mercury, the toxicity values of mercuric chloride were applied with recognition of the conservative nature of its application.

6.4.1. Toxicity Equivalents for Chlorinated Dioxins and Furans

Toxic Equivalency Factors (TEFs) were applied to assess the human health risks related to exposure to chlorinated dioxins and chlorinated furans. TEFs utilized within this report were provided by Van den Berg *et* al. (2006). The TEFs are located in the *Derivation of toxicity equivalents for dioxins* tables in the RAGS Table 2 Series. A discussion of the TEFs used for quantitative health risk assessment of dioxin and furans is presented below. A more detailed discussion of dioxin toxicity in animals and humans is presented in Section 8.

To facilitate the evaluation of mixtures of PCDD/Fs regulatory authorities have used a TEF approach, a widely accepted approach used by the scientific and regulatory communities in many parts of the world (USEPA 1989b, ATSDR 1997, WHO 1998). 2,3,7,8-tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD) is the most widely studied chlorinated dioxin; most of the PCDD/F congeners have not been tested as extensively as 2,3,7,8-TCDD. Available data indicates that some of the congeners may display toxic properties, even though they are less potent than 2,3,7,8-TCDD. The TEF approach assigns a relative potency factor (relative to 2,3,7,8-TCDD) for each PCDD/F congener. The TEFs are based on observed structure activity relationships for PCDD/F compounds, receptor binding affinity or enzyme induction.

6.4.2. Polychlorinated Biphenyls

The IRIS database provides toxicity data for Aroclors 1016, 1248, and 1254. The Aroclors detected at the site consisted of Aroclors 1016, 1242, 1248, 1254, 1260, and 1268. Aroclors with the percent chlorine less than or equal to 42 (*i.e.,* Aroclor 1016 and 1242) will use the RfD for Aroclor 1016. Aroclors with percent chlorine greater than 42 (*i.e.,* Aroclor 1248, 1254, 1260 and 1268) will use the RfD for Aroclor 1254.

6.4.3. Polycyclic Aromatic Hydrocarbons

The USEPA IRIS database has published a CSF for benzo(a)pyrene of $7.3x10^{0}$ $(mg/Kg\text{-}day)^{-1}$. Using this value and TEFs for carcinogenic PAHs, the oral CSF can be calculated for benzo(a)anthracene (TEF = 0.1), benzo(b)fluoranthene (TEF = 0.1), benzo(k)fluoranthene (TEF = 0.01), chrysene (TEF = 0.001), dibenzo(a,h) anthracene (TEF = 1.0), and indeno(ghi)pyrene (TEF = 0.1) (ORNL 2004).

The CSFs for benzo(a)pyrene for oral, dermal and inhalation exposures are $7.3x10^{0}$ $(mg/Kg\text{-}day)^{-1}$, $2.4\ x10^{1}$ $(mg/Kg\text{-}day)^{-1}$, and $3.1\ x10^{0}$ $(mg/Kg\text{-}day)^{-1}$, respectively. Utilizing the above TEFs, the CSFs were calculated for the carcinogenic PAHs for dermal exposure. The inhalation CSF was calculated

from the inhalation unit risk as described in supplemental guidance from the *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons* (USEPA 1993a).

6.4.4. Chromium

In this report, the toxicity value of hexavalent chromium was used as a surrogate for unspeciated chromium; this is a conservative assumption. The USEPA IRIS database provides a discussion on the carcinogenicity of hexavalent chromium and a published CSF for inhalation of 4.2×10^{1} $(mg/Kg\text{-}day)^{-1}$.

6.4.5. Surrogates

Surrogate compounds were utilized in the absence of toxicity data as summarized as summarized below. The selection of the surrogate compounds was based on professional judgment regarding the similarity of the COPC to the surrogate compound.

Table 6.1. *Summary of Surrogates*.

Constituent	Notes
Chromium	Because chromium was not speciated, RfC, RfD, and inhalation unit risk values for chromium VI were utilized.
Less Chlorinated PCBs	Less chlorinated includes Aroclors 1221, 1232, 1016, and 1242. RfD values for Aroclor-1016 (CAS# 126741120) utilized.
Highly Chlorinated PCBs	Highly Chlorinated includes Aroclors 1248, 1254, 1260 [and higher if reported]. RfD values for Aroclor-1254 (CAS# 11097691) utilized.
Mercury	RfC and RfDi for elemental mercury were used because the corresponding values for methyl mercury were unavailable. Mercuric chloride used as a surrogate for oral/dermal RfD value.
PAH's	For carcinogenic PAHs, relative potency approach with respect to benzo(a)pyrene applied to estimate Oral Cancer Slope Factor (see USEPA 1993a *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons*, EPA/600/R-93/089).
Vanadium	Vanadium pentoxide as surrogate for oral/dermal RfD value.
Endosulfan I	Endosulfan used as a surrogate for oral/dermal RfD value.

7. Risk Characterization

In this section of the HHRA, the toxicity and exposure assessments are summarized and integrated into numerical values that may be used to evaluate the likelihood of adverse health effects in populations potentially exposed to Site-related chemicals. RME and CT estimates of potential health risks were developed for each potentially exposed receptor at the Site.

Chronic non-cancer health effects were evaluated by comparing the chemical-specific CDIs with the respective chronic RfD as given below.

1. For each receptor identified during the exposure assessment and each individual exposure pathway, the chemical-specific hazard quotients (HQs) were calculated where HQ is given by:

   Hazard Quotient = CDI/RfD

2. For each exposure pathway, the chemical-specific hazard quotients were summed to calculate the Hazard Index (HI) for that pathway. For each receptor, the pathway specific hazard indexes were summed to obtain the total HI for that receptor. A total HI of less than one indicates that it is highly unlikely that chronic non-cancer toxic effects would occur for the given receptor.

To evaluate carcinogenic effects, the incremental cancer risk associated with exposure to chemicals of concern was calculated using chemical-specific slope factors as described below.

1. For each receptor identified during the exposure assessment and each exposure pathway, the chemical-specific risk is given by:

   Cancer risk = CDI * slope factor.

2. For each receptor, the total incremental excess cancer risk was calculated by summing the pathway specific cancer risk. This calculated risk estimate was then compared with an acceptable range of excess cancer risks of between 10^{-4} and 10^{-6} (40 CFR §300.430[e][2][I][A][2]; CFR 2004).

Details of the chemical-specific, pathway-specific and total HIs or cancer risk for each Exposure Area and receptor are given on RAGS D Tables 7.1 RME through 7.10 CT. Summaries of HIs and cancer risks for each receptor are given by AOS in RAGS D Tables 9.1 RME through 9.25 CT. A brief discussion of the RME risk estimates associated with each receptor is presented below.

7.1. Plant Area

7.1.1. Current/Future Receptors

Adolescent Trespasser

The calculated RME HI for the current and future adolescent trespasser is 1.3 and the calculated cancer risk is 4×10^{-5} (RAGS D Table 7.1a RME; Attachment A). The corresponding CT HI and cancer risk are 0.9 and 2×10^{-5}, respectively (RAGS D Table 7.1a CT). There are no unacceptable cancer risks or non-cancer hazards for this receptor.

Adult Trespasser

The calculated total RME HI for the current and future adult trespasser is 0.5, and the calculated cancer risk is 4×10^{-5} (RAGS D Table 7.2a RME). The corresponding CT HI and cancer risk are 0.3 and 6×10^{-6}, respectively (RAGS D Table 7.2a CT). There are no unacceptable cancer risks or non-cancer hazards for this receptor.

Surveillance Worker

The calculated RME HI for the current and future surveillance worker in the Plant Area is 0.6 and the calculated cancer risk is 3×10^{-5} (RAGS D Table7.3a RME; Attachment A). The corresponding CT HI and cancer risk are 0.05 and 1×10^{-6}, respectively (RAGS D Table7.3a CT). There are no unacceptable cancer risks or non-cancer hazards for this receptor.

7.1.2. Future Receptors

Industrial Worker

The calculated RME HI for the future industrial worker in the Plant Area is 1.9 and the calculated RME cancer risk is 9×10^{-5} (RAGS D Table 7.4a RME; Attachment A). The calculated CT HI and cancer risk are 1.4 and 2×10^{-5}, respectively (RAGS D Table 7.4a CT). The HI for the industrial worker under future Site conditions only marginally exceeds the HI threshold of 1, and is driven by the target HI for autoimmune effects (1.3) arising from the ingestion of mercury in surface soils.

Construction Worker

The calculated RME HI for the future construction worker in the Plant Area is 26 and the calculated RME cancer risk is 3×10^{-5} (RAGS D Table 7.5a RME; Attachment A). The calculated CT HI and cancer risk are 14 and 2×10^{-5}, respectively (RAGS D Table 7.5a CT). The HI for the construction worker under future Site conditions exceeds the HI threshold of 1, and is driven by the target HI for nasal/respiratory effects (18) arising from the inhalation of nickel in upper soils.

Utility Worker

The calculated RME HI for the future utility worker in the Plant Area is 5.3 and the calculated cancer risk is 9×10^{-6} (RAGS D Table 7.7a RME; Attachment A). The calculated CT HI and cancer risk are 5.1 and 7×10^{-6}, respectively (RAGS D Table 7.7a CT). The HI for the utility worker under current and future Site conditions exceeds the HI threshold of 1, and is driven by the target HI for autoimmune effects (4) arising from the ingestion of mercury in intermediate soils.

7.2. On-Site Ditches

7.2.1. Current/Future Receptors

Adolescent Trespasser

The adolescent trespasser RME and CT cancer risks at the On-Site Ditches are 6×10^{-5} and 4×10^{-5}, respectively (RAGS D Tables 7.1b RME and 7.1b CT). The RME and CT HIs for these areas are 6.3 and 4.4, respectively (exceeding the HI threshold of 1). The HI is driven by the target value for autoimmune effects (3.5) arising from ingestion of mercury in surface soils, and developmental effects arising from ingestion of 2,3,7,8-TCDD equivalent in surface soils (2.7). There are no unacceptable cancer risks for this receptor.

Adult Trespasser

The adult trespasser RME and CT cancer risks at the On-Site Ditches are 9×10^{-5} and 2×10^{-5}, respectively (RAGS D Tables 7.2b RME and 7.2b CT). The RME and CT HIs for these areas are 2.6 and 1.6, respectively. The HI marginally exceeds the threshold as a result of contributions from autoimmune effects (1.3) arising from ingestion of mercury and developmental effects arising from the ingestion 2,3,7,8-TCDD equivalent in surface soils (1.3). There are no unacceptable cancer risks for this receptor.

Surveillance Worker

The surveillance worker RME and CT cancer risks at the On-Site Ditches are 7×10^{-5} and 3×10^{-6}, respectively (RAGS D Tables 7.3b RME and 7.3b CT). The RME and CT HIs for these areas are 2.9 and 0.3, respectively. The HI marginally exceeds the threshold as a result of contributions from autoimmune effects (1.6) arising from the ingestion of mercury in surface soils. There are no unacceptable cancer risks for this receptor.

7.2.2. Future Receptors

Industrial Worker

The calculated RME HI for the future industrial worker at the On-Site Ditches is 9.1 and the calculated RME cancer risk is 2×10^{-4} (RAGS D Table 7.4b RME; Attachment A). The calculated CT HI and cancer risk are 6.7 and 5×10^{-5}, respectively (RAGS D Table 7.4b CT). The RME cancer risk exceeds the acceptable regulatory range of 1×10^{-4} – 1×10^{-6} and is driven by the target risk value for ingestion of 2,3,7,8-TCDD equivalent in surface soils. The HI for the industrial worker under future Site conditions exceeds the HI threshold, and is driven by the target HI for autoimmune effects (5.1) arising from the ingestion of mercury in surface soils.

Construction Worker

The calculated RME HI for the future construction worker at the On-Site Ditches is 48 and the calculated RME cancer risk is 5×10^{-5} (RAGS D Table 7.5b RME; Attachment A). The calculated CT HI and cancer risk are 39 and 3×10^{-5}, respectively (RAGS D Table 7.5b CT). The HI for the construction worker under future Site conditions exceeds the HI threshold of 1, and is driven by the target HI for autoimmune (29) and nervous system (33) effects arising from the ingestion & inhalation of mercury in upper soils. There are no unacceptable cancer risks for this receptor.

Utility Worker

The utility worker RME and CT cancer risks at the On-Site Ditches are 2×10^{-5} and 2×10^{-5}, respectively (RAGS D Tables 7.7b RME and 7.7b CT). The RME and CT HIs for these areas are 26 and 24, respectively (exceeding the HI threshold of 1). The HI is driven by the target value for autoimmune effects (17) arising from ingestion of mercury in surface soils, and developmental effects arising from ingestion of 2,3,7,8-TCDD equivalent in intermediate soils (9). There are no unacceptable cancer risks for this receptor.

7.3. Former Chlorination Building

7.3.1. Current/Future Receptors

Adolescent Trespasser

The adolescent trespasser RME and CT cancer risks at the Former Chlorination Building are 4×10^{-4} and 3×10^{-4}, respectively (RAGS D Tables 7.1c RME and 7.1c CT), exceeding the 1×10^{-4} threshold. The RME and CT HIs for these areas are 22 and 15, respectively, exceeding the HI threshold of 1. Cancer risk exceeds the acceptable regulatory range of 1×10^{-4} – 1×10^{-6} and is driven by ingestion of 2,3,7,8-TCDD equivalent in upper soils. The non-cancer hazard is driven by developmental effects arising from the ingestion of 2,3,7,8-TCDD equivalent in surface soils (22).

Adult Trespasser

The adult trespasser RME and CT cancer risks at the Former Chlorination Building are 7×10^{-4} and 1×10^{-4}, respectively (RAGS D Tables 7.2c RME and 7.2c CT), exceeding the 1×10^{-4} threshold. The RME and CT HIs for these areas are 11 and 6, respectively, exceeding the HI threshold of 1. Cancer risk exceeds the acceptable regulatory range of 1×10^{-4} – 1×10^{-6} and is driven by ingestion of 2,3,7,8-TCDD equivalent in upper soils. HI exceeds its threshold of 1 and is driven by developmental effects arising from the ingestion of 2,3,7,8-TCDD equivalent in surface soils (10).

The IEUBK model default exposure parameters and Site-specific parameters were to estimate the geometric mean blood lead level in residential children for the site wide potable water ingestion scenario (Appendix J). The predicted geometric mean blood lead level (58.97 ug/L) was combined with the default model geometric standard deviation for child blood lead (1.6 µg/dL) to generate a distribution of blood lead in resident children. The variability in the distribution is due to differences in lead uptake rates for children exposed to the same environmental lead concentrations (Appendix J). The child blood lead distribution was converted to a probability distribution to determine the

probability of exceeding the target blood lead level. This value was calculated to be 10.6%, exceeding the regulatory target of 5%.

Surveillance Worker

The surveillance worker RME and CT cancer risks at the Former Chlorination Building are 5×10^{-4} and 2×10^{-5}, respectively (RAGS D Tables 7.3c RME and 7.3c CT). The RME and CT HIs for these areas are 9.9 and 1, respectively. Cancer risk exceeds the acceptable regulatory range of 1×10^{-4} – 1×10^{-6} and is driven by ingestion of 2,3,7,8-TCDD equivalent in surface soils. HI exceeds its threshold of one and is driven by developmental effects arising from the ingestion and dermal contact of 2,3,7,8-TCDD equivalent in surface soils (9.9).

7.3.2. Future Receptors

Industrial Worker

The calculated RME HI for the future industrial worker at the Former Chlorination Building is 32 and the calculated RME cancer risk is 2×10^{-3} (RAGS D Table 7.4c RME; Attachment A). The calculated CT HI and cancer risk are 21 and 4×10^{-4}, respectively (RAGS D Table 7.4c CT). Cancer risk exceeds the acceptable regulatory range of 1×10^{-4} – 1×10^{-6} and is driven by ingestion of 2,3,7,8-TCDD equivalent in upper soils. HI exceeds its threshold of 1 and is driven by developmental effects arising from the ingestion and dermal contact of 2,3,7,8-TCDD equivalent in surface soils (32).

Construction Worker

The calculated RME HI for the future construction worker at the Former Chlorination Building is 360 and the calculated RME cancer risk is 8×10^{-4} (RAGS D Table 7.5c RME; Attachment A). The calculated CT HI and cancer risk are 339 and 7×10^{-4}, respectively (RAGS D Table 7.5c CT). Cancer risk exceeds the acceptable regulatory range of 1×10^{-4} – 1×10^{-6} and is driven by ingestion of 2,3,7,8-TCDD equivalent in upper soils. HI exceeds its threshold of 1 and is driven by developmental effects arising from the ingestion and dermal contact of 2,3,7,8-TCDD equivalent in surface soils (355).

Utility Worker

The utility worker RME and CT cancer risks at the Former Chlorination Building are 7×10^{-4} and 6×10^{-4}, respectively (RAGS D Tables 7.7c RME and 7.7c CT), exceeding the 1×10^{-4} threshold. The RME and CT HIs for these areas are 312 and 260, respectively (exceeding the HI threshold of 1). Cancer risk exceeds the acceptable regulatory range of 1×10^{-4} – 1×10^{-6} and is driven by ingestion of 2,3,7,8-TCDD equivalent in upper soils. HI exceeds its threshold of 1 and is driven by developmental effects arising from the ingestion and dermal contact of 2,3,7,8-TCDD equivalent in surface soils (310).

7.4. Southwest Off-Site/Outfall 006 Exposure Area

7.4.1. Current Receptors

Adolescent Trespasser

The adolescent trespasser RME and CT cancer risks at the Southwest Off-Site/Outfall 006 Exposure Area are 4×10^{-5} and 2×10^{-5}, respectively (RAGS D Tables 7.1d RME and 7.1d CT). The RME and

CT HIs for these areas are 2.5 and 1.6, respectively (marginally exceeding the HI threshold of 1). The HI is driven by the target value for autoimmune (0.7) and ocular (0.6) effects arising from ingestion and dermal contact of highly chlorinated PCBs and ingestion of mercury in surface soils. There are no unacceptable cancer risks for this receptor.

Adult Trespasser

The adult trespasser RME and CT cancer risks at the Southwest Off-Site/Outfall 006 Exposure Area are 4×10^{-5} and 6×10^{-6}, respectively (RAGS D Tables 7.2d RME and 7.2d CT). The RME and CT HIs for these areas are 1.3 and 0.7, respectively. There are no unacceptable cancer risks or non-cancer hazards for this receptor.

7.4.2. Future Receptors

Industrial Worker

The calculated RME HI for the future industrial worker at the Southwest Off-Site/Outfall 006 Exposure Area is 3.6 and the calculated RME cancer risk is 9×10^{-5} (RAGS D Table 7.4d RME; Attachment A). The calculated CT HI and cancer risk are 2.2 and 1×10^{-5}, respectively (RAGS D Table 7.4d CT). The HI for the industrial worker under future Site conditions only marginally exceeds the HI threshold of 1, and is driven by the target HI for autoimmune effects (3.2) arising from the ingestion of mercury in surface soils. There are no unacceptable cancer risks for this receptor.

Construction Worker

The calculated RME HI for the future construction worker at the Southwest Off-Site/Outfall 006 Exposure Area is 75 and the calculated RME cancer risk is 2×10^{-4} (RAGS D Table 7.5d RME; Attachment A). The RME cancer risk exceeds acceptable regulatory range of 1×10^{-4} – 1×10^{-6}, and is driven by the cancer risk arising from inhalation of benzene in upper soils (1.4×10^{-4}). The calculated CT HI and cancer risk are 45 and 9×10^{-5}, respectively (RAGS D Table 7.5d CT). The HI for the construction worker under future Site conditions exceeds the H1 threshold of 1, and is driven by the target HI for autoimmune (58) effects arising from the inhalation and ingestion of benzene in upper soils.

7.5. State Fair Blvd./Northwest Off-Site/Outfall 004 Exposure Area

7.5.1 Current/Future Receptors

Adolescent Trespasser

The adolescent trespasser RME and CT cancer risks at the State Fair Blvd./Northwest Off-Site/Outfall 004 Exposure Area are 4×10^{-6} and 3×10^{-6}, respectively (RAGS D Tables 7.1e RME and 7.1e CT). The RME and CT HIs for these areas are 0.4 and 0.3, respectively. There are no unacceptable cancer risks or non-cancer hazards for this receptor.

Adult Trespasser

The adult trespasser RME and CT cancer risks at the State Fair Blvd./Northwest Off-Site/Outfall 004 Exposure Area are 6×10^{-6} and 1×10^{-6}, respectively (RAGS D Tables 7.2e RME and 7.2e CT). The

RME and CT HIs for these areas are 0.2 and 0.1, respectively. There are no unacceptable cancer risks or non-cancer hazards for this receptor.

State Fair Boulevard transient

The RME and CT cancer risks at the State Fair Blvd./Northwest Off-Site/Outfall 004 Exposure Area for the State Fair Boulevard transient are 6×10^{-7} and 8×10^{-8}, respectively (RAGS D Tables 7.6 RME and 7.6 CT). The RME and CT HIs for these areas are 0.07 and 0.009, respectively. There are no unacceptable cancer risks or non-cancer hazards for this receptor.

Utility Worker

The utility worker RME and CT cancer risks at the State Fair Blvd./Northwest Off-Site/Outfall 004 Exposure Area are 2×10^{-6} and 1×10^{-6}, respectively (RAGS D Tables 7.7d RME and 7.7d CT). The RME and CT HIs for these areas are 1.2 and 1.1, respectively, only marginally exceeding the HI threshold of 1. Contributors to the HI include developmental effects arising from the ingestion of 2,3,7,8-TCDD equivalent (0.6) and autoimmune effects (0.5), arising from the ingestion of mercury, both in upper soils. There are no unacceptable cancer risks or non-cancer hazards for this receptor.

7.6. Lakeshore Area

7.6.1. Current/Future Receptors

Adolescent trespasser

The adolescent trespasser RME and CT cancer risks at the Lakeshore Area are 3×10^{-5} and 1×10^{-5}, respectively (RAGS D Tables 7.1f RME and 7.1f CT). The RME and CT HIs for these areas are 0.2 and 0.1, respectively. There are no unacceptable cancer risks or non-cancer hazards for this receptor.

Adult Trespasser

The adult trespasser RME and CT cancer risks at the Lakeshore Area are 2×10^{-5} and 3×10^{-6}, respectively (RAGS D Tables 7.2f RME and 7.2f CT). The RME and CT HIs for these areas are 0.1 and 0.05, respectively. There are no unacceptable cancer risks or non-cancer hazards for this receptor.

Utility Worker

The utility worker RME and CT cancer risks at the Lakeshore Area are 4×10^{-5} and 3×10^{-5}, respectively (RAGS D Tables 7.7e RME and 7.7e CT). The RME and CT HIs for these areas are 15 and 14, respectively, exceeding the H1 threshold of 1. The HI is driven by autoimmune effects (10) arising from dermal contact with benzene in shallow groundwater. There are no unacceptable cancer risks for this receptor.

7.7. Petroleum Storage Area

7.7.1. Current Receptors

Adolescent Trespasser

The adolescent trespasser RME and CT cancer risks at the Petroleum Storage Area are 3×10^{-5} and 1×10^{-5}, respectively (RAGS D Tables 7.1g RME and 7.1g CT). The RME and CT HIs for these areas are 0.1 and 0.09, respectively. There are no unacceptable cancer risks or non-cancer hazards for this receptor.

Adult Trespasser

The adult trespasser RME and CT cancer risks at the Petroleum Storage Area are 2×10^{-5} and 3×10^{-6}, respectively (RAGS D Tables 7.2g RME and 7.2g CT). The RME and CT HIs for these areas are 0.06 and 0.04, respectively. There are no unacceptable cancer risks or non-cancer hazards for this receptor.

7.7.2. Future Receptors

Industrial Worker

The calculated RME HI for the future industrial worker at the Petroleum Storage Area is 0.2 and the calculated RME cancer risk is 5×10^{-5} (RAGS D Table 7.4e RME; Attachment A). The calculated CT HI and cancer risk are 0.1 and 8×10^{-6}, respectively (RAGS D Table 7.4e CT). There are no unacceptable cancer risks or non-cancer hazards for this receptor.

Construction Worker

The calculated RME HI for the future construction worker at the Petroleum Storage Area is 7.7 and the calculated RME cancer risk is 9×10^{-6} (RAGS D Table 7.5e RME; Attachment A). The calculated CT HI and cancer risk are 4.7 and 7×10^{-6}, respectively (RAGS D Table 7.5e CT). The HI values exceed the H1 threshold of 1, and are driven by nervous system effects (6), arising from the inhalation of manganese from upper soils. There are no unacceptable cancer risks for this receptor.

Utility Worker

The utility worker RME and CT cancer risks at the Petroleum Storage Area are 5×10^{-6} and 4×10^{-6}, respectively (RAGS D Tables 7.7f RME and 7.7f CT). The RME and CT HIs for these areas are 1.5 and 1.3, respectively, only marginally exceeding the H1 threshold of 1. Contributors to the HI include autoimmune effects (1) arising from dermal contact with benzene in shallow groundwater. There are no unacceptable cancer risks or non-cancer hazards for this receptor.

7.8. Chlorobenzene Hot-Spot Area

7.8.1. Current Receptors

Adolescent Trespasser

The adolescent trespasser RME and CT cancer risks at the Chlorobenzene Hot-Spot Area are 5×10^{-5} and 2×10^{-5}, respectively (RAGS D Tables 7.1h RME and 7.1h CT). The RME and CT HIs for these areas are 4.1 and 2.1, respectively (exceeding the H1 threshold of 1). The HI is driven by ocular (4) and autoimmune (4) effects arising from the ingestion of, and dermal contact with, highly chlorinated PCBs in surface soils. There are no unacceptable cancer risks for this receptor.

Adult Trespasser

The adult trespasser RME and CT cancer risks at the Chlorobenzene Hot-Spot Area are 7×10^{-5} and 9×10^{-6}, respectively (RAGS D Tables 7.2h RME and 7.2h CT). The RME and CT HIs for these areas are 2.7 and 1.2, respectively, only marginally exceeding the H1 threshold of 1. The HI is driven by ocular (3) and autoimmune (3) effects arising from the ingestion of, and dermal contact with, highly chlorinated PCBs in surface soils. There are no unacceptable cancer risks for this receptor.

7.8.2. Future Receptors

Industrial Worker

The calculated RME HI for the future industrial worker at the Chlorobenzene Hot-Spot Area is 6 and the calculated RME cancer risk is 1×10^{-4} (RAGS D Table 7.4f RME; Attachment A). The calculated CT HI and cancer risk are 2.2 and 2×10^{-5}, respectively (RAGS D Table 7.4f CT). The RME cancer risk exceeds the acceptable regulatory range of 1×10^{-4} – 1×10^{-6} and is driven by ingestion and dermal contact with highly chlorinated PCBs in surface soils. The same drivers are responsible for HI, exceeding the threshold of 1; ocular (6) and autoimmune (6) effects are dominant in this respect.

Construction Worker

The calculated RME HI for the future construction worker at the Chlorobenzene Hot-Spot Area is 14 and the calculated RME cancer risk is 3×10^{-5} (RAGS D Table 7.5f RME; Attachment A). The calculated CT HI and cancer risk are 11 and 2×10^{-5}, respectively (RAGS D Table 7.5f CT). The HI values exceed the HI threshold of 1 and are driven by ocular (6) and autoimmune (7) effects arising from the ingestion of highly chlorinated PCBs in upper soils. There are no unacceptable cancer risks for this receptor.

Utility Worker

The utility worker RME and CT cancer risks at the Chlorobenzene Hot-Spot Area are 1×10^{-5} and 9×10^{-6}, respectively (RAGS D Tables 7.7g RME and 7.7g CT). The RME and CT HIs for these areas are 10 and 7, respectively. The HI for this area exceeds the HI threshold of 1 and is driven by ocular (7) and autoimmune effects (8), arising from the ingestion of highly chlorinated PCBs in upper soils. There are no unacceptable cancer risks for this receptor.

7.9. Tributary 5A

7.9.1 Current and Future Receptors

Adolescent Trespasser

The adolescent trespasser RME and CT cancer risks at the Tributary 5A are 3×10^{-5} and 2×10^{-5}, respectively (RAGS D Tables 7.1i RME and 7.1i CT). The RME and CT HIs for these areas are 1.9 and 1.4, respectively (marginally exceeding the HI threshold of 1). The HI is driven by the ingestion of chromium in sediment (1.1). There are no unacceptable cancer risks or non-cancer hazards for this receptor.

Adult Trespasser

The adult trespasser RME and CT cancer risks at the Tributary 5A are 5×10^{-5} and 8×10^{-6}, respectively (RAGS D Tables 7.2i RME and 7.2i CT). The RME and CT HIs for these areas are 0.9 and 0.6, respectively. There are no unacceptable cancer risks or non-cancer hazards for this receptor.

Utility Worker

The utility worker RME and CT cancer risks at the Tributary 5A are 4×10^{-6} and 4×10^{-6}, respectively (RAGS D Tables 7.7h RME and 7.7h CT). The RME and CT HIs for these areas are 6.7 and 6.4, respectively. The HI for this area exceeds the HI threshold of 1 and is driven by the ingestion of chromium in sediment (4). There are no unacceptable cancer risks for this receptor.

7.10. Hypothetical Drinking Water Source Area

As discussed in previous sections of this report, groundwater at the Site is not suitable for use as a drinking water supply irrespective of any contributions related to waste at the Site. The drinking water pathway was included in this section at the request of the NYSDEC.

Adult Resident

The RME and CT cancer risks for the future adult resident are 1×10^{-2} and 4×10^{-3}, respectively (RAGS D Tables 7.8 RME and 7.8 CT). This exceeds the acceptable regulatory range of 1×10^{-4} – 1×10^{-6} and is driven by ingestion of benzene. The RME and CT HIs for these areas are each 175, and are driven by autoimmune effects (122), arising from the ingestion of benzene.

Child Resident

The RME and CT cancer risks for the future child resident are each 7×10^{-3} (RAGS D Tables 7.9 RME and 7.9 CT). This exceeds the acceptable regulatory range of 1×10^{-4} – 1×10^{-6} and is driven by ingestion of benzene. The RME and CT HIs for these areas are each 408, and are driven by autoimmune effects (284), arising from the ingestion of benzene.

7.11. Risk Characterization – Summary

7.11.1. Current Conditions

Under current conditions, cancer risks for receptors in all exposure areas are within the acceptable regulatory range of 10^{-4} to 10^{-6}, except for the Former Chlorination Building, in which RME total cancer risks exceed the regulatory range for the adolescent and adult trespasser, and the surveillance worker.

Under current conditions, hazard indices for receptors in the Plant Area, State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area, and the Petroleum Storage Area are within the threshold of 1. RME hazard indices that exceed 1 include:

- Adolescent trespasser in the On-Site Ditches, Former Chlorination Building, Southwest Off-Site/Outfall 006 Exposure Area, Chlorobenzene Hot-Spot Area, and Tributary 5A.

- Adult trespasser in the On-Site Ditches, Former Chlorination Building, Southwest Off-Site/Outfall 006 Exposure Area, and Chlorobenzene Hot-Spot Area.
- Surveillance worker in the On-Site Ditches and Former Chlorination Building
- Utility worker in the Lakeshore Area and Tributary 5A.

A summary of estimated cancer risks and non-cancer hazards is presented below in Table 7.1.

Table 7.1. *Summary of current RME and CT estimated cancer risks and hazard indexes*.

Exposure Area	Receptor	RME or CT	Cancer Risk	HI
Plant Area	Adolescent Trespasser	RME	$4x10^{-5}$	$1x10^{0}$
		CT	$2x10^{-5}$	$9x10^{-1}$
	Adult Trespasser	RME	$4x10^{-5}$	$5x10^{-1}$
		CT	$6x10^{-6}$	$3x10^{-1}$
	Surveillance Worker	RME	$3x10^{-5}$	$6x10^{-1}$
		CT	$1x10^{-6}$	$5x10^{-2}$
On-Site Ditches	Adolescent Trespasser	RME	$6x10^{-5}$	$6x10^{0}$
		CT	$4x10^{-5}$	$4x10^{0}$
	Adult Trespasser	RME	$9x10^{-5}$	$3x10^{0}$
		CT	$2x10^{-5}$	$2x10^{0}$
	Surveillance Worker	RME	$7x10^{-5}$	$3x10^{0}$
		CT	$3x10^{-6}$	$3x10^{-1}$
Former Chlorination Building (FCB)	Adolescent Trespasser	RME	$4x10^{-4}$	$2x10^{2}$
		CT	$3x10^{-4}$	$1x10^{1}$
	Adult Trespasser	RME	$7x10^{-4}$	$1x10^{1}$
		CT	$1x10^{-4}$	$6x10^{0}$
	Surveillance Worker	RME	$5x10^{-4}$	$1x10^{1}$
		CT	$2x10^{-5}$	$1x10^{0}$
Southwest Off-Site/Outfall 006 Exposure Area	Adolescent Trespasser	RME	$4x10^{-5}$	$3x10^{0}$
		CT	$2x10^{-5}$	$2x10^{0}$
	Adult Trespasser	RME	$4x10^{-5}$	$1x10^{0}$
		CT	$6x10^{-6}$	$7x10^{-1}$
State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	Adolescent Trespasser	RME	$4x10^{-6}$	$4x10^{-1}$
		CT	$3x10^{-6}$	$3x10^{-1}$
	Adult Trespasser	RME	$6x10^{-6}$	$2x10^{-1}$
		CT	$1x10^{-6}$	$1x10^{-1}$
	Adult Transient	RME	$6x10^{-7}$	$7x10^{-2}$
		CT	$8x10^{-8}$	$9x10^{-3}$

Table 7.1. *Summary of current RME and CT estimated cancer risks and hazard indexes*.

Exposure Area	Receptor	RME or CT	Cancer Risk	HI
	Utility Worker	RME	$2x10^{-6}$	$1x10^{0}$
		CT	$1x10^{-6}$	$1x10^{0}$
Lakeshore Area	Adolescent Trespasser	RME	$3x10^{-5}$	$2x10^{-1}$
		CT	$1x10^{-5}$	$1x10^{-1}$
	Adult Trespasser	RME	$2x10^{-5}$	$1x10^{-1}$
		CT	$3x10^{-6}$	$5x10^{-2}$
Lakeshore Area cont.	Utility Worker	RME	$4x10^{-5}$	$1x10^{1}$
		CT	$3x10^{-5}$	$1x10^{1}$
Petroleum Storage Area	Adolescent Trespasser	RME	$3x10^{-5}$	$1x10^{-1}$
		CT	$1x10^{-5}$	$9x10^{-2}$
	Adult Trespasser	RME	$2x10^{-5}$	$6x10^{-2}$
		CT	$3x10^{-6}$	$4x10^{-2}$
Chlorobenzene Hot-Spot Area	Adolescent Trespasser	RME	$5x10^{-5}$	$4x10^{0}$
		CT	$2x10^{-5}$	$2x10^{0}$
	Adult Trespasser	RME	$7x10^{-5}$	$3x10^{0}$
		CT	$9x10^{-6}$	$1x10^{0}$
Tributary 5A	Adolescent Trespasser	RME	$3x10^{-5}$	$2x10^{0}$
		CT	$2x10^{-5}$	$1x10^{0}$
	Adult Trespasser	RME	$5x10^{-5}$	$9x10^{-1}$
		CT	$8x10^{-6}$	$6x10^{-1}$
	Utility Worker	RME	$4x10^{-6}$	$7x10^{0}$
		CT	$4x10^{-6}$	$6x10^{0}$

7.11.2. Future Conditions

Under future conditions, cancer risks for receptors in all exposure areas are within the acceptable regulatory range of 10^{-4} to 10^{-6}, except for the construction worker in the Southwest Off-Site/Outfall 006 Exposure Area and the Former Chlorination Building, in which RME total cancer risks exceed the regulatory range for the adolescent trespasser, adult trespasser, surveillance worker, industrial worker, construction worker, and utility worker.

Under future conditions, hazard indices for receptors in the State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area are within the threshold of 1. RME hazard indices that exceed 1 include:

- Adolescent trespasser in the On-Site Ditches, Former Chlorination Building, Southwest Off-Site/Outfall 006 Exposure Area, Chlorobenzene Hot-Spot Area, and Tributary 5A.

- Adult trespasser in the On-Site Ditches, Former Chlorination Building, Southwest Off-Site/Outfall 006 Exposure Area, and Chlorobenzene Hot-Spot Area.
- Surveillance worker in the On-Site Ditches and Former Chlorination Building
- Industrial worker in the Plant Area, On-Site Ditches, Former Chlorination Building, Southwest Off-Site/Outfall 006 Exposure Area, and Chlorobenzene Hot-Spot Area
- Construction worker in the Plant Area, On-Site Ditches, Former Chlorination Building, Southwest Off-Site/Outfall 006 Exposure Area, Petroleum Storage Area, and Chlorobenzene Hot-Spot Area
- Utility worker in the Plant Area, On-Site Ditches, Former Chlorination Building, Lakeshore Area, Chlorobenzene Hot-Spot Area, and Tributary 5A
- Child and adult resident in the potable water use scenario

Table 7.2 below summarizes cancer risk and non-cancer hazards for potential future conditions at the Site.

Table 7.2. *Summary of future RME and CT standard cancer risks and hazard indexes*.

Exposure Area	Receptor	RME or CT	Cancer Risk	HI
Plant Area	Adolescent Trespasser	RME	$4x10^{-5}$	$1x10^{0}$
		CT	$2x10^{-5}$	$9x10^{-1}$
	Adult Trespasser	RME	$4x10^{-5}$	$5x10^{-1}$
		CT	$6x10^{-6}$	$3x10^{-1}$
	Surveillance Worker	RME	$3x10^{-5}$	$6x10^{-1}$
		CT	$1x10^{-6}$	$5x10^{-2}$
	Industrial Worker	RME	$9x10^{-5}$	$2x10^{0}$
		CT	$2x10^{-5}$	$1x10^{0}$
	Construction Worker	RME	$3x10^{-5}$	$3x10^{1}$
		CT	$2x10^{-5}$	$1x10^{1}$
	Utility Worker	RME	$9x10^{-6}$	$5x10^{0}$
		CT	$7x10^{-6}$	$5x10^{0}$
On-Site Ditches	Adolescent Trespasser	RME	$6x10^{-5}$	$6x10^{0}$
		CT	$4x10^{-5}$	$4x10^{0}$
	Adult Trespasser	RME	$9x10^{-5}$	$3x10^{0}$
		CT	$2x10^{-5}$	$3x10^{0}$
	Surveillance Worker	RME	$7x10^{-5}$	$3x10^{0}$
		CT	$3x10^{-6}$	$3x10^{-1}$
	Industrial Worker	RME	$2x10^{-4}$	$9x10^{0}$
		CT	$5x10^{-5}$	$7x10^{0}$
	Construction Worker	RME	$5x10^{-5}$	$5x10^{1}$
		CT	$3x10^{-5}$	$4x10^{1}$
	Utility Worker	RME	$2x10^{-5}$	$3x10^{1}$

Table 7.2. *Summary of future RME and CT standard cancer risks and hazard indexes*.

Exposure Area	Receptor	RME or CT	Cancer Risk	HI
		CT	$2x10^{-5}$	$2x10^{1}$
Former Chlorination Building (FCB)	Adolescent Trespasser	RME	$4x10^{-4}$	$2x10^{1}$
		CT	$3x10^{-4}$	$1x10^{1}$
	Adult Trespasser	RME	$7x10^{-4}$	$1x10^{1}$
		CT	$1x10^{-4}$	$6x10^{0}$
	Surveillance Worker	RME	$5x10^{-4}$	$1x10^{1}$
		CT	$2x10^{-5}$	$1x10^{0}$
Former Chlorination Building (FCB) cont.	Industrial Worker	RME	$2x10^{-3}$	$3x10^{1}$
		CT	$4x10^{-4}$	$2x10^{1}$
	Construction Worker	RME	$8x10^{-4}$	$4x10^{2}$
		CT	$7x10^{-4}$	$3x10^{2}$
	Utility Worker	RME	$7x10^{-4}$	$3x10^{2}$
		CT	$6x10^{-4}$	$3x10^{2}$
Southwest Off-Site/Outfall 006 Exposure Area	Adolescent Trespasser	RME	$3x10^{-5}$	$3x10^{0}$
		CT	$2x10^{-5}$	$2x10^{0}$
	Adult Trespasser	RME	$4x10^{-5}$	$1x10^{0}$
		CT	$6x10^{-6}$	$7x10^{-1}$
	Industrial Worker	RME	$9x10^{-5}$	$4x10^{0}$
		CT	$1x10^{-5}$	$2x10^{0}$
	Construction Worker	RME	$2x10^{-4}$	$8x10^{1}$
		CT	$9x10^{-5}$	$4x10^{1}$
State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	Adolescent Trespasser	RME	$4x10^{-6}$	$4x10^{-1}$
		CT	$3x10^{-6}$	$3x10^{-1}$
	Adult Trespasser	RME	$6x10^{-6}$	$2x10^{-1}$
		CT	$1x10^{-6}$	$1x10^{-1}$
	Adult Transient	RME	$6x10^{-7}$	$7x10^{-2}$
		CT	$8x10^{-8}$	$9x10^{-3}$
	Utility Worker	RME	$2x10^{-6}$	$1x10^{0}$
		CT	$1x10^{-6}$	$1x10^{0}$
Lakeshore Area	Adolescent Trespasser	RME	$3x10^{-5}$	$2x10^{-1}$
		CT	$1x10^{-5}$	$1x10^{-1}$
	Adult Trespasser	RME	$2x10^{-5}$	$6x10^{-2}$
		CT	$3x10^{-6}$	$5x10^{-2}$
	Utility Worker	RME	$4x10^{-5}$	$1x10^{1}$
		CT	$3x10^{-5}$	$1x10^{1}$

Table 7.2. *Summary of future RME and CT standard cancer risks and hazard indexes*.

Exposure Area	Receptor	RME or CT	Cancer Risk	HI
Petroleum Storage Area	Adolescent Trespasser	RME	$3x10^{-5}$	$1x10^{-1}$
		CT	$1x10^{-5}$	$9x10^{-2}$
	Adult Trespasser	RME	$2x10^{-5}$	$6x10^{-2}$
		CT	$3x10^{-6}$	$4x10^{-2}$
	Industrial Worker	RME	$5x10^{-5}$	$2x10^{-1}$
		CT	$8x10^{-6}$	$1x10^{-1}$
	Construction Worker	RME	$9x10^{-6}$	$8x10^{0}$
Petroleum Storage Area cont.	Construction Worker	CT	$7x10^{-6}$	$5x10^{0}$
	Utility Worker	RME	$5x10^{-6}$	$1x10^{0}$
		CT	$4x10^{-6}$	$1x10^{0}$
Chlorobenzene Hot-Spot Area	Adolescent Trespasser	RME	$5x10^{-5}$	$4x10^{0}$
		CT	$2x10^{-5}$	$2x10^{0}$
	Adult Trespasser	RME	$7x10^{-5}$	$3x10^{0}$
		CT	$9x10^{-6}$	$1x10^{0}$
	Industrial Worker	RME	$1x10^{-4}$	$6x10^{0}$
		CT	$2x10^{-5}$	$2x10^{0}$
	Construction Worker	RME	$3x10^{-5}$	$1x10^{1}$
		CT	$2x10^{-5}$	$1x10^{1}$
	Utility Worker	RME	$1x10^{-5}$	$1x10^{1}$
		CT	$9x10^{-6}$	$7x10^{0}$
Tributary 5A	Adolescent Trespasser	RME	$3x10^{-5}$	$2x10^{0}$
		CT	$2x10^{-5}$	$1x10^{0}$
	Adult Trespasser	RME	$5x10^{-5}$	$9x10^{-1}$
		CT	$8x10^{-6}$	$6x10^{-1}$
	Utility Worker	RME	$4x10^{-6}$	$7x10^{0}$
		CT	$4x10^{-6}$	$6x10^{0}$
Potable Water	Child Resident (< 6 years)	RME	$7x10^{-3}$	$4x10^{2}$
		CT	$7x10^{-3}$	$4x10^{2}$
	Adult Resident	RME	$1x10^{-2}$	$2x10^{2}$
		CT	$4x10^{-3}$	$2x10^{2}$

8. Uncertainty Assessment

The risk measures used in this HHRA are not precise, deterministic estimates of risk, but conditional estimates controlled by a considerable number of consecutive upper-bound assumptions regarding exposure and toxicity. They are designed to estimate an upper bound of the potential health risk value, as opposed to present a precise and realistic estimate of actual health risks. This is done by convention, consistent with USEPA protocols. The main sources of uncertainty relative to the assumptions, results, and conclusions of the HHRA are:

- estimation of chemical concentrations,
- estimation of exposure point concentrations,
- evaluation of exposure scenarios,
- estimation of toxicity values, and
- calculation of quantitative risk estimates.

Uncertainties related to these sources are discussed below.

8.1. Estimation of Chemical Concentrations

The data were validated as described in Appendix A of the RI report. Some data were qualified as "J" values, indicating that the reported concentrations were "estimated" values. However, the uncertainty in the reported concentrations was within acceptable levels as specified in the Site-specific Quality Assurance Project Plan (QAPP). As such, the analytical data is representative of the chemical concentrations in Site media. Analytical data that were qualified as rejected, “R,” were not utilized in the HHRA.

8.1.1. Mercury Speciation

Mercury can be present in the environment in organic and inorganic forms, with the organic forms exhibiting greater toxicity to nearly all receptors (ATSDR 1999). The toxic effects of the organic form of mercury, methyl mercury, are most pronounced following exposure because of its high bioavailability and minimal attenuation in tissue. Neither form of mercury is classified as carcinogenic; however, non-cancer hazards can be estimated for each of these compounds via application of the appropriate toxicity data (oral Rfd, dermal Rfd, inhalation Rfc), which vary depending on the type of mercury.

To perform a hazard assessment of mercury, the concentrations of each form of mercury in environmental media must be known. However, laboratory sample analysis did not include mercury speciation for all Exposure Areas or media. In cases where mercury was speciated, conservative health hazard estimates were made for each of these compounds (mercury and methyl mercury). Where data was only available for total mercury, health hazard estimates were completed exclusively for elemental mercury.

Evaluation of mercury health hazards posed to an individual by assessing only the less toxic form of mercury may decrease the conservativeness of the hazard estimate. Consequently, there is a certain amount of uncertainty inherent in the evaluation since it is possible that some fraction of the total mercury is the more bioavailable and toxic form, methyl mercury. To account for potential underestimation of health hazards associated with exposure to unspeciated mercury, a sensitivity analysis was completed.

This sensitivity analysis was completed by developing a ratio of methyl mercury to mercury for all locations where speciated data was available. Table 8.1 presents the Exposure Areas and media where speciated data was both available and unavailable.

Table 8.1. *Prevalence of mercury speciation at the Willis Avenue Site*.

Speciated Mercury		**Unspeciated Mercury**	
Exposure Area	**Media**	**Exposure Area**	**Media**
Plant Area	Surface Soil, Upper Soil, Intermediate Soil	Plant Area	Intermediate Groundwater
Former Chlorination Building	Surface Soil, Upper Soil, Intermediate Soil		
On-Site Ditches	Surface Soil, Intermediate Soil, Upper Soil	Northwest Off-Site/Outfall 004	Surface Soil, Upper Soil
Southwest Off-Site/Outfall 006	Surface Soil, Upper Soil	Lakeshore Area	Surface Soil, Upper Soil, Shallow Groundwater
Tributary 5A	Sediment, Surface Water	Petroleum Storage Area	Shallow Groundwater
Petroleum Storage Area	Surface Soil, Upper Soil	Chlorobenzene Hot-Spot Area	Shallow Groundwater
Chlorobenzene Hot-Spot Area	Surface Soil, Upper Soil	Site Wide Groundwater Exposure Area	Groundwater – All Depths

Methyl mercury to total mercury ratios were developed based on the average ratio of detected concentrations of these compounds at each sample location within an exposure area. Table 8.2 presents the ratios developed for each Exposure Area and the Exposure Areas to which the ratios will be applied.

Table 8.2. *Methyl mercury to total mercury ratios developed for Exposure Areas and media.*

Exposure Area	Media	Ratio	Applied to Exposure Area:	Rationale
Plant Area	Surface Soil	0.0026	Lakeshore Area – Surface Soil	Close proximity, identical depth
	Upper Soil	0.0026	Lakeshore Area – Upper Soil	Close proximity, identical depth
	Intermediate Soil	0.0026	None	Application to Plant Area groundwater not appropriate
Former Chlorination Building (FCB)	Surface Soil	0.0028	None	Application to FCB groundwater not appropriate
	Upper Soil	0.0028		
	Intermediate Soil	0.0028		
On-Site Ditches	Surface Soil	0.00014	NW Off-Site/ Outfall 004 Exposure Area- Surface Soil and Upper Soil	Same Exposure Area **/** Close proximity and identical depth
	Intermediate Soil	0.00014		
	Upper Soil	0.00014		
Southwest Off-Site/Outfall 006 Exposure Area	Surface Soil	0.00020	None	None required
	Upper Soil	0.00020	None	None required
Tributary 5A	Sediment	0.023	None	No other location with sediment
Petroleum Storage Area	Surface Soil	0.00024	None	Application to CHSA groundwater not appropriate
	Upper Soil	0.00024	None	
Chlorobenzene Hot-Spot Area (CHSA)	Surface Soil	0.0033	None	Application to CHSA groundwater not appropriate
	Upper Soil	0.0033		

New hazard quotients were found by applying the methyl mercury ratio to the total mercury exposure point concentration for each receptor, media, and Exposure Area (exposure scenario). Similarly, the inverse of the methyl mercury ratio was applied to the total mercury exposure point concentration to calculate the remaining portion that is elemental mercury. New exposure point concentrations were used to calculate chronic daily intakes for each exposure scenario. The hazard quotients for each form of mercury were then determined by dividing the newly calculated chronic daily intake by the appropriate RfD. The hazard quotients for mercury and methyl mercury were then added together for each exposure scenario to obtain a hazard index.

Table 8.3. *Original total mercury and new ratio based methyl mercury hazard estimates*.

Exposure Area	Media	Receptor	Pathway	Original Mercury Hazard Quotient (RME)	Ratio Applied	Calculated Mercury Hazard Quotient (RME)	Calculated Methyl Mercury Hazard Quotient (RME)	Calculated Mercury and Methyl Mercury Hazard (RME)	New HI greater than 1.0 (Y/N)
Northwest Off-Site/Outfall 004 Exposure Area	Surface Soil	Adolescent Trespasser	Ingestion	1.36E-01	0.00014	1.36E-01	5.73E-05	1.36E-01	N
			Dermal	NA	NA	NA	NA	NA	NA
		Adult Trespasser	Ingestion	4.38E-02	0.00014	4.38E-02	1.84E-05	4.38E-02	N
			Dermal	NA	NA	NA	NA	NA	NA
		Adult Transient	Ingestion	2.92E-02	0.00014	2.92E-02	1.23E-05	2.92E-02	N
			Dermal	NA	NA	NA	NA	NA	NA
	Upper Soil	Utility Worker	Ingestion	3.71E-01	0.00014	3.71E-01	1.56E-04	3.71E-01	N
			Dermal	NA	NA	NA	NA	NA	NA
Lakeshore Area	Surface Soil	Adolescent Trespasser	Ingestion	2.60E-03	0.0026	2.60E-03	2.03E-05	2.62E-03	N
			Dermal	NA	NA	NA	NA	NA	NA
		Adult Trespasser	Ingestion	8.37E-04	0.0026	8.35E-04	6.53E-06	8.41E-04	N
			Dermal	NA	NA	NA	NA	NA	NA
	Upper Soil	Utility Worker	Ingestion	9.86E-03	0.0026	9.84E-03	7.69E-05	9.91E-03	N
			Dermal	NA	NA	NA	NA	NA	NA

As shown in Table 7, there is a nominal difference between the hazard quotient for total mercury and the combined hazard index for mercury and methyl mercury. Additionally, no total mercury, elemental mercury, or methyl mercury hazard quotient exceeds 1.0. The reason for such a nominal difference after applying the methyl mercury ratio is twofold. First, the ratios of methyl mercury to mercury were found to be extremely small, meaning only a small fraction of each sample is the more toxic methyl mercury. Second, the oral RfD for methyl mercury was not markedly lower than that of mercury (0.0001 mg/kg-day for methyl mercury and 0.0003 mg/kg-day for mercury). The dermal RfD shows a greater difference for mercury (0.000021 mg/kg-day) and methyl mercury (0.0001 mg/kg-day); however, since no dermal absorption factor exists for mercury or methyl mercury dermal exposure was not applicable. The end result of these contributing factors was a minor difference in unspeciated mercury and speciated mercury hazard indices.

Considering that the methyl mercury concentrations were estimated based on ratios of methyl mercury to mercury in other samples, there is a degree of uncertainty associated with this assessment. However, the uncertainty does not affect the outcome of this risk assessment as none of the newly calculated hazard quotients for mercury or methyl mercury approach an unacceptable level. By comparison, even in the most conservative and unreasonable scenario, assuming that all of the mercury at the areas where mercury was not speciated is assumed to be methyl mercury, then only

one exposure scenario would result in an unacceptable hazard quotient. The Northwest Off-Site/Outfall 004 Utility Worker exposed to upper soil through ingestion would have a hazard quotient of 1.11 if all of the mercury in that Exposure Area were methyl mercury, which is nominally above what is considered acceptable (1.0). This assumption is both highly conservative and highly unlikely and it is therefore concluded that a lack of speciated mercury samples at some Exposure Areas did not alter the conclusions of this risk assessment.

8.2. Calculation of Exposure Point Concentrations

8.2.1. General

Conservative judgments were applied in calculating RME exposure point concentrations. Depending on the Exposure Area and COPC, maximum detected concentrations or UCLs were used as exposure point concentrations (EPC). As such, it is highly unlikely that the estimated EPCs underestimate representative concentrations in the Site media.

In addition, as noted in the text, the maximum detected concentration was applied as a default value if there were less than five detects. This was done as a conservative measure, since there was insufficient number of samples to assess the shape of the underlying distribution.

ProUCL statistical software package (Version 4.0; USEPA 2007b) was used to examine the data distribution and develop an upper confidence level (UCL) on the arithmetic mean. ProUCL was run using Regression on Order Statistics (ROS), which is a method for accounting for non-detect samples in the data set. ROS infers values for non-detect samples based on the distribution of detected data. ProUCL recommends the most appropriate UCL to use given the distribution type. The UCL recommended by ProUCL was subsequently applied as the EPC. The ProUCL output is presented in Appendix K.

Data Temporal Distribution

Analytical data has been collected from various media since January of 1991 in order to support various phases of investigation at the Site. The majority of data collection efforts occurred in two distinct time periods (1991/1992 and 1997/1998). The histogram presented below depicts the number of sample locations sampled for each year of data utilized in this assessment. Data collected during this time period reflected initial investigatory efforts (early 1990s) and significant additional sampling to support remedial investigation efforts (late 1990s).

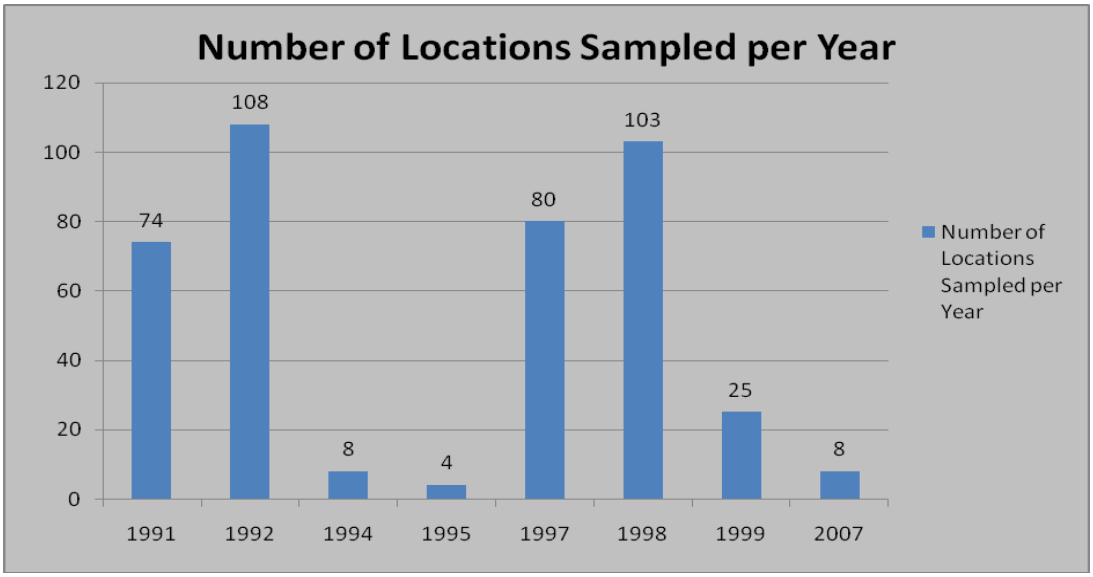


Figure 8.1. *Historical sampling frequency*.

All of the data utilized in this and other assessments were validated in accordance with USEPA specified guidelines. Data validation involves the reconstruction of the analytical process and an evaluation of whether the analysis has been performed correctly. The data validation process was used to determine which data was considered usable in quantitative and qualitative evaluations. For the purposes of this report, data that was qualified as rejected "R" or that was a quality control sample were not utilized in this assessment.

A Data Usability Assessment was also completed in accordance with the Data Quality Objectives specified for the Site. Among other parameters, the Data Usability Assessment evaluated the representativeness of the data which is a measure of whether the collective data represent actual conditions at the Site. The data was confirmed to be representative of Site conditions.

The historical nature of the dataset is still considered to reflect actual Site conditions because constituent concentrations are not expected to increase over time and are actually likely to attenuate. Therefore, the dataset, in its entirety, is legitimately utilized in this HHRA. It is important to note that this HHRA has been an iterative process as the initial version of the report was developed in 2002 as an Appendix (L) to the Remedial Investigation Report. Subsequent revisions to this document include one in 2004 and this revision. The temporal distribution of the data is not expected to affect the overall interpretation of potential human health risk posed by the Site to selected receptors.

8.2.2. Indoor Air Exposures for Future Industrial Workers

As part of the HHRA, the future migration of volatile constituents in groundwater to the indoor air of future On-Site industrial buildings was evaluated. Groundwater concentrations were compared to screening levels, but a quantitative risk was not calculated.

8.2.3. Inhalation Exposures for Future Construction Workers

As discussed in Sec 5.4.4, PEF is used to calculate the constituent concentration in fugitive dust. For this Report, a single PEF value for the construction worker was calculated on the basis of total Site area ("Site-wide PEF"). This section presents a sensitivity analysis to determine the influence of using this single Site-wide PEF versus using a separate PEF for each Exposure Area with a construction worker receptor. The figure below presents the Site-wide PEF and the PEF for individual Exposure Areas as a function of area. For the PEF calculation, each Exposure Area is assumed to be in the shape of a square of the area shown on the X-axis in the figure below. It is further assumed that a road of 6.1m width bisects the exposure point area and thereby entrains particulate matter in the air immediately above it, which is subject to inhalation by a receptor at the exposure point.

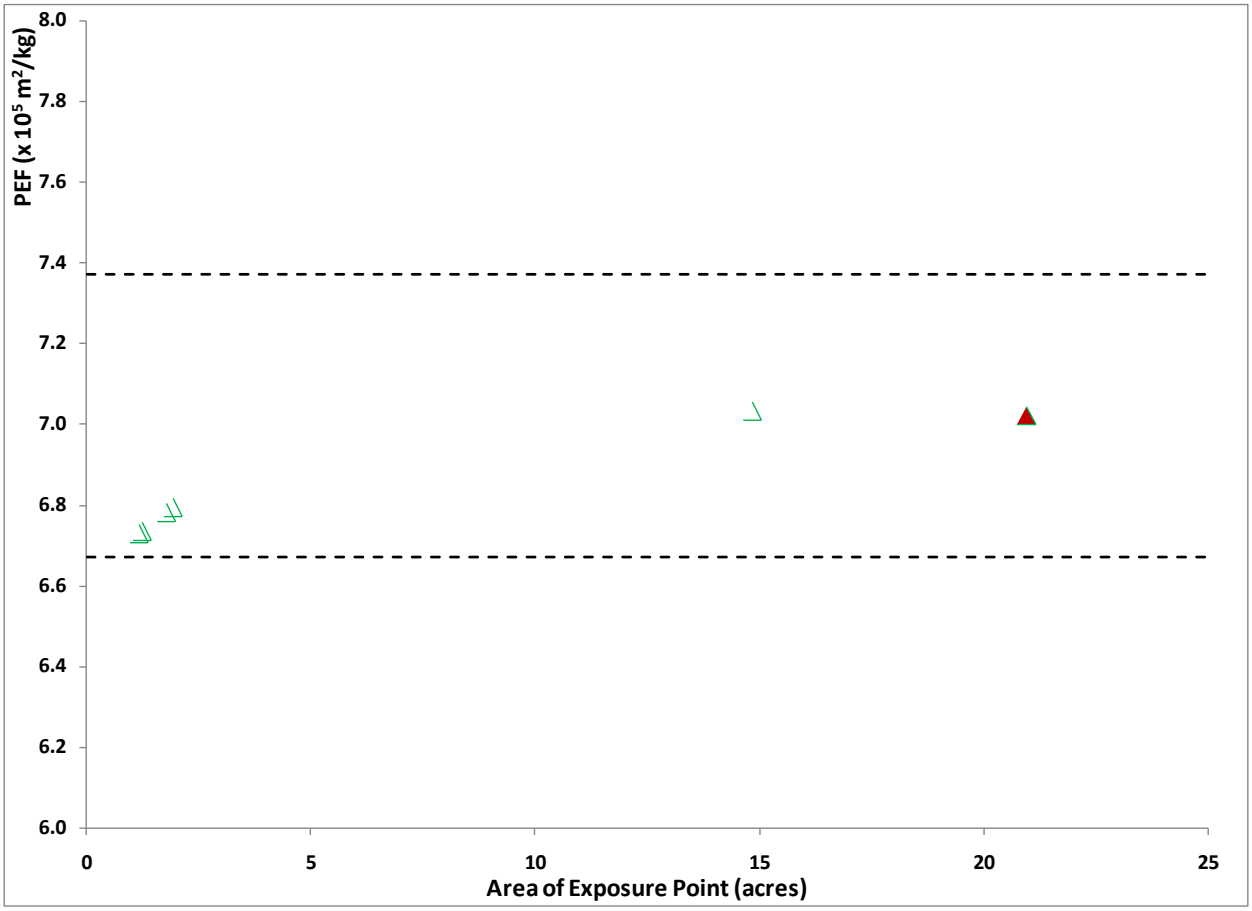


Figure 8.2. *Exposure area and Site-wide PEF values as a function of area.*

The unfilled triangles represent the calculated PEFs for the various exposure points within the Site (with the exception of the On-Site Ditches), while the red filled triangle represents the calculated PEF using total Site area, ("Site-wide PEF"). The dotted lines represent the ±5% range around the red filled triangle. The PEFs are of the order of 7×10^5 for the exposure points shown in the figure, and are within 5% of the Site-Wide PEF. The one exception to this trend is the calculated PEF for the On-Site Ditches (not shown), which has a value of ~2×10^8. The figure below presents the area (orange squares) and PEF value (blue bars) for each Exposure Area and the Site-Wide PEF.

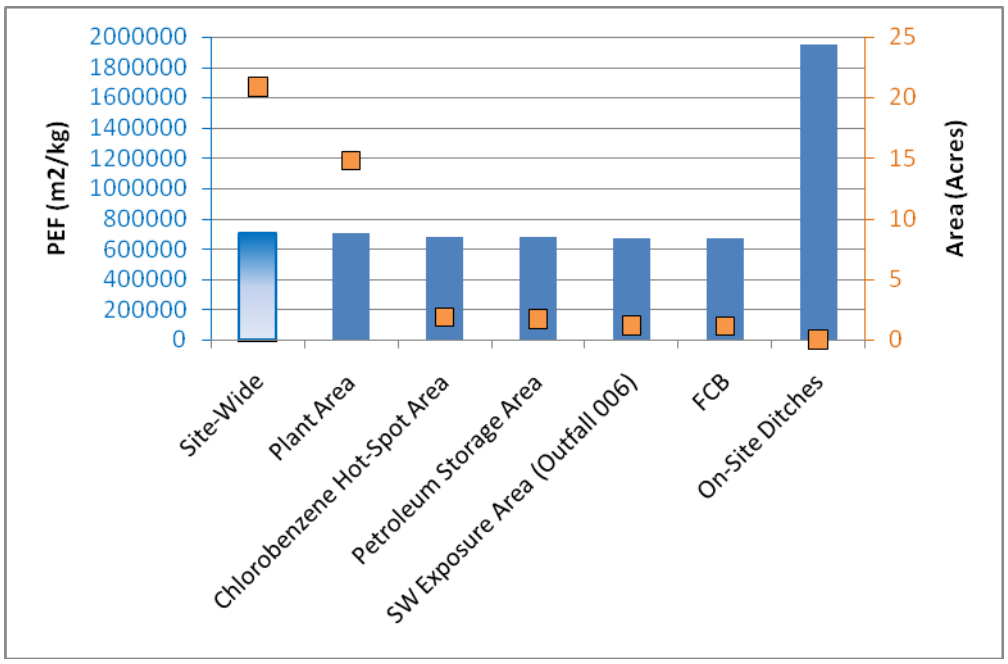


Figure 8.3. *Comparison of Site-wide and individual exposure area PEF values.*

While the PEF for the On-Site Ditches differs from the Site-Wide value, it is important to note that the ditches are long narrow trenches and would ordinarily not have a roadway bisecting them. Furthermore, the total area of the On-Site Ditches is 0.04 acres; a hypothetical road 6.1 m wide running the entire length of the ditch would occupy approximately 0.02 acres, or 50% of the exposure point area itself. These two factors suggest that it is highly unlikely that a road would be constructed through the On-Site Ditches, and any calculated result for the PEF would therefore be implausible and can be removed from the analysis.

Therefore, as seen in the figures above, the remaining PEF values for the individual Exposure Areas all lie within 5% of the Site-wide PEF, and we conclude that the Site-wide PEF reasonably captures the concentration of constituents in fugitive dust for the inhalation pathway for the construction worker.

8.3. Toxicity Values

8.3.1. General

A general discussion of the uncertainties and conservatism inherent in the USEPA approach for deriving RfDs and cancer slope factors has been presented in Section 6 of the HHRA and is briefly summarized below.

Reference Doses (RfDs) - For some chemicals, RfDs are derived directly from data on human exposures. Such data includes occupational exposures that are known to have no adverse effects, normal dietary levels of certain chemicals, therapeutic doses of certain chemicals, and epidemiological data relating to populations with background exposures. For most chemicals, USEPA derives RfDs based on laboratory studies in which experimental animals were exposed to different concentrations of a chemical, and a NOAEL is estimated. If data from several animal studies are available, USEPA seeks to identify the species that is most comparable to humans based on knowledge of specific biologic properties. If adequate comparative data is not available, USEPA selects the study on the most sensitive animal species as the critical study for the basis of the NOAEL. The NOAEL is then used to derive a RfD for potential adverse effects in human populations.

RfD Uncertainty Factors - In most cases, there is considerable uncertainty regarding the extension of toxicological data from animal studies to humans. In other words, the actual RfD for humans or sensitive sub-populations of humans would not be precisely known based on data in animal species. This uncertainty arises because there may be differences between the animal and human species regarding factors such as the metabolism of the chemical, the distribution and clearance rate of the chemical from the body, and the sensitivity of specific organ systems to the chemical. Therefore, the USEPA derives RfDs that are designed to be protective of the public at large, *including sensitive sub-populations*. The USEPA applies a series of "uncertainty" factors to calculate the final RfD values. Depending on the data, the NOAEL may be divided by an uncertainty factor ranging from 1 to 10,000. For human data, in most cases, the uncertainty factor of 10 is applied for the application of data from the public at large to sensitive sub-populations. For animal data a typical uncertainty factor of 100 (10 for sensitive sub-population and 10 for animal-human extrapolation) is applied for deriving the human RfD.

Cancer Slope Factors - Additional uncertainty arises from the USEPA use of the linearized multi-stage model for estimating the cancer slope factor. The linearized multi-stage model is one mathematical model, which may describe the carcinogenic process. The model assumes that at low doses, there is a linear relationship between the dose of a chemical and the excess cancer risk. In addition, the model assumes that there is no threshold dose for the induction of cancer. However, there are many instances in which this assumption may not hold true for the carcinogenic process. Examples of such effects are chemicals that cause an increased high dose cancer incidence due to stimulated cell proliferation rates (Cohen and Ellwein 1990; Ames and Gold 1990), chemicals for which metabolic parameters limit the delivered dose to the target organ (Zeise and Wilson 1986), promoters, or in instances where DNA repair mechanisms may be dose dependent (Zeise and Wilson 1986). In these instances, the linearized multi-stage model may provide a "plausible upper limit" of potential cancer risk (51 FR 33992). However, as acknowledged by USEPA (51 FR 33992), "such an estimate does not necessarily give a realistic prediction of the risk. The true value of the risk is unknown, and may be as low as zero."

8.3.2. Uncertainty of TCDD Equivalents

The toxicity equivalency factor (TEF) scheme compares the relative toxicity of individual dioxin-like compounds to that of TCDD, which is the most toxic congener. The toxicity equivalent (TEQ) is calculated by multiplying the exposure level of a particular dioxin-like compound by its TEF. The sum of each dioxin/furan toxicity equivalent at a given location equals the total sample TEQ.

Dioxin TEQs were a contributor to risk estimates calculated and presented in this HHRA. However, there is considerable uncertainty as to the potential carcinogenic and non-cancer chronic impacts of

TEQs to humans. Given this uncertainty, and the application of the TEF approach, which assumes 2,3,7,8-TCDD-like activity to the range of PCDD/F congeners, there is a high likelihood that the actual human health risks associated with the detection of PCDD/Fs at the site are lower than the estimates presented in this HHRA.

The 2,3,7,8-TCDD is considered to be the most potent of the PCDD/F compounds with respect to potential toxic effects. 2,3,7,8- TCDD may induce a wide range of toxic effects in laboratory animals including effects on the liver, sex hormone balance, immune system, and *in utero* development (ATSDR 1998). In addition, 2,3,7,8-TCDD has been shown to induce cancer in laboratory animals at relatively low administered doses (USEPA 1992d). There may be considerable variability in the toxic potency of 2,3,7,8-TCDD depending on the test animal species and toxic effect being considered (ATSDR 1998). Guinea pigs are generally the most dioxin-sensitive mammalian species. By comparison, the hamster may be 5,000 to 10,000 times more resistant in similar toxicity tests.

Very few of the toxic effects of 2,3,7,8-TCDD observed in animal species have been reported in exposed human populations (USEPA 1992d). The only toxic effect that has been definitively associated with TCDD exposure in human populations is chloracne (an acne-like skin condition) in heavily exposed individuals (USEPA 1992d). Numerous studies and health surveys of human populations exposed to relatively high levels of TCDD have failed to detect a clear association between TCDD exposure and the adverse health effects reported in laboratory animal studies (USEPA 1992d). However, certain studies of occupationally exposed workers in the United States (Fingerhut *et al*. 1991) and Germany (Manz *et al.* 1991) have reported a possible increase in lung cancer and thyroid cancer rates in occupationally exposed workers. A significant reduction in breast cancer rates was observed in women living in Seveso, Italy, which was the Site of a large dioxin release in July 1976 (Bertazzi *et al*. 1993). This observation is consistent with a similar reduction in mammary tumor risk in laboratory animals.

The IRIS database does not contain a weight-of-evidence cancer classification for 2,3,7,8-TCDD. The USEPA is currently re-evaluating the risks and hazards from exposures to PCDD/Fs. In its proposed rule to add a chemical category that includes dioxin and dioxin-like compounds to the list of toxic chemicals subject to release reporting requirements, the USEPA acknowledged that existing data shows "2,3,7,8-TCDD is a potent toxicant in animals and has the potential to produce a wide spectrum of toxic effects in humans" (USEPA 1997b). In the preamble of the rule, the USEPA further states that "available human data cannot clearly demonstrate whether a cause and effect relationship exists between 2,3,7,8-TCDD exposure and increased incidence of cancer.

There is little direct evidence regarding the toxic effects and potency PCDD/F compounds other than 2,3,7,8-TCDD. As a conservative assumption, USEPA and other regulatory agencies assume that other PCDD/F compounds may induce the same toxic effects as TCDD, though they are likely to be less potent than TCDD (USEPA 1989b). It is recognized that chlorination at the 2,3,7,8 positions is required for a PCDD/F compound to potentially exert toxic effects (USEPA 1989b). Therefore, in order to evaluate the toxic potential of PCDD/F mixtures, Van den Berg et al. (2006) publishes a TEF for each PCDD/F compound. The TEFs are based on observed structure activity relationships for PCDD/F compounds, receptor binding affinity or enzyme induction. The TEF approach assumes that receptor binding is necessary (but not exclusive) for biological activity of PCDD/F compounds and the affinity of a given PCDD/F congener to the receptor reflects the relative biologic potency of a given congener. However, it is important to recognize a given toxic response in a biological organism probably involves many physiologic events other than receptor activation. As such, it is

reasonable to assume that the congener-specific relative toxic potency may not be the same as the relative receptor affinity. In fact, given the diverse mechanisms for different toxic responses, it is reasonable to assume that the relative potencies may be different for different toxicological endpoints.

As of the revision of this HHRA, the IRIS database did not contain a CSF or RfD for PCDD/Fs. The NYSDEC requested that a qualitative discussion of non-cancer PCDD/F exposures be presented in the uncertainty section, with references to advisory levels prepared by the ATSDR (or other agencies). The following information appears in the ATSDR toxicological profile on PCDD/Fs (ATSDR 1998) as compiled and referenced in the ATSDR Toxicological Profiles (on CD; ATSDR 2003).

It is the ATSDR's policy to use health guidance values (*i.e.*, Minimal Response Levels and Environmental Media Evaluation Guides) derived for 2,3,7,8-TCDD for other dioxin-like compounds as total TEQs. The ATSDR has derived an acute-duration oral minimal response level (MRL) of 0.0002 µg/day (2×10^{-4} µg/kg/day) for 2,3,7,8-TCDD based on its ability to suppress serum total hemolytic complement activity in $B6C3F_1$ mice (White *et al*. 1986). An intermediate-duration oral MRL of 0.00002 µg/day (2×10^{-5} µg/kg/day) was derived based on observed decreases in thymus weight in guinea pigs (Decaprio *et al*. 1986). A chronic-duration oral MRL of 0.000001 µg/day (1×10^{-6} µg/kg/day) was derived for 2,3,7,8-TCDD based on altered social interaction with peers in monkeys exposed to 2,3,7,8-TCDD prenatally and during lactation (Schantz *et al*. 1992). Neither a reference concentration (RfC) nor a RfD is listed in IRIS (USEPA 2004c) for any of the PCDD/Fs.

To further examine the exposure to dioxins on the Site, dioxin equivalents were compared to the ATSDR Minimal Risk Level (MRL) for 2,3,7,8-TCDD. The MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure (ATSDR 1998). These substance specific estimates, which are intended to serve as screening levels, are used by ATSDR health assessors and other responders to identify contaminants and potential health effects that may be of concern at hazardous waste sites (ATSDR 1998).

ATSDR uses the no observed adverse effect level/uncertainty factor (NOAEL/UF) approach to derive MRLs for hazardous substances. MRLs, based on non-cancer health effects only, are presented in units of µg/mg/day. MRLs are derived for the acute (1 to 14 days), intermediate (>14 to 364 days), and chronic (365 days and longer) exposure durations. The table below presents the TEQ values which represent the maximum sample TEQ of the cohort of samples for a particular Exposure Area and media. All Exposure Area TEQs exceeded acute, intermediate, and chronic ATSDR MRL values.

Table 8.4. *Exposure Area TEQ Comparison to ATSDR MRLs. "X" designates an exceedance.*

Exposure Area	Medium	Exposure Area TEQ (mg/kg)	ATSDR Acute MRL (2,3,7,8-TCDD) **2.0E-07** (mg/kg/day)	ATSDR Intermediate MRL (2,3,7,8-TCDD) **2.0E-08** (mg/kg/day)	ATSDR Chronic MRL (2,3,7,8-TCDD) **1.0E-09** (mg/kg/day)
Plant Area	Surface Soil	$2.09x10^{-3}$	X	X	X
Plant Area	Upper Soil	$2.09x10^{-3}$	X	X	X
Plant Area	Intermediate Soil	$2.09x10^{-3}$	X	X	X
Former Chlorination Building	Surface Soil	$2.23x10^{-1}$	X	X	X
Former Chlorination Building	Upper Soil	$2.52x10^{-1}$	X	X	X
Former Chlorination Building	Intermediate Soil	$2.52x10^{-1}$	X	X	X
On-Site Ditches	Surface Soil	$7.54x10^{-3}$	X	X	X
On-Site Ditches	Upper Soil	$7.54x10^{-3}$	X	X	X
On-Site Ditches	Intermediate Soil	$7.54x10^{-3}$	X	X	X
Southwest Offsite/Outfall 006	Surface Soil	$6.96x10^{-4}$	X	X	X
Southwest Offsite/Outfall 006	Upper Soil	$6.96x10^{-4}$	X	X	X
Northwest Offsite/Outfall 004 Area	Surface Soil	$5.28x10^{-4}$	X	X	X
Northwest Offsite/Outfall 004 Area	Upper Soil	$5.28x10^{-4}$	X	X	X
Lakeshore Area	Surface Soil	$7.62x10^{-5}$	X	X	X
Lakeshore Area	Upper Soil	$7.62x10-^{5}$	X	X	X
Tributary 5A	Sediment	$2.66x10^{-5}$	X	X	X

ATSDR recommends a decision matrix approach to aid in drawing conclusions about the public health implication of certain compounds. This approach is based on the use of a decision framework that compares Site-specific TEQ concentrations to ranges of values to which a particular action is assigned. The ranges are identified as screening level range (< 50 ppt), evaluation level range (> 50 ppt but < 1 ppb), and action level range (>1 ppb). Depending on how a particular TEQ compares to these values, one of three response decisions may be concluded. If the Exposure Area TEQ is below or equal to 50 parts per trillion, no further evaluation is required. Second, should the TEQ fall within the evaluation level range, evaluation of Site-specific factors is recommended. Site specific factors that may be evaluated include bioavailability, ingestion rates, pathway analysis, soil cover, climate, other constituents, community concerns, demographics, and background exposures. Thirdly, an Exposure Area TEQ that is greater than or equal to 1 part per billion is within the action level range, which may trigger the potential consideration of public health actions. Examples of public health actions may include surveillance, research, health studies, community education, and exposure investigations.

Table 8.5. *Dioxin TEQ decisions matrix screening*.

RAGS Table	Exposure Area	Medium	Location TEQ (mg/kg)	Screening Level Range (<0.00005 mg/kg)	Evaluation Level Range (0.00005 mg/kg – 0.001 mg/kg)	Action Level Range (> 0.001 mg/kg)
2.1	Plant Area	Surface Soil	$2.09x10^{-3}$			X
2.2	Plant Area	Upper Soil	$2.09x10^{-3}$			X
2.3	Plant Area	Intermediate Soil	$2.09x10^{-3}$			X
2.6	Former Chlorination Building	Surface Soil	$2.23x10^{-1}$			X
2.7	Former Chlorination Building	Upper Soil	$2.52x10^{-1}$			X
2.8	Former Chlorination Building	Intermediate Soil	$2.52x10^{-1}$			X
2.9	On-site Ditches	Surface Soil	$7.54x10^{-3}$			X
2.10	On-site Ditches	Upper Soil	$7.54x10^{-3}$			X
2.11	On-site Ditches	Intermediate Soil	$7.54x10^{-3}$			X
2.12	Southwest Offsite/ Outfall 006	Surface Soil	$6.96x10^{-4}$		X	
2.13	Southwest Offsite/ Outfall 006	Upper Soil	$6.96x10^{-4}$		X	
2.14	Northwest Offsite/ Outfall 004 Area	Surface Soil	$5.28x10^{-4}$		X	
2.15	Northwest Offsite/ Outfall 004 Area	Upper Soil	$5.28x10^{-4}$		X	
2.16	Lakeshore Area	Surface Soil	$7.62x10^{-5}$		X	
2.17	Lakeshore Area	Upper Soil	$7.62x10^{-5}$		X	
2.19	Tributary 5A	Sediment	$2.66x10^{-5}$	X		

The decision matrix described above was applied to the Exposure Area TEQs developed for this Site and is presented in Table 8. One Exposure Area TEQ (Tributary 5A, sediment), was below the screening action level. Six Exposure Area TEQs were within the evaluation level range indicating that Site-specific conditions should be considered in decision making. The TEQs within this range are for surface soil and upper soil of the Southwest Offsite/Outfall 006, Northwest Offsite/Outfall 004, and the Lakeshore Area. Nine Exposure Area TEQs were within the action level range of the decision matrix which represents the dioxin equivalent concentrations present in surface soil, upper soil, and intermediate soil for the Plant Area, Former Chlorination Building, and On-Site Ditches.

Although some of the Exposure Area TEQ fall within the action level range of the ATSDR decision matrix, current and expected use of the site along with anticipated remedial action renders specific dioxin-related action unwarranted. Further, RME non-cancer hazard results indicate that many 2,3,7,8-TCDD hazard quotients are within below one. Those HQ that are not below one generally exceed one by less than one order of magnitude. Although the ATSDR action level can reflect, in certain instances, a concentration of dioxin TEQ at which consideration of action to interdict/prevent exposure occurs, a site-specific evaluation may indicate that none of these actions may be necessary.

8.3.3. Lead in Drinking Water

Groundwater data from all available depths was used to evaluate a potable use scenario for the adult and child resident at the Site. The maximum concentration of lead in groundwater is high and well above EPA's action level of 15 µg/L. The lack of cancer or non-cancer toxicity data precludes the

development of risk or hazard estimates. However, for the child resident, exposure to lead in drinking water has been evaluated using the IEUBK model.

This pathway has been evaluated because the current use designation for this aquifer is as a potable water supply and the National Contingency Plan states the groundwater must be returned to its most beneficial use. The Site is zoned as industrial and is unlikely to be developed as a residential area. Therefore, residential use of the Site is highly unlikely. Municipal water currently supplies existing buildings and facilities with potable water and therefore Site groundwater is not used as a potable water source. Because the affected nature of the groundwater is known, potable water wells are not likely be drilled or authorized in the future.

A change in zoning from industrial to residential is more likely than the use of groundwater as a potable water supply. Any residential or other structure built on the Site in the future will undoubted be connected to municipal water supply. It may be interesting to note that most lead enters the home after it leaves the municipal water supply or well (USEPA 1993b) by leaching out of the pipes or solder during corrosion reactions. The USEPA and scientific data indicates that the newer the home, the greater the risk of lead contamination (USEPA 1993b). This is because mineral deposits that form a coating over the surface of the solder connections and protect against leaching can take up to five years to form. As such, more likely than not, water in buildings less than five years old has high levels of lead contamination. Should the area be zoned differently and residential homes be built, the piping and solder within the newly constructed homes is more likely to contribute to elevated levels of lead than other sources.

8.3.4. Carcinogenicity of Trichloroethene

Trichloroethene (TCE) is a chemical with known cancer risk and non-cancer hazard effects. A draft assessment of health risks due to TCE by the USEPA (2001b) provided a range of cancer slope factors (2×10^{-2} to 4×10^{-1} mg/kg-d) to evaluate cancer risk. The RAGS Table D series in the present report were developed using the upper bound of this range (*i.e.*, 4×10^{-1} mg/kg-d) for the dermal, ingestion, and inhalation exposure pathways. The estimate of cancer risk due to TCE in this report is therefore a conservative one.

There are currently no recommended values for assessing non-cancer exposure to TCE. However, the New York State Department of Health (NYSDOH) guideline for TCE in air is 5 $\mu g/m^3$ (NYSDOH, 2006). For comparison, in the present risk assessment, TCE was detected under only one receptor/exposure point combination (Southwest Off-Site/Outfall 006; future construction), for which the exposure point air concentration was found to be 1.33×10^{-5} mg/m^3 or 1.33×10^{-2} $\mu g/m^3$, well below the guideline. Similarly, the New York State MCL for TCE in groundwater (as well as the drinking water standard; NYSDOH, 2006) is 5 $\mu g/l$; in comparison, no TCE was detected in either groundwater or surface water samples in this report.

8.3.5. Carcinogenicity of Naphthalene through Inhalation

Naphthalene is carcinogenic through inhalation exposure. CalEPA provides a PPRTV unit risk for naphthalene of $3.4x10^{-5}$ $(ug/m^3)^{-1}$. This corresponds to a screening value for indoor air of 72 ug/L, which is lower than the value used in this HHRA. However, usage of the 72 ug/L value would not affect whether naphthalene is above screening level in the RAGS D Table 2 series.

8.3.6. Carcinogenicity of Hexavalent Chromium

The RAGS D Table 6 series includes an inhalation unit risk value for chromium based on hexavalent chromium, but oral and dermal cancer slope factors were not available. However, the National Toxicology Program has identified chromium as carcinogenic through the oral pathway and EPA is in the process of developing an oral toxicity value for hexavalent chromium.

8.3.7. Dichlorobenzene Toxicity

At the time of this report, 1,2-, 1,3-, and 1,4- dichlorobenzene were in the IRIS review process. This process will lead to an updated non-carcinogenic endpoint for 1,3-dichlorobenzene and updated carcinogenic and non-carcinogenic endpoints for 1,2- and 1,4-dichlorobenzene.

8.4. Calculation of Quantitative Risk Estimates

8.4.1. Non-Carcinogenic Effects

For each exposure pathway, the chemical-specific hazard quotients were summed to calculate the HI for that pathway. For each receptor, the pathway-specific hazard indexes were summed to obtain the total HI for that receptor.

The additivity assumption for calculating hazard indexes is based on the concept that multiple chemicals, acting on the same target organ or by the same mechanism of toxicity, will have an additive effect with respect to the potential damage that is caused to that organ. The additivity assumption does not hold true for chemicals that do not act on the same target organ or by the same mechanism of toxicity. Therefore, USEPA guidance states that if the total HI for the Site exceeds 1, the COPCs may be segregated according to target organ, and the HIs re-derived for each sub group of chemicals. As previously discussed, for receptors and areas for which the HI exceeded 1, the derived risks were dominated by one or two chemicals. As such, segregation of the HI by target organ would have resulted in the same overall conclusions.

8.4.2. Carcinogenic Effects

Uncertainties associated with the Linearized Multistage Model for low dose cancer risk assessments have been discussed in Section 8.4.1. As described in that section, the model and associated assumptions likely result in a conservative estimate of potential lifetime excess cancer risk.

8.5. Central Tendency Estimates

Central tendency (CT) risk calculations were completed for Exposure Areas and receptors for which the HI exceeded 1 or the cancer risk exceeded 1×10^{-6}. The input parameters and calculated CT risk estimates are presented in the RAGS D Table 4, 7, 9, and 10 series. Based on the NYSDEC's direction, the RME exposure point concentrations were applied as exposure point concentrations for the CT calculations. For other input parameters, average values were estimated based on data

published in the *Exposure Factors Handbook* (USEPA 1997a) or professional judgment regarding site specific exposure frequency and duration estimates.

8.6. Multiple Exposure Scenarios

Current and future expected exposures assume that receptors will be exposed to one Exposure Area. The tables below summarize the risks and hazards to each current and future receptor for each Exposure Area. The largest contributor to the risk or hazard is shown in bold. These tables show that the FCB leads to unacceptable risks and hazards for most receptors. However, it is unlikely that a receptor such as the surveillance worker would spend all of their time in the FCB. Thus the risks and hazards shown for the FCB are likely an overestimate, and the true risk to a receptor would likely be a weighted average of the risks from several Exposure Areas.

Table 8.6. *Summary of current RME and CT cancer risks and hazard indexes by receptor*.

Receptor	Exposure Area	RME or CT	Cancer Risk	HI
Adolescent Trespasser	Plant Area	RME	$4x10^{-5}$	$1x10^{0}$
	On-Site Ditches Area	RME	$6x10^{-5}$	$6x10^{0}$
	Former Chlorination Building (FCB)	**RME**	**$4x10^{-4}$**	**$2x10^{1}$**
	Southwest Off-Site/Outfall 006 Exposure Area	RME	$4x10^{-5}$	$3x10^{0}$
	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	RME	$4x10^{-6}$	$4x10^{-1}$
	Lakeshore Area	RME	$3x10^{-5}$	$2x10^{-1}$
	Petroleum Storage Area	RME	$3x10^{-5}$	$1x10^{-1}$
	Chlorobenzene Hot-Spot Area	RME	$5x10^{-5}$	$4x10^{0}$
	Tributary 5A	RME	$3x10^{-5}$	$2x10^{0}$
Adult Trespasser	Plant Area	RME	$4x10^{-5}$	$5x10^{-1}$
	On-Site Ditches Area	RME	$9x10^{-5}$	$3x10^{0}$
	Former Chlorination Building (FCB)	**RME**	**$7x10^{-4}$**	**$1x10^{1}$**
	Southwest Off-Site/Outfall 006 Exposure Area	RME	$4x10^{-5}$	$1x10^{0}$
	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	RME	$6x10^{-6}$	$2x10^{-1}$
	Lakeshore Area	RME	$2x10^{-5}$	$1x10^{-1}$
	Petroleum Storage Area	RME	$2x10^{-5}$	$6x10^{-2}$
	Chlorobenzene Hot-Spot Area	RME	$7x10^{-5}$	$3x10^{0}$
	Tributary 5A	RME	$5x10^{-5}$	$9x10^{-1}$
Surveillance Worker	Plant Area	RME	$3x10^{-5}$	$6x10^{-1}$
	On-Site Ditches Area	RME	$7x10^{-5}$	$3x10^{0}$
	Former Chlorination Building (FCB)	**RME**	**$5x10^{-4}$**	**$1x10^{1}$**
Adult Transient	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	RME	$6x10^{-7}$	$7x10^{-2}$
Utility Worker	Plant Area	RME	$9x10^{-6}$	$5x10^{0}$
	On-Site Ditches Area	RME	$2x10^{-5}$	$3x10^{1}$

Table 8.6. *Summary of current RME and CT cancer risks and hazard indexes by receptor*.

Receptor	Exposure Area	RME or CT	Cancer Risk	HI
	Former Chlorination Building (FCB)	**RME**	**$7x10^{-4}$**	**$3x10^{2}$**
	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	RME	$2x10^{-6}$	$1x10^{0}$
	Lakeshore Area	RME	$4x10^{-5}$	$1x10^{1}$
	Petroleum Storage Area	RME	$5x10^{-6}$	$1x10^{0}$
	Chlorobenzene Hot-Spot Area	RME	$1x10^{-5}$	$1x10^{1}$
	Tributary 5A	RME	$4x10^{-6}$	$7x10^{0}$
Adolescent Trespasser	Plant Area	CT	$2x10^{-5}$	$9x10^{-1}$
	On-Site Ditches Area	CT	$4x10^{-5}$	$4x10^{0}$
	Former Chlorination Building (FCB)	**CT**	**$3x10^{-4}$**	**$1x10^{1}$**
	Southwest Off-Site/Outfall 006 Exposure Area	CT	$2x10^{-5}$	$2x10^{0}$
	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	CT	$3x10^{-6}$	$3x10^{-1}$
	Lakeshore Area	CT	$1x10^{-5}$	$1x10^{-1}$
	Petroleum Storage Area	CT	$1x10^{-5}$	$9x10^{-2}$
	Chlorobenzene Hot-Spot Area	CT	$2x10^{-5}$	$2x10^{0}$
	Tributary 5A	CT	$2x10^{-5}$	$1x10^{0}$
Adult Trespasser	Plant Area	CT	$6x10^{-6}$	$3x10^{-1}$
	On-Site Ditches Area	CT	$2x10^{-5}$	$2x10^{0}$
	Former Chlorination Building (FCB)	**CT**	**$1x10^{-4}$**	**$6x10^{0}$**
	Southwest Off-Site/Outfall 006 Exposure Area	CT	$6x10^{-6}$	$7x10^{-1}$
	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	CT	$1x10^{-6}$	$1x10^{-1}$
	Lakeshore Area	CT	$3x10^{-6}$	$5x10^{-2}$
	Petroleum Storage Area	CT	$3x10^{-6}$	$4x10^{-2}$
	Chlorobenzene Hot-Spot Area	CT	$9x10^{-6}$	$1x10^{0}$
	Tributary 5A	CT	$8x10^{-6}$	$6x10^{-1}$
Surveillance Worker	Plant Area	CT	$1x10^{-6}$	$5x10^{-2}$
	On-Site Ditches Area	CT	$3x10^{-6}$	$3x10^{-1}$
	Former Chlorination Building (FCB)	**CT**	**$2x10^{-5}$**	**$1x10^{0}$**
Adult Transient	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	CT	$8x10^{-8}$	$9x10^{-3}$
Utility Worker	Plant Area	CT	$7x10^{-6}$	$5x10^{0}$
	On-Site Ditches Area	CT	$2x10^{-5}$	$2x10^{1}$
	Former Chlorination Building (FCB)	**CT**	**$6x10^{-4}$**	**$3x10^{2}$**
	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	CT	$1x10^{-6}$	$1x10^{0}$
	Lakeshore Area	CT	$3x10^{-5}$	$1x10^{1}$
	Petroleum Storage Area	CT	$4x10^{-6}$	$1x10^{0}$
	Chlorobenzene Hot-Spot Area	CT	$9x10^{-6}$	$7x10^{0}$

Table 8.6. *Summary of current RME and CT cancer risks and hazard indexes by receptor*.

Receptor	Exposure Area	RME or CT	Cancer Risk	HI
	Tributary 5A	CT	$4x10^{-6}$	$6x10^{0}$

Table 8.7. *Summary of future RME and CT cancer risks and hazard indexes by receptor.*

Receptor	Exposure Area	RME or CT	Cancer Risk	HI
Adolescent Trespasser	Plant Area	RME	$4x10^{-5}$	$1x10^{0}$
	On-Site Ditches Area	RME	$6x10^{-5}$	$6x10^{0}$
	Former Chlorination Building (FCB)	**RME**	**$4x10^{-4}$**	**$2x10^{1}$**
	Southwest Off-Site/Outfall 006 Exposure Area	RME	$4x10^{-5}$	$3x10^{0}$
	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	RME	$4x10^{-6}$	$4x10^{-1}$
	Lakeshore Area	RME	$3x10^{-5}$	$2x10^{-1}$
	Petroleum Storage Area	RME	$3x10^{-5}$	$1x10^{-1}$
	Chlorobenzene Hot-Spot Area	RME	$5x10^{-5}$	$4x10^{0}$
	Tributary 5A	RME	$3x10^{-5}$	$2x10^{0}$
Adult Trespasser	Plant Area	RME	$4x10^{-5}$	$5x10^{-1}$
	On-Site Ditches Area	RME	$9x10^{-5}$	$3x10^{0}$
	Former Chlorination Building (FCB)	**RME**	**$7x10^{-4}$**	**$1x10^{1}$**
	Southwest Off-Site/Outfall 006 Exposure Area	RME	$4x10^{-5}$	$1x10^{0}$
	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	RME	$6x10^{-6}$	$2x10^{-1}$
	Lakeshore Area	RME	$2x10^{-5}$	$1x10^{-1}$
	Petroleum Storage Area	RME	$2x10^{-5}$	$6x10^{-2}$
	Chlorobenzene Hot-Spot Area	RME	$7x10^{-5}$	$3x10^{0}$
	Tributary 5A	RME	$5x10^{-5}$	$9x10^{-1}$
Surveillance Worker	Plant Area	RME	$3x10^{-5}$	$6x10^{-1}$
	On-Site Ditches Area	RME	$7x10^{-5}$	$3x10^{0}$
	Former Chlorination Building (FCB)	**RME**	**$5x10^{-4}$**	**$1x10^{1}$**
Industrial Worker	Plant Area	RME	$9x10^{-5}$	$2x10^{0}$
	On-Site Ditches Area	RME	$2x10^{-4}$	$9x10^{0}$
	Former Chlorination Building (FCB)	**RME**	**$2x10^{-3}$**	**$3x10^{1}$**
	Southwest Off-Site/Outfall 006 Exposure Area	RME	$9x10^{-5}$	$4x10^{0}$
	Petroleum Storage Area	RME	$5x10^{-5}$	$2x10^{-1}$
	Chlorobenzene Hot-Spot Area	RME	$1x10^{-4}$	$6x10^{0}$
Construction Worker	Plant Area	RME	$3x10^{-5}$	$3x10^{1}$
	On-Site Ditches Area	RME	$5x10^{-5}$	$5x10^{1}$
	Former Chlorination Building (FCB)	**RME**	**$8x10^{-4}$**	**$4x10^{2}$**

Table 8.7. *Summary of future RME and CT cancer risks and hazard indexes by receptor.*

Receptor	Exposure Area	RME or CT	Cancer Risk	HI
	Southwest Off-Site/Outfall 006 Exposure Area	RME	$2x10^{-4}$	$8x10^{1}$
	Petroleum Storage Area	RME	$9x10^{-6}$	$8x10^{0}$
	Chlorobenzene Hot-Spot Area	RME	$3x10^{-5}$	$1x10^{1}$
Adult Transient	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	RME	$6x10^{-7}$	$7x10^{-2}$
Utility Worker	Plant Area	RME	$9x10^{-6}$	$5x10^{0}$
	On-Site Ditches Area	RME	$2x10^{-5}$	$3x10^{1}$
	Former Chlorination Building (FCB)	**RME**	**$7x10^{-4}$**	**$3x10^{2}$**
	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	RME	$2x10^{-6}$	$1x10^{0}$
	Lakeshore Area	RME	$4x10^{-5}$	$1x10^{1}$
	Petroleum Storage Area	RME	$5x10^{-6}$	$1x10^{0}$
	Chlorobenzene Hot-Spot Area	RME	$1x10^{-5}$	$1x10^{1}$
	Tributary 5A	RME	$4x10^{-6}$	$7x10^{0}$
Child Resident (< 6 years)	Potable Water	RME	$7x10^{-3}$	$4x10^{2}$
Adult Resident	Potable Water	RME	$1x10^{-2}$	$2x10^{2}$
Adolescent Trespasser	Plant Area	CT	$2x10^{-5}$	$9x10^{-1}$
	On-Site Ditches Area	CT	$4x10^{-5}$	$4x10^{0}$
	Former Chlorination Building (FCB)	**CT**	**$3x10^{-4}$**	**$1x10^{1}$**
	Southwest Off-Site/Outfall 006 Exposure Area	CT	$2x10^{-5}$	$2x10^{0}$
	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	CT	$3x10^{-6}$	$3x10^{-1}$
	Lakeshore Area	CT	$1x10^{-5}$	$1x10^{-1}$
	Petroleum Storage Area	CT	$1x10^{-5}$	$9x10^{-2}$
	Chlorobenzene Hot-Spot Area	CT	$2x10^{-5}$	$2x10^{0}$
	Tributary 5A	CT	$2x10^{-5}$	$1x10^{0}$
Adult Trespasser	Plant Area	CT	$6x10^{-6}$	$3x10^{-1}$
	On-Site Ditches Area	CT	$2x10^{-5}$	$2x10^{0}$
	Former Chlorination Building (FCB)	**CT**	**$1x10^{-4}$**	**$6x10^{0}$**
	Southwest Off-Site/Outfall 006 Exposure Area	CT	$6x10^{-6}$	$7x10^{-1}$
	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	CT	$1x10^{-6}$	$1x10^{-1}$
	Lakeshore Area	CT	$3x10^{-6}$	$5x10^{-2}$
	Petroleum Storage Area	CT	$3x10^{-6}$	$4x10^{-2}$
	Chlorobenzene Hot-Spot Area	CT	$9x10^{-6}$	$1x10^{0}$
	Tributary 5A	CT	$8x10^{-6}$	$6x10^{-1}$
Surveillance Worker	Plant Area	CT	$1x10^{-6}$	$5x10^{-2}$
	On-Site Ditches Area	CT	$3x10^{-6}$	$3x10^{-1}$

Table 8.7. *Summary of future RME and CT cancer risks and hazard indexes by receptor.*

Receptor	Exposure Area	RME or CT	Cancer Risk	HI
	Former Chlorination Building (FCB)	**CT**	**$2x10^{-5}$**	**$1x10^{0}$**
Industrial Worker	Plant Area	CT	$2x10^{-5}$	$1x10^{0}$
	On-Site Ditches Area	CT	$5x10^{-5}$	$7x10^{0}$
	Former Chlorination Building (FCB)	**CT**	**$4x10^{-4}$**	**$2x10^{1}$**
	Southwest Off-Site/Outfall 006 Exposure Area	CT	$1x10^{-5}$	$2x10^{0}$
	Petroleum Storage Area	CT	$8x10^{-6}$	$1x10^{-1}$
	Chlorobenzene Hot-Spot Area	CT	$2x10^{-5}$	$2x10^{0}$
Construction Worker	Plant Area	CT	$2x10^{-5}$	$1x10^{1}$
	On-Site Ditches Area	CT	$3x10^{-5}$	$4x10^{1}$
	Former Chlorination Building (FCB)	**CT**	**$7x10^{-4}$**	**$3x10^{2}$**
	Southwest Off-Site/Outfall 006 Exposure Area	CT	$9x10^{-5}$	$4x10^{1}$
	Petroleum Storage Area	CT	$7x10^{-6}$	$5x10^{0}$
	Chlorobenzene Hot-Spot Area	CT	$2x10^{-5}$	$1x10^{1}$
Adult Transient	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	CT	$8x10^{-8}$	$9x10^{-3}$
Utility Worker	Plant Area	CT	$7x10^{-6}$	$5x10^{0}$
	On-Site Ditches Area	CT	$2x10^{-5}$	$2x10^{1}$
	Former Chlorination Building (FCB)	**CT**	**$6x10^{-4}$**	**$3x10^{2}$**
	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	CT	$1x10^{-6}$	$1x10^{0}$
	Lakeshore Area	CT	$3x10^{-5}$	$1x10^{1}$
	Petroleum Storage Area	CT	$4x10^{-6}$	$1x10^{0}$
	Chlorobenzene Hot-Spot Area	CT	$9x10^{-6}$	$7x10^{0}$
	Tributary 5A	CT	$4x10^{-6}$	$6x10^{0}$
Child Resident (< 6 years)	**Potable Water**	**CT**	**$7x10^{-3}$**	**$4x10^{2}$**
Adult Resident	**Potable Water**	**CT**	**$4x10^{-3}$**	**$2x10^{2}$**

9. Conclusions

In general, under current conditions, cancer risks for receptors in all exposure areas are within the acceptable regulatory range of 10^{-4} to 10^{-6}, except for the Former Chlorination Building, and hazard indices for receptors in the Plant Area, State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area, and the Petroleum Storage Area are within the threshold of 1.

Under future conditions, cancer risks for receptors in all exposure areas are within the acceptable regulatory range of 10^{-4} to 10^{-6}, except for the Southwest Off-Site/Outfall 006 Exposure Area and the Former Chlorination Building. Under future conditions, hazard indices for receptors in the State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area are within the threshold of 1.

It should be noted that it is unlikely that a given receptor would spend all of their time in one exposure area. Thus the risks and hazards shown for a given exposure area are likely an overestimate, and the true risk to a receptor would likely be a weighted average of the risks from several exposure areas. A summary of risk drivers is presented in RAGS Table 10 series (Attachment A) and below.

9.1. Plant Area

9.1.1. Current/Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for current/future Site-receptors (adolescent trespasser, adult trespasser, and surveillance worker).

9.1.2. Future Receptors

Under the future exposure scenarios, there are no unacceptable cancer risks associated with any receptor in this exposure area. Non-cancer hazard exceeding the threshold for the future construction worker is driven primarily by exposure to:

- Nickel (HQ = 20)

Non-cancer hazard for the future utility worker is driven primarily by exposure to:

- Mercury (HQ = 3).

9.2. On-Site Ditches

9.2.1. Current/Future Receptors

There are no unacceptable cancer risks for current/future Site-receptors. Likewise, there are no unacceptable chemical-specific hazards for the current/future adult trespasser or surveillance worker. The non-cancer hazards for the adolescent trespasser are driven primarily by exposure to:

- 2,3,7,8-TCDD Equivalents (HQ = 3)
- Mercury (HQ = 3).

9.2.2. Future Receptors

There are no unacceptable cancer risks for future Site-receptors. Non-cancer hazards for the future construction worker are driven by exposure to:

- 2,3,7,8-TCDD Equivalents (HQ = 10)
- Mercury (HQ = 30).

Non-cancer hazards for future utility workers are also driven primarily by exposure to:

- 2,3,7,8-TCDD Equivalents (HQ = 9)
- Mercury (HQ = 20).

To a lesser extent, non-cancer hazards for future industrial workers are also driven primarily by these constituents.

9.3. Former Chlorination Building

9.3.1. Current/Future Receptors

Cancer risk to the adolescent trespasser, adult trespasser, and surveillance worker was estimated at the higher end of the regulatory threshold range of 10^{-4} to 10^{-6}. This risk was driven primarily by potential exposure to:

- 2,3,7,8-TCDD Equivalents (CR range = 4×10^{-4} to 7×10^{-4})

Non-cancer hazards for these receptors also exceeded the regulatory threshold and are also driven by potential exposure to:

- 2,3,7,8-TCDD Equivalents (HQ range = 10 to 20).

9.3.2. Future Receptors

Cancer risks to the future industrial worker, construction worker, and utility worker exceeded the regulatory threshold range of 10^{-4} to 10^{-6}. These risks are driven primarily by potential exposure to:

- 2,3,7,8-TCDD Equivalents (CR range = 2×10^{-3} to 8×10^{-4})

Non-cancer hazards for these receptors also exceeded the regulatory threshold and are also driven by potential exposure to:

- 2,3,7,8-TCDD Equivalents (HQ ranges from 30 to 400).

9.4. Southwest Off-Site/Outfall 006 Exposure Area

9.4.1. Current/Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for current/future Site-receptors in the Southwest Off-Site/Outfall 006 Exposure Area.

9.4.2. Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for future industrial worker. Cancer risk to the future construction worker exceeded the regulatory threshold range of 10^{-4} to 10^{-6}. Cancer risk was driven primarily by exposure to:

- Benzene (CR = 1.5×10^{-4})

Non-cancer hazards for the future construction worker exceeded the regulatory threshold of 1 and were driven primarily by exposure to:

- Benzene (HQ = 40)
- Mercury (HQ = 10)
- Xylenes (HQ = 9)

9.5. State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area

9.5.1. Current/Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for the current/future receptor in this exposure area.

9.5.2. Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for anticipated future receptors in this exposure area.

9.6. Lakeshore Property Area

9.6.1. Current/Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for the adolescent trespasser or adult trespasser. There are also no unacceptable cancer risks for the utility worker in this exposure area; however non-cancer hazards for this receptor exceeded the regulatory threshold. The non-cancer hazard was driven primarily by potential exposure to:

- Benzene (HQ = 9)
- Chlorobenzene (HQ = 3)

9.7. Petroleum Storage Area

9.7.1. Current/Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for the adolescent trespasser or adult trespasser in this exposure area.

9.7.2. Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for future industrial or utility worker. There are also no unacceptable cancer risks to the future construction worker; however, non-cancer hazards for the future construction worker exceeded the regulatory threshold of 1 and was driven primarily by exposure to:

- Manganese (HQ = 4)

9.8. Chlorobenzene Hot-Spot Area

9.8.1. Current/Future Receptors

There are no unacceptable cancer risks for the adolescent trespasser or the adult trespasser in the CHSA. Non-cancer hazard, however, did exceed the regulatory threshold and was driven by exposure to:

- PCBs (HQ = 4 and 3, respectively)

9.8.2. Future Receptors

There are no unacceptable cancer risks for future industrial worker in the CHSA. Non-cancer hazard, however, did exceed the regulatory threshold and was driven by exposure to:

- PCBs (HQ = 6)

There are no unacceptable cancer risks for future construction worker in the CHSA. Non-cancer hazards, however, did exceed the regulatory threshold and were driven primarily by exposure to:

- Manganese (HQ = 4)
- PCBs (HQ = 6)

There are no unacceptable cancer risks for future utility worker in the CHSA. Non-cancer hazard, however, did exceed the regulatory threshold and was driven primarily by exposure to:

- PCBs (HQ = 7)

9.9. Tributary 5A

9.9.1. Current/Future Receptors

There are no unacceptable cancer risks or non-cancer hazards for the adolescent trespasser or the adult trespasser in this exposure area.

9.10. Hypothetical Drinking Water Source Area

Groundwater at the Site is not suitable for use as a drinking water supply irrespective of any contributions related to waste at the Site. However, the following section describes the risk drivers that would be expected if it groundwater was used as drinking water source.

9.10.1. Future Receptors

Both cancer risk and non-cancer hazards exceeded their respective regulatory thresholds for future child and adult residents. The cancer risks are driven primarily by exposure to:

- Benzene (CR = 5×10^{-3} and 1×10^{-2}, respectively)
- Arsenic (CR = 1×10^{-3} and 2×10^{-3}, respectively)

- 1,4-Dichlorobenzene (CR = 2×10^{-4} and 4×10^{-4}, respectively)
- Benzo(b)fluoranthene (CR = 2×10^{-4} and 4×10^{-5}, respectively)

Non-cancer hazards for the future child and adult residents are driven primarily by:

- Benzene (HQ = 300 and 100, respectively)
- Chlorobenzene (HQ = 50 and 20, respectively)
- Arsenic (HQ = 30 and 10, respectively)
- Toluene ((HQ = 10 and 5, respectively)
- Chromium (HQ = 8 and 3, respectively)
- Iron (HQ = 6 and 2, respectively)
- 1,4-Dichlorobenzene (HQ = 5 and 2, respectively)

9.11. Hypothetical Future Indoor Air

Based on the discussion in Section 3.10.1 and the high vapor pressure of many of the compounds detected, a vapor intrusion evaluation will need to be conducted prior to the construction of occupied buildings at the site. Based on the vapor intrusion evaluation, preventative measures may be included in the design and construction of buildings at the Site to mitigate the risk of exposure to on-Site soil gas. Such measures may include the use of a vapor barrier or the installation of a venting system, such as at the groundwater treatment plant.

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TABLES

TABLE 1
HONEYWELL
WILLIS AVENUE CHLOROBENZENE SITE
HUMAN HEALTH RISK ASSESSMENT
SUMMARY OF SITE REMEDIAL INVESTIGATION ACTIVITIES

	Sample media	No. of samples	Year collected	Analytes	Sampling purpose
Willis Avenue Chlorobenzene Site Remedial Investigation					
Phase 1	Soil vapor	62	1991	VOCs, Hg	Evaluate the subsurface occurrence of VOCs and Hg
	Surface soil	3	1992	TPH, % Solids	Evaluate and characterize the nature and extent of Site-related constituents
	Subsurface soil	26	1992	VOCs, SVOCs, Metals, TPH, % Solids	
	Groundwater	63	1992, 1995	VOCs, SVOCs, Metals	
Phase 2	Surface soil	16	1997	VOCs, PCB/Pest, % Solids, Hg, PCDD/Fs, Wet Chem	Evaluate and characterize the nature and extent of Site-related constituents
	Subsurface soil	42	1997	VOCs, PCB/Pest, Hg, % Solids	
	Subsurface utilities bedding	6	1997	VOCs, PCB/Pest, Metals, Hg, % Solids	
	Groundwater	6	1997	VOCs, Metals	
	Sewer and intake water	4	1997	VOCs, SVOCs, PCB/Pest, Metals	
Phase 3	Surface soil	40	1998	VOCs, SVOCs, PCB/Pest, Metals, PCDD/Fs, TOC, % Solids	Evaluate and characterize the nature and extent of Site-related constituents
	Subsurface soil	39	1998	VOCs, SVOCs, PCB/Pest, Metals, PCDD/Fs, TOC, % Solids	
Phase 4 (BERA)	Surface soil	12	1999	VOCs, SVOCs, PCB/Pest, Metals, MeHg, TOC, % Solids	Evaluate and characterize the nature and extent of Site-related constituents
	Tributary 5A surface water	4	1999	VOCs, SVOCs, PCB/Pest, Metals, MeHg, Hardness, TSS, Total Alk	Investigate Tributary 5A for the presence of Site-related constituents
	Tributary 5A sediment	4	1999	VOCs, SVOCs, PCB/Pest, Metals, MeHg, PCDD/Fs, TOC, % Solids, Grain Size	

NOTES:
Surface soil = Soil from a depth interval of 0 to 2 ft
Subsurface soil = Soil from a depth interval greater than 2 ft
BERA = Baseline Ecological Risk Assessment
Hg = Mercury
MeHg = Methyl Mercury
PCB/Pest = Polychlorinated Biphenyls/Pesticides
PCDD/Fs = Polychlorinated Dibenzo-p-dioxins/Dibenzofura
TOC = Total Organic Carbon
TSS = Total Suspended Solids
Total Alk = Total Alkalinity
SVOCs = Semivolatile Organic Compounds
VOCs = Volatile Organic Compounds
% Solids = Percent Solids

TABLE 2
HONEYWELL
WILLIS AVENUE CHLOROBENZENE SITE
HUMAN HEALTH RISK ASSESSMENT
INVESTIGATION SAMPLE SUMMARY

	Sample media	No. of samples	Year collected	Exposure Area	No. of Samples	Notes
Willis Avenue Chlorobenzene Site Remedial Investigation						
Phase 1	Soil vapor	62	1991	General Plant Area	62	Includes Plant Area, FCB, and On-Site Ditches
	Surface soil	3	1992	PSA	3	
	Subsurface soil	26	1992	Plant Area	20	
				Lakeshore Area	1	
				PSA	5	
	Groundwater	63	1992, 1995	CHSA	15	
				PSA	8	
				Lakeshore Area	12	
				Plant Area	24	
				Southwest Off-Site/006	4	
Phase 2	Surface soil	16	1997	St. Fair/Northwest/004	4	
				Southwest Off-Site/006	4	
				On-Site Ditches	3	
				FCB	5	
	Subsurface soil	42	1997	Southwest Off-Site/006	2	
				General area	40	
	Subsurface utilities bedding	6	1997	St. Fair/Northwest/004	2	
				Lakeshore Area	1	
				Plant Area	2	
				FCB	1	
	Groundwater	6	1997	CHSA	5	
				Lakeshore Area	1	
	Sewer and intake water	4	1997	Lakeshore Area	1	
				Plant Area	3	Two are near the Plant Area.
Phase 3	Surface soil	40	1998	Plant Area	12	
				FCB	8	
				On-Site Ditches	2	
				Southwest Off-Site/006	7	
				St. Fair/Northwest/004	2	
				CHSA	6	
				PSA	3	
	Subsurface soil	39	1998	Plant Area	15	
				FCB	15	
				CHSA	6	
				PSA	3	
Phase 4	Surface soil	12	1999	Plant Area	1	
				FCB	1	
				On-Site Ditches	1	
				Southwest Off-Site/006	1	
				CHSA	1	
				PSA	1	
				Lakeshore Area	6	
	Tributary 5A surface water	4	1999	Tributary 5A	4	
	Tributary 5A sediment	4	1999	Tributary 5A	4	

NOTES: Surface soil = Soil from a depth interval of 0 - 2 ft
Subsurface soil = Soil from a depth interval greater than 2 ft
PSA = Petroleum Storage Area; CHSA = Chlorobenzene Hot-Spot Area; Southwest Off-Site/006 = Southwest Off-Site/Outfall 006 Exposure Area
St. Fair/004/NIMO = State Fair Boulevard/Northwest Off-Site/Outfall 004 Exposure Area; FCB = Former Chlorination Building

FIGURES

FIGURE L-1



This document was developed in color. Reproduction in B/W may not represent the data as intended.

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HONEYWELL
WILLIS AVENUE
CHLOROBENZENE SITE
HUMAN HEALTH
RISK ASSESSMENT
GEDDES, NEW YORK



QUADRANGLE LOCATION

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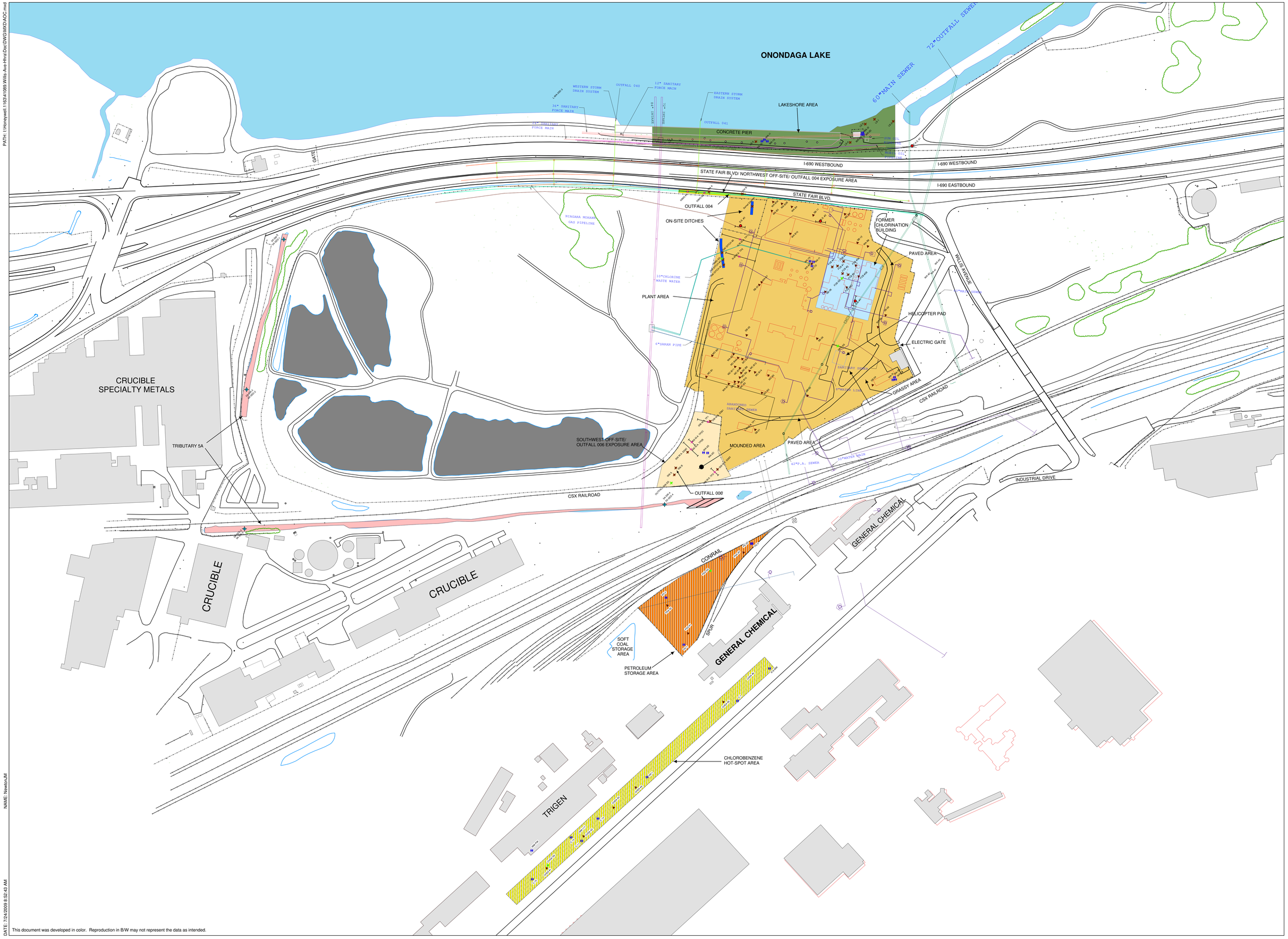
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JULY 2009

O'BRIEN & GERE

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NAME: Newton,IM

DATE: 7/24/2009 8:52:43 AM

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LEGEND

SAMPLE LOCATION
- MONITORING WELL
- SOIL BORING
- SURFACE SOIL
- SURFACE SOIL (BERA)
- SW/SEDIMENT
- TEST PIT SAMPLE
- EXCAVATION

EXPOSURE AREAS
- ON-SITE DITCHES
- FORMER CHLORINATION BUILDING
- PLANT AREA
- SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA
- STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA
- TRIBUTARY 5A
- LAKESHORE AREA
- PETROLEUM STORAGE AREA
- CHLOROBENZENE HOT-SPOT AREA

HONEYWELL
WILLIS AVENUE CHLOROBENZENE SITE
HUMAN HEALTH RISK ASSESSMENT
GEDDES, NEW YORK

0 125 250 500 750 1,000
Feet

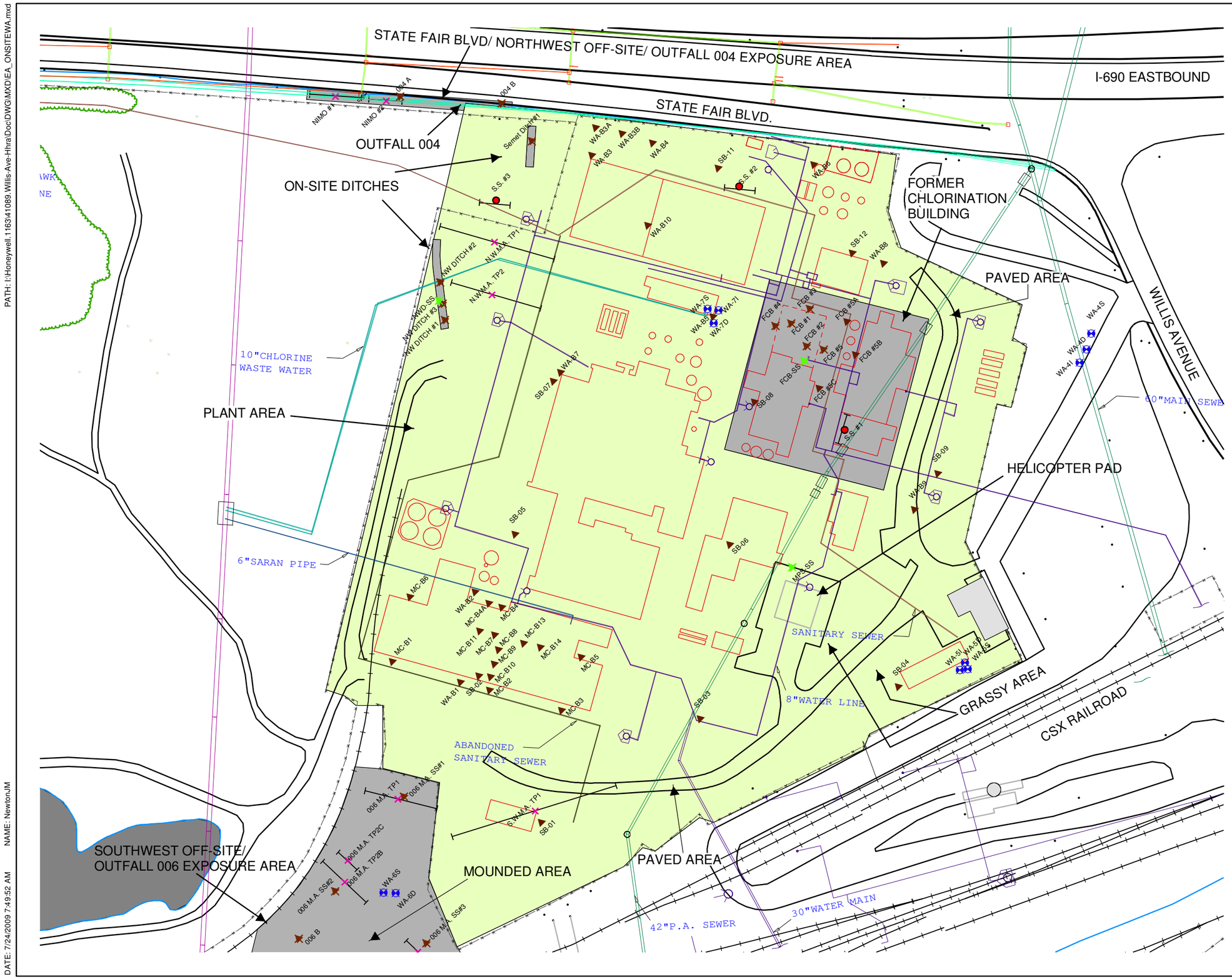
SITE AREAS OF CONCERN AND SAMPLE LOCATIONS

FIGURE L-2

FILE NO.
1163.41089
DATE
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O'BRIEN & GERE

FIGURE L-3



LEGEND

SAMPLE TYPE

- EXCAVATION
- MONITORING WELL
- SOIL BORING
- SURFACE SOIL
- SURFACE SOIL (BERA)
- SURFACE WATER/SEDIMENT
- TEST PIT SAMPLE
- PLANT AREA
- OTHER EXPOSURE AREAS

HONEYWELL
WILLIS AVENUE
CHLOROBENZENE SITE
HUMAN HEALTH
RISK ASSESSMENT
GEDDES, NEW YORK

PLANT AREA

0 125 250
Feet

JULY 2009
1163.41089

O'BRIEN & GERE

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DATE: 7/24/2009 7:49:52 AM

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NAME: NewtonJM

DATE: 7/23/2009 11:07:49 AM

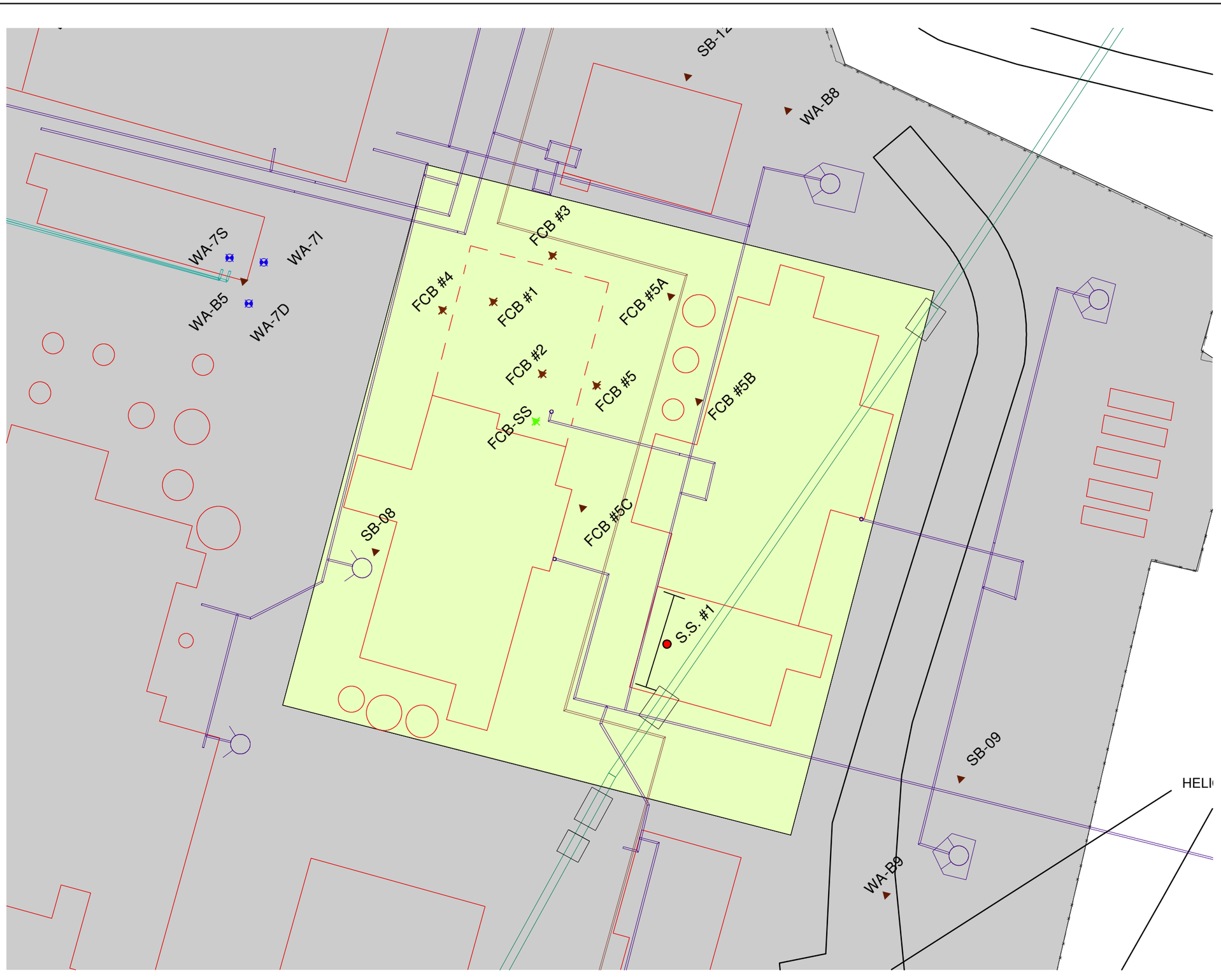


FIGURE L-4

LEGEND

SAMPLE LOCATION

- MONITORING WELL
- SOIL BORING
- SURFACE SOIL
- SURFACE SOIL (BERA)
- SW/SEDIMENT
- TEST PIT SAMPLE
- EXCAVATION
- FORMER CHLORINATION BUILDING
- OTHER EXPOSURE AREAS

HONEYWELL
WILLIS AVENUE
CHLOROBENZENE SITE
HUMAN HEALTH
RISK ASSESSMENT
GEDDES, NEW YORK

FORMER CHLORINATION BUILDING

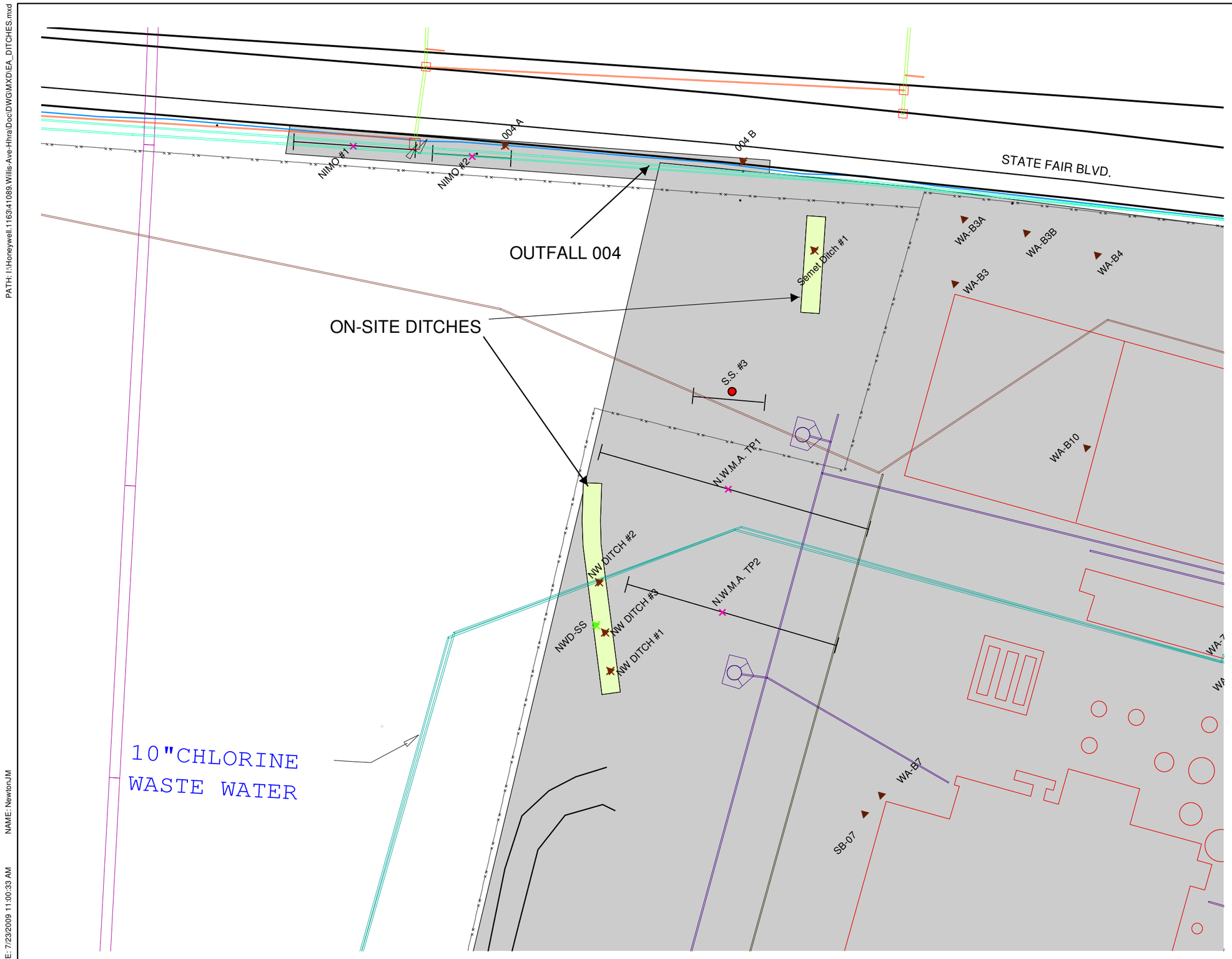
0 20 40 80

Feet

JULY 2009
1163.41089

O'BRIEN & GERE

FIGURE L-5



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LEGEND

SAMPLE LOCATION

- MONITORING WELL
- SOIL BORING
- SURFACE SOIL
- SURFACE SOIL (BERA)
- SW/SEDIMENT
- TEST PIT SAMPLE
- EXCAVATION
- ON-SITE DITCHES
- OTHER EXPOSURE AREAS

HONEYWELL
WILLIS AVENUE
CHLOROBENZENE SITE
HUMAN HEALTH
RISK ASSESSMENT
GEDDES, NEW YORK

ON-SITE DITCHES

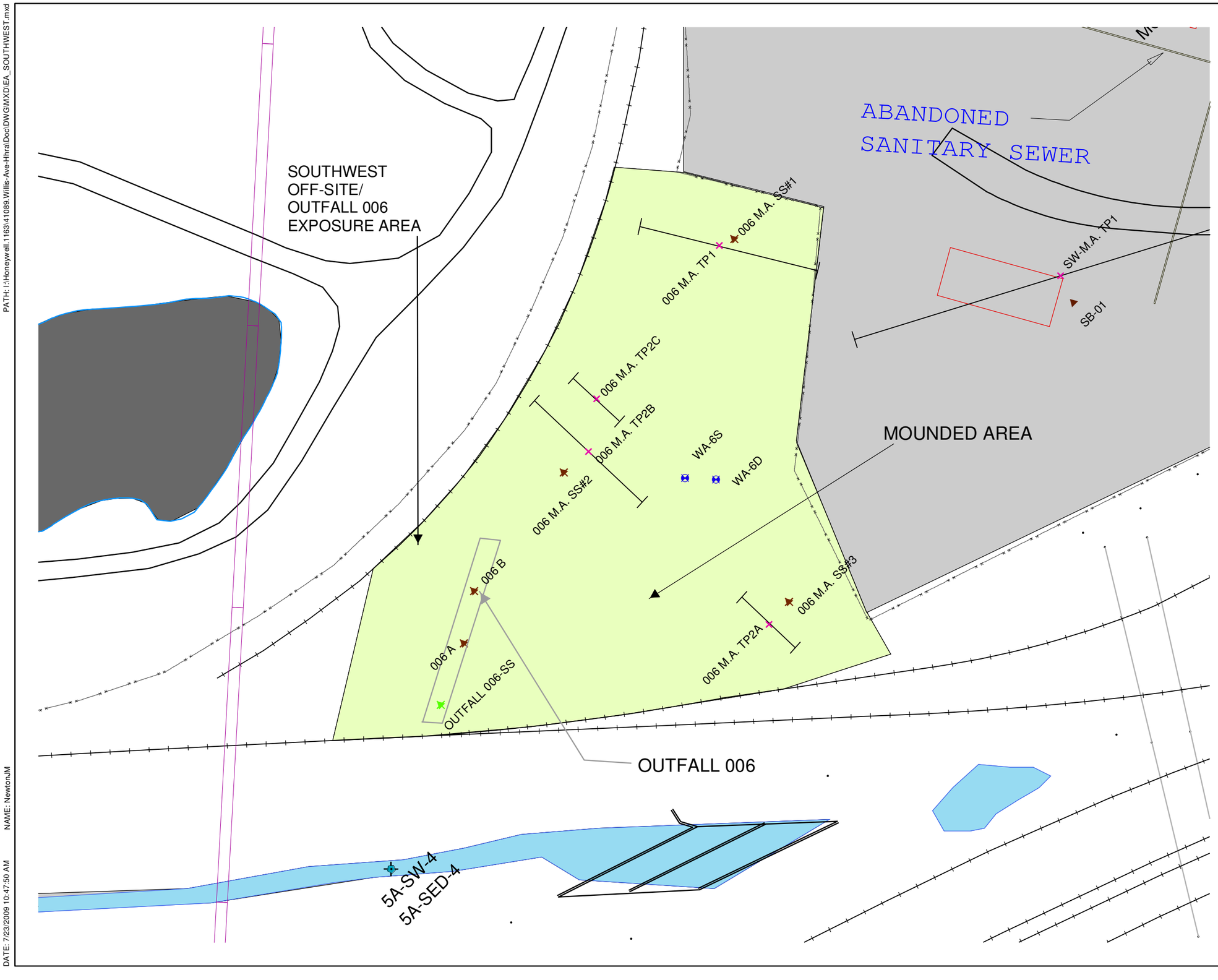
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Feet

JULY 2009
1163.41089

O'BRIEN & GERE

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FIGURE L-6



LEGEND

SAMPLE LOCATION

- MONITORING WELL
- SOIL BORING
- SURFACE SOIL
- SURFACE SOIL (BERA)
- SW/SEDIMENT
- TEST PIT SAMPLE
- EXCAVATION
- SOUTHWEST OFFSITE/OUTFALL 006 EXPOSURE AREA
- OTHER EXPOSURE AREAS

HONEYWELL
WILLIS AVENUE
CHLOROBENZENE SITE
HUMAN HEALTH
RISK ASSESSMENT
GEDDES, NEW YORK

SOUTHWEST OFFSITE/ OUTFALL 006 EXPOSURE AREA

0 25 50 100
Feet

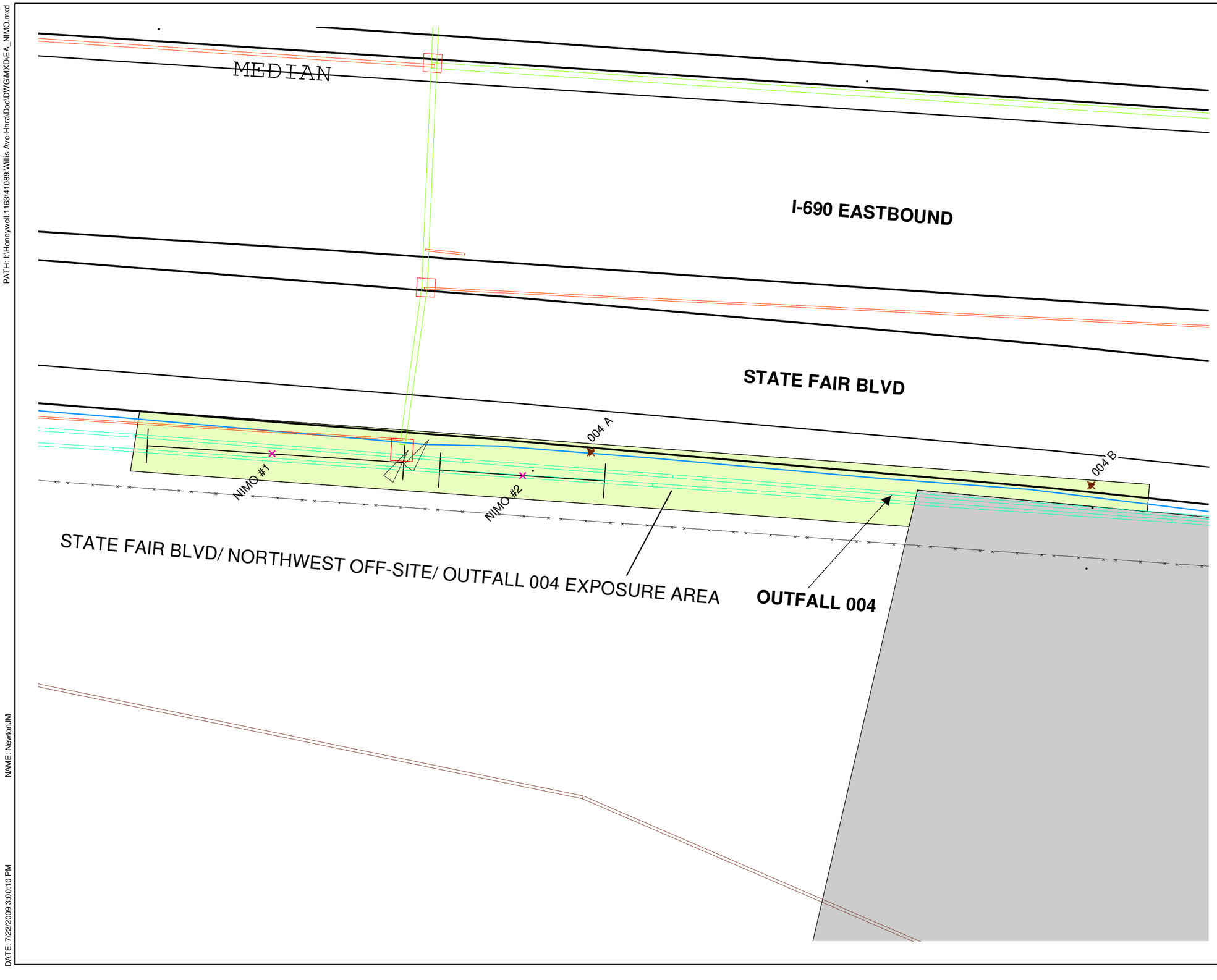
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FIGURE L-7



LEGEND

SAMPLE LOCATIONS

- MONITORING WELL
- SOIL BORING
- SURFACE SOIL
- SURFACE SOIL (BERA)
- SW/SEDIMENT
- TEST PIT SAMPLE
- EXCAVATION
- STATE FAIR BLVD/ NORTHWEST OFF-SITE/ OUTFALL 004 EXPOSURE AREA
- OTHER EXPOSURE AREAS

HONEYWELL
WILLIS AVENUE
CHLOROBENZENE SITE
HUMAN HEALTH
RISK ASSESSMENT
GEDDES, NEW YORK

STATE FAIR BLVD/ NORTHWEST OFF-SITE/ OUTFALL 004 EXPOSURE AREA

0 25 50
Feet

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FIGURE L-8

ONONDAGA LAKE

OUTFALL 040

12" SANITARY FORCE MAIN

84" INTAKE

72" INTAKE

EASTERN STORM DRAIN SYSTEM

LAKESHORE AREA

60"MAIN SEWER

OUTFALL 041

CONCRETE PIER

LS-1

LS-2

LS-3

LS-4

LS-5

LS-6

WA-1I

WA-1S

WA-1D

WA-2S,I,D

SUN OIL PIPELINE

P.A.S. #1

MOBIL OIL PIPELINE

6' CHAIN LINK FENCE

I-690 WESTBOUND

MEDIAN

STATE FAIR BLVD/ NORTHWEST OFF-SITE/ OUTFALL 004 EXPOSURE AREA

I-690 EASTBOUND

STATE FAIR BLVD.

004 A

004 B

NIMO #1

NIMO #2

OUTFALL 004

WA-B3A

WA-B4

WA-B3B

WA-B3

WA-B6

SB-11

S.S. #2

Semet Ditch #1

ON-SITE DITCHES

S.S. #3

WA-B10

FORMER CHLORINATION BUILDING

LEGEND

SAMPLE LOCATION

- MONITORING WELL
- SOIL BORING
- SURFACE SOIL
- SURFACE SOIL (BERA)
- SW/SEDIMENT
- TEST PIT SAMPLE
- EXCAVATION
- LAKESHORE AREA
- OTHER EXPOSURE AREAS

HONEYWELL
WILLIS AVENUE
CHLOROBENZENE SITE
HUMAN HEALTH
RISK ASSESSMENT
GEDDES, NEW YORK

LAKESHORE AREA

0 50 100 200
Feet

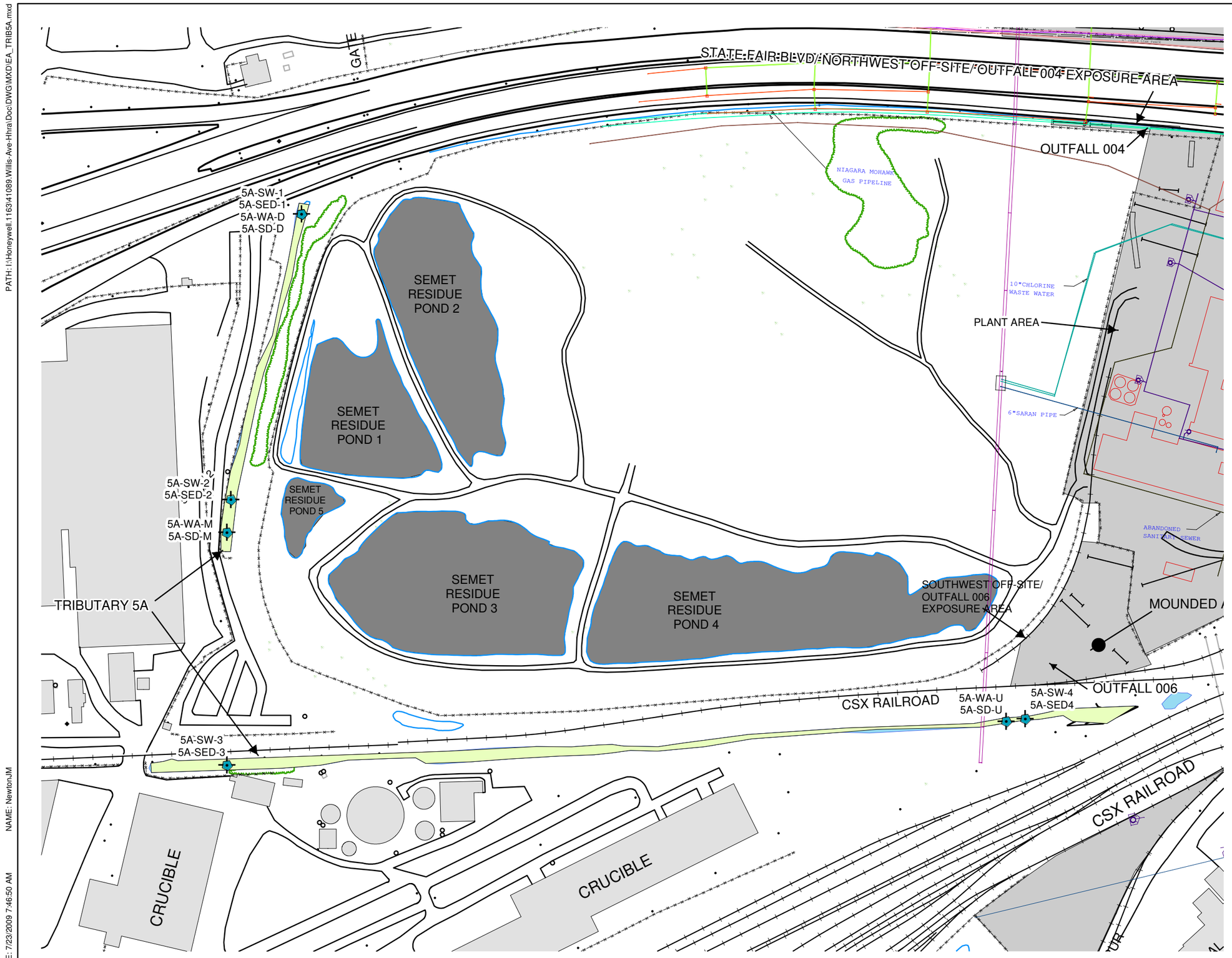
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FIGURE L-9



N

LEGEND

- SURFACE WATER/SEDIMENT SAMPLE LOCATION
- TRIBUTARY 5A
- OTHER EXPOSURE AREAS

HONEYWELL
WILLIS AVENUE
CHLOROBENZENE SITE
HUMAN HEALTH
RISK ASSESSMENT
GEDDES, NEW YORK

TRIBUTARY 5A

0 100 200 400
Feet

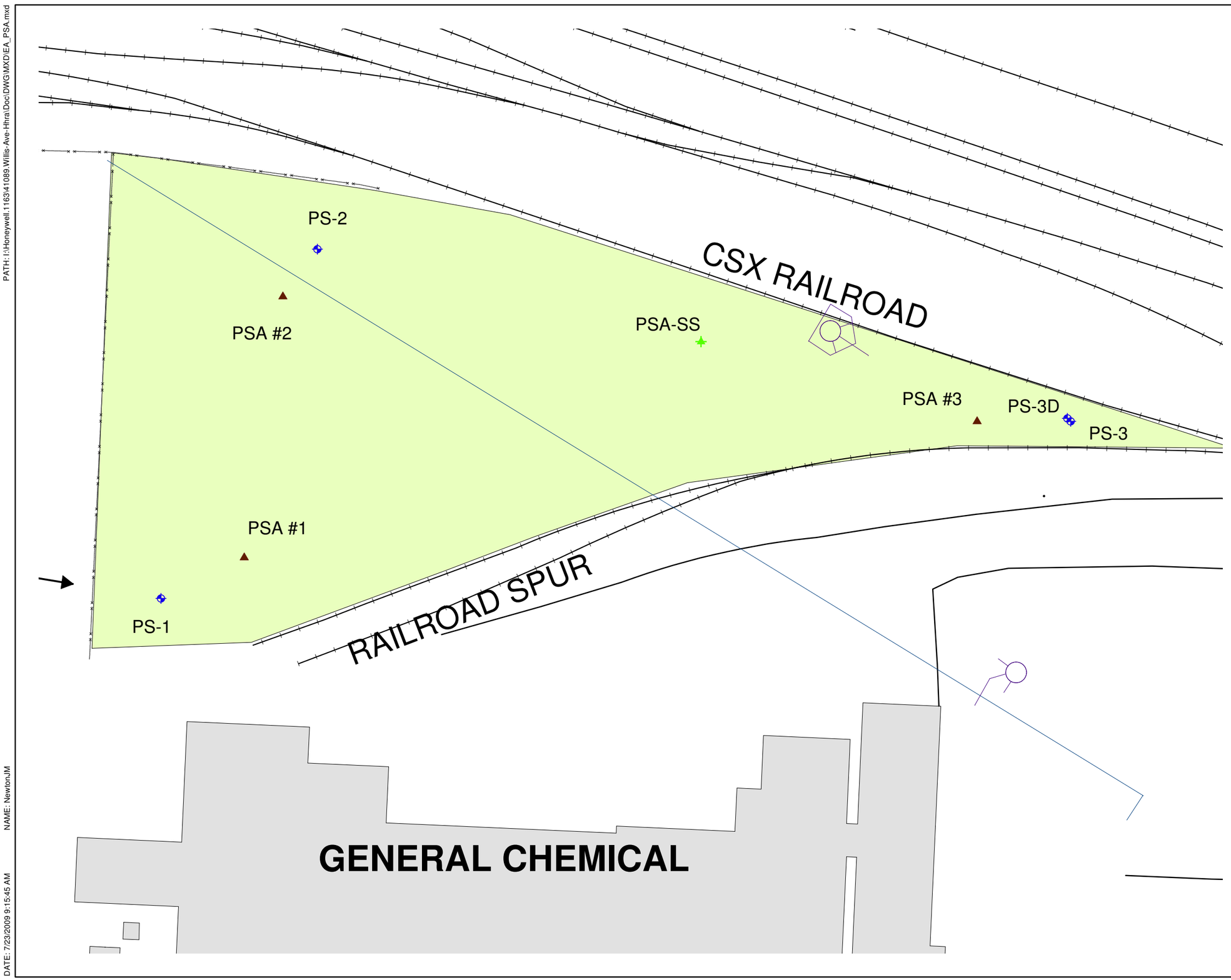
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FIGURE L-10



N

LEGEND

SAMPLE LOCATION

- MONITORING WELL
- SOIL BORING
- SURFACE SOIL
- SURFACE SOIL (BERA)
- SW/SEDIMENT
- TEST PIT SAMPLE
- EXCAVATION
- PETROLEUM STORAGE AREA

HONEYWELL
WILLIS AVENUE
CHLOROBENZENE SITE
HUMAN HEALTH
RISK ASSESSMENT
GEDDES, NEW YORK

PETROLEUM STORAGE AREA

0 25 50 100
Feet

JULY 2009
1163.41089

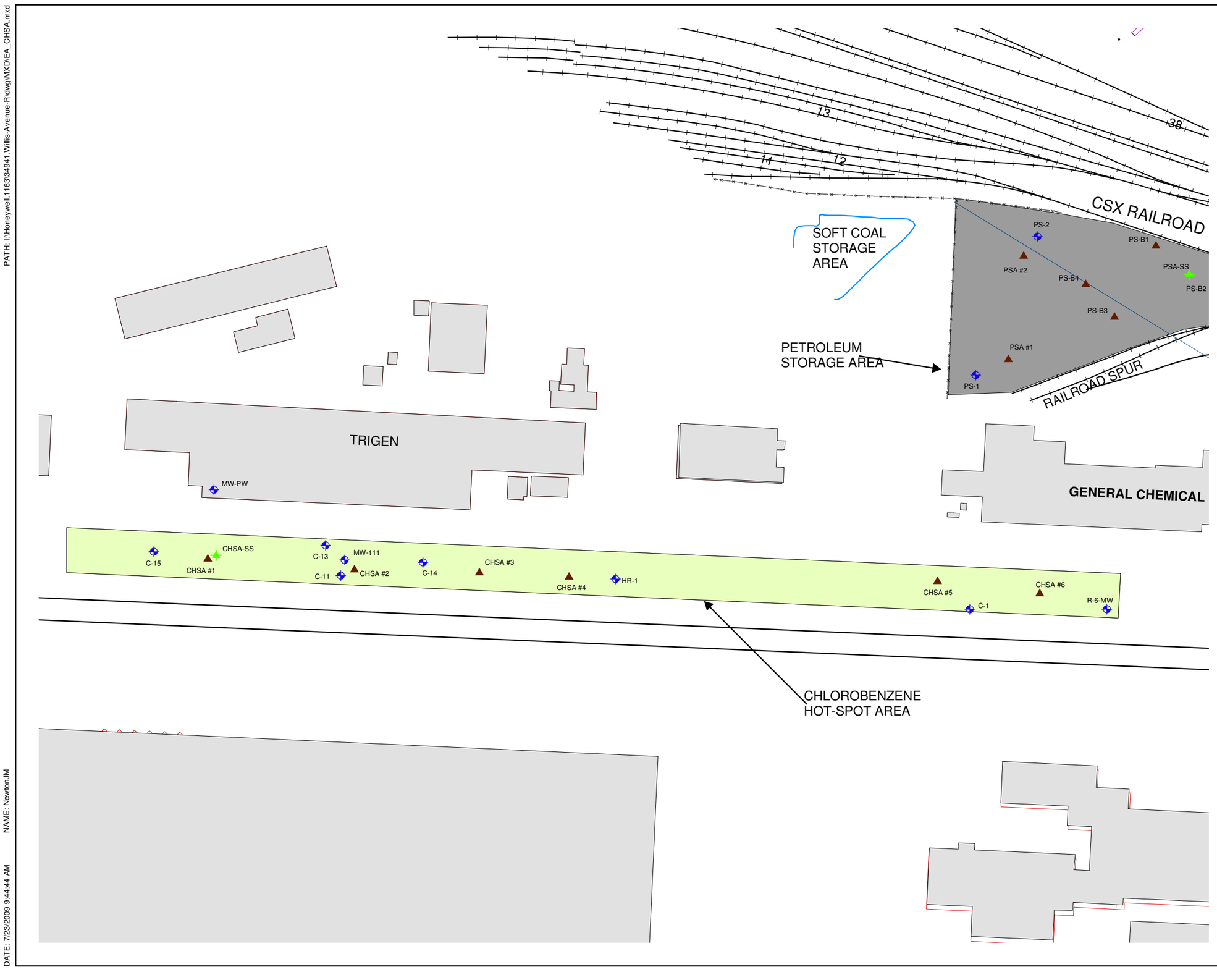
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NAME: NewtonJM

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FIGURE L-11



LEGEND

SAMPLE LOCATION

- MONITORING WELL
- SOIL BORING
- SURFACE SOIL
- SURFACE SOIL (BERA)
- SW/SEDIMENT
- TEST PIT SAMPLE
- EXCAVATION
- CHLOROBENZENE HOT-SPOT AREA
- OTHER EXPOSURE AREAS

HONEYWELL
WILLIS AVENUE
CHLOROBENZENE SITE
HUMAN HEALTH
RISK ASSESSMENT
GEDDES, NEW YORK

CHLOROBENZENE HOT-SPOT AREA

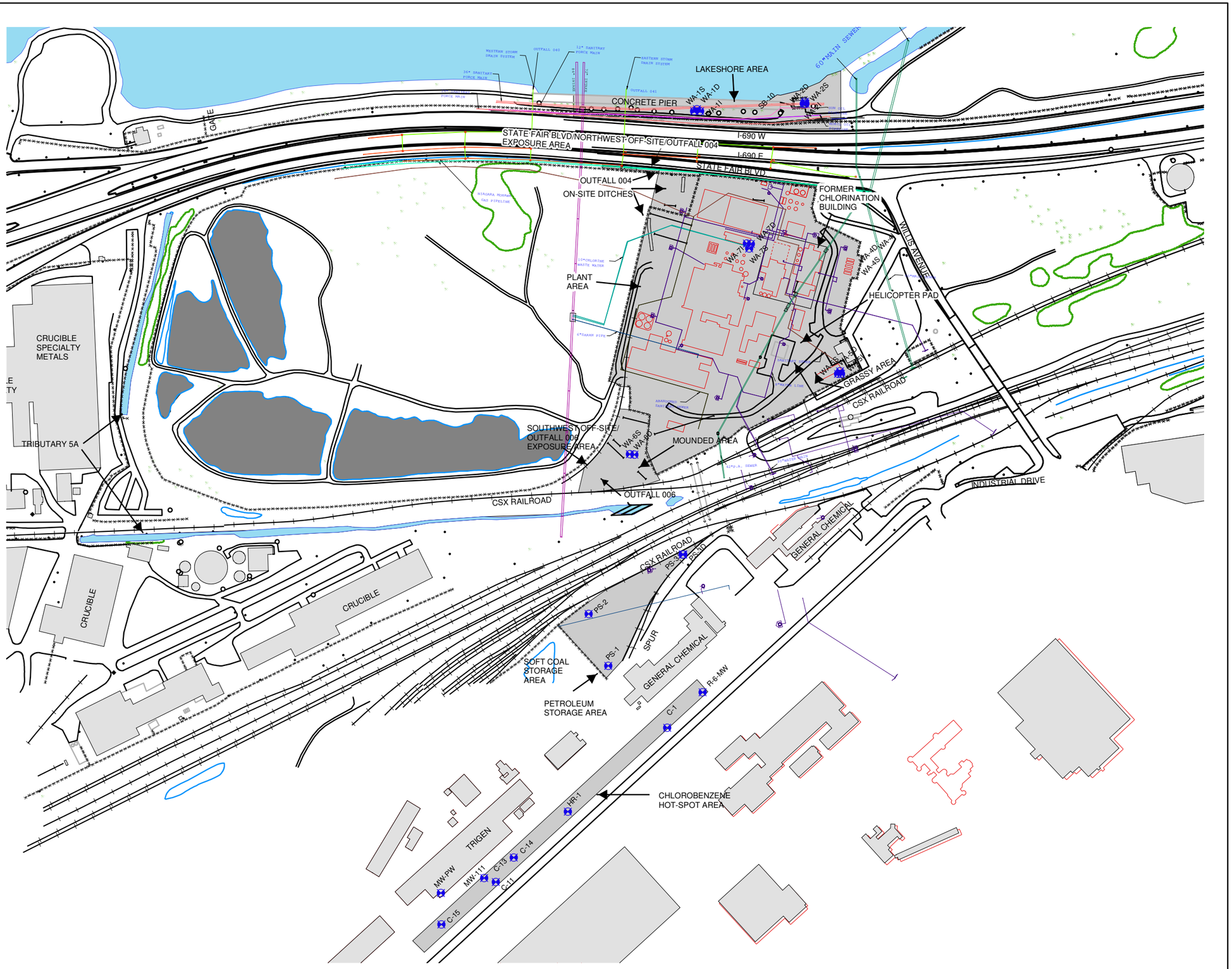
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Feet

JULY 2009
1163.41089

O'BRIEN & GERE

NAME: NewtonJM
DATE: 7/23/2009 9:44:44 AM

FIGURE L-12



LEGEND

- MONITORING WELL
- EXPOSURE AREAS

HONEYWELL
WILLIS AVENUE
CHLOROBENZENE SITE
HUMAN HEALTH
RISK ASSESSMENT
GEDDES, NEW YORK

HYPOTHETICAL POTABLE WATER SOURCE AREA

0 175 350 700
Feet

JULY 2009
1163.41089

O'BRIEN & GERE

PATH: I:\Honeywell\1163\41089.Willis-Ave-Hhral\Doc\DWG\MXD\EA_GW.mxd
NAME: NewtonJM
DATE: 7/24/2009 9:12:49 AM

APPENDICES

APPENDIX A

Sample Locations Summary Table

APPENDIX A
Sample Summary Table - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Sample Code	Sample Matrix	Location ID[a]	Date Sampled	Start Depth (ft)	End Depth (ft)	East	North	Used in HHRA?
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-C-1	5/4/1992	3.4	13.7	1116617.4	921086.4	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-C-1	9/24/1992	3.4	13.7	1116617.4	921086.4	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-C-11	3/30/1992	4.3	14.6	1116662.3	920245.9	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-C-11	5/4/1992	4.3	14.6	1116662.3	920245.9	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-C-11	9/24/1992	4.3	14.6	1116662.3	920245.9	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-C-13	10/27/1997	4	14.3	1116702.6	920225.8	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-C-14	10/27/1997	3.1	24	1116679.7	920355.8	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-C-15	10/28/1997	6.8	17.5	1116693.9	919996.4	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-C-15	5/4/1992	6.8	17.5	1116693.9	919996.4	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-C-15	5/5/1992	6.8	17.5	1116693.9	919996.4	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-C-15	9/25/1992	6.8	17.5	1116693.9	919996.4	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-HR-1	5/4/1992	5	15	1116657.7	920613.1	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-HR-1	9/24/1992	5	15	1116657.7	920613.1	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-MW-111	10/27/1997	7	17	1116682.9	920250.9	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-MW-111	3/8/1995	7	17	1116682.9	920250.9	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-MW-111	5/4/1992	7	17	1116682.9	920250.9	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-MW-111	9/25/1992	7	17	1116682.9	920250.9	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-MW-PW	10/2/1992	4	14	1116776.6	920076.5	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-MW-PW	5/4/1992	4	14	1116776.6	920076.5	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-R-6-MW	5/4/1992	6.2	16.2	1116617.8	921269.5	Y
Chlorobenzene Hot Spot Area	Ground Water	MW	WATER	WA-R-6-MW	9/24/1992	6.2	16.2	1116617.8	921269.5	Y
Chlorobenzene Hot Spot Area	Soil	SB	SOIL	WA-CHSA-1	9/30/1998	0	2	1116685.7	920068.7	Y
Chlorobenzene Hot Spot Area	Soil	SB	SOIL	WA-CHSA-1	9/30/1998	2	10	1116685.7	920068.7	Y
Chlorobenzene Hot Spot Area	Soil	SB	SOIL	WA-CHSA-2	9/30/1998	0	2	1116671.5	920264.2	Y
Chlorobenzene Hot Spot Area	Soil	SB	SOIL	WA-CHSA-2	9/30/1998	2	10	1116671.5	920264.2	Y
Chlorobenzene Hot Spot Area	Soil	SB	SOIL	WA-CHSA-3	9/30/1998	0	2	1116667.3	920431.3	Y
Chlorobenzene Hot Spot Area	Soil	SB	SOIL	WA-CHSA-3	9/30/1998	2	10	1116667.3	920431.3	Y
Chlorobenzene Hot Spot Area	Soil	SB	SOIL	WA-CHSA-4	9/30/1998	0	2	1116661.8	920551.3	Y
Chlorobenzene Hot Spot Area	Soil	SB	SOIL	WA-CHSA-4	9/30/1998	2	10	1116661.8	920551.3	Y
Chlorobenzene Hot Spot Area	Soil	SB	SOIL	WA-CHSA-5	9/30/1998	0	2	1116655.9	921043.4	Y
Chlorobenzene Hot Spot Area	Soil	SB	SOIL	WA-CHSA-5	9/30/1998	2	10	1116655.9	921043.4	Y
Chlorobenzene Hot Spot Area	Soil	SB	SOIL	WA-CHSA-6	9/30/1998	0	2	1116639.5	921180	Y
Chlorobenzene Hot Spot Area	Soil	SB	SOIL	WA-CHSA-6	9/30/1998	2	10	1116639.5	921180	Y
Chlorobenzene Hot Spot Area	Soil	SS	SOIL	WA-CHSA-SS	10/26/1999	0	0.5	1116690.8	920079.7	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB1	11/19/1997	0.7	1	1117570.7	922606.5	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB2	11/19/1997	0.6	0.75	1117535.3	922599.7	Y

APPENDIX A
Sample Summary Table - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Sample Code	Sample Matrix	Location ID[a]	Date Sampled	Start Depth (ft)	End Depth (ft)	East	North	Used in HHRA?
Former Chlorination Building	Soil	SB	SOIL	WA-FCB2	9/29/1998	1	2	1117535.3	922599.7	Y
Former Chlorination Building	Soil	SS	SOIL	WA-FCB2	9/29/1998	1	2	1117535.3	922599.7	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB2	9/29/1998	2	3	1117535.3	922599.7	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB2	9/29/1998	3	4	1117535.3	922599.7	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB2	9/29/1998	4	5	1117535.3	922599.7	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB3	11/19/1997	0.6	0.8	1117566.9	922637.3	Y
Former Chlorination Building	Soil	SS	SOIL	WA-FCB3	11/19/1997	0.6	0.8	1117566.9	922637.3	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB4	11/19/1997	0.7	1	1117583.3	922589.1	Y
Former Chlorination Building	Soil	SS	SOIL	WA-FCB4	11/19/1997	0.7	1	1117583.3	922589.1	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB5	11/19/1997	0.7	1	1117516.1	922612.2	Y
Former Chlorination Building	Soil	SS	SOIL	WA-FCB5	11/19/1997	0.7	1	1117516.1	922612.2	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB5	9/29/1998	1	2	1117516.1	922612.2	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB5	9/29/1998	2	3	1117516.1	922612.2	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB5	9/29/1998	3	4	1117516.1	922612.2	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB5	9/29/1998	4	5	1117516.1	922612.2	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5A	9/28/1998	0.5	1	1117520.4	922659.9	Y
Former Chlorination Building	Soil	SS	SOIL	WA-FCB-5A	9/28/1998	0.5	1	1117520.4	922659.9	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5A	9/28/1998	1	2	1117520.4	922659.9	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5A	9/28/1998	2	3	1117520.4	922659.9	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5A	9/28/1998	3	4	1117520.4	922659.9	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5A	9/28/1998	4	5	1117520.4	922659.9	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5B	9/28/1998	0.5	1	1117481.5	922637.4	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5B	9/28/1998	1	2	1117481.5	922637.4	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5B	9/28/1998	2	3	1117481.5	922637.4	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5B	9/28/1998	3	4	1117481.5	922637.4	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5B	9/28/1998	4	5	1117481.5	922637.4	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5C	9/29/1998	0.5	1	1117484.2	922572.1	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5C	9/29/1998	1	2	1117484.2	922572.1	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5C	9/29/1998	2	3	1117484.2	922572.1	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5C	9/29/1998	3	4	1117484.2	922572.1	Y
Former Chlorination Building	Soil	SB	SOIL	WA-FCB-5C	9/29/1998	4	5	1117484.2	922572.1	Y
Former Chlorination Building	Soil	SS	SOIL	WA-FCB-SS	10/26/1999	0	0.5	1117523.4	922583.9	Y
Former Chlorination Building	Soil	SB	SOIL	WA-SB-8	9/28/1998	0	2	1117532.3	922498.6	Y
Former Chlorination Building	Soil	SB	SOIL	WA-SB-8	9/28/1998	0.5	1	1117532.3	922498.6	Y
Former Chlorination Building	Soil	SB	SOIL	WA-SB-8	9/28/1998	1	2	1117532.3	922498.6	Y
Former Chlorination Building	Soil	SB	SOIL	WA-SB-8	9/28/1998	2	3	1117532.3	922498.6	Y
Former Chlorination Building	Soil	SB	SOIL	WA-SB-8	9/28/1998	3	4	1117532.3	922498.6	Y
Former Chlorination Building	Soil	SB	SOIL	WA-SB-8	9/28/1998	4	5	1117532.3	922498.6	Y
Former Chlorination Building	Soil	TP	SOIL	WA-SS#1	9/15/1997	6	6	1117418.9	922557.1	Y

APPENDIX A
Sample Summary Table - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Sample Code	Sample Matrix	Location ID[a]	Date Sampled	Start Depth (ft)	End Depth (ft)	East	North	Used in HHRA?
Lakeshore Area	Ground Water	MW	WATER	WA-WA-01D	10/15/1992	96.6	106.6	1118138.5	922746.5	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-01D	2/27/2007	96.6	106.6	1118138.5	922746.5	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-01D	4/7/1992	96.6	106.6	1118138.5	922746.5	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-01I	10/15/1992	28.5	38.5	1118135.6	922757.7	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-01I	4/7/1992	28.5	38.5	1118135.6	922757.7	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-01S	10/15/1992	6.5	16.5	1118122.9	922761.9	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-01S	10/28/1997	6.5	16.5	1118122.9	922761.9	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-01S	2/27/2007	6.5	16.5	1118122.9	922761.9	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-01S	4/7/1992	6.5	16.5	1118122.9	922761.9	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-02D	10/14/1992	73.5	83.5	1117869.2	923053.7	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-02D	2/27/2007	73.5	83.5	1117869.2	923053.7	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-02D	4/6/1992	73.5	83.5	1117869.2	923053.7	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-02I	10/14/1992	30	40	1117876.4	923056.8	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-02I	4/6/1992	30	40	1117876.4	923056.8	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-02S	10/14/1992	8	18	1117873.6	923048.9	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-02S	10/28/1997	8	18	1117873.6	923048.9	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-02S	2/27/2007	8	18	1117873.6	923048.9	Y
Lakeshore Area	Ground Water	MW	WATER	WA-WA-02S	4/6/1992	8	18	1117873.6	923048.9	Y
Lakeshore Area	Soil	SS	SOIL	WA-LS-1	4/5/1999	0	0.5	1117882.5	923128.7	Y
Lakeshore Area	Soil	SS	SOIL	WA-LS-2	4/5/1999	0	0.5	1117823.5	923176	Y
Lakeshore Area	Soil	SS	SOIL	WA-LS-3	4/5/1999	0	0.5	1117895.1	923088.7	Y
Lakeshore Area	Soil	SS	SOIL	WA-LS-4	4/5/1999	0	0.5	1117885.9	922993.7	Y
Lakeshore Area	Soil	SS	SOIL	WA-LS-5	4/5/1999	0	0.5	1118156.4	922728	Y
Lakeshore Area	Soil	SS	SOIL	WA-LS-6	4/5/1999	0	0.5	1118411.8	922476.5	Y
Lakeshore Area	Soil	TP	SOIL	WA-P.A.S.#1	9/17/1997	11	11	1117698.2	923159.9	N
Lakeshore Area	Soil	SB	SOIL	WA-WA-02D	2/7/1992	8	10	1117869.2	923053.7	Y
NW-Outfall-004	Soil	SS	SOIL	WA-004A	10/1/1998	0	0.5	1118147.3	922452.7	Y
NW-Outfall-004	Soil	SS	SOIL	WA-004A	9/15/1997	0	0.5	1118147.3	922452.7	Y
NW-Outfall-004	Soil	SS	SOIL	WA-004A	10/1/1998	0.5	1	1118147.3	922452.7	Y
NW-Outfall-004	Soil	SS	SOIL	WA-004A	10/1/1998	1	1.5	1118147.3	922452.7	Y
NW-Outfall-004	Soil	SS	SOIL	WA-004A	9/15/1997	1	1.5	1118147.3	922452.7	Y
NW-Outfall-004	Soil	SS	SOIL	WA-004B	9/15/1997	0	0.5	1118046.4	922541	Y
NW-Outfall-004	Soil	SS	SOIL	WA-004B	9/15/1997	1	1.5	1118046.4	922541	Y
NW-Outfall-004	Soil	TP	SOIL	WA-SS#3	9/15/1997	9	9	1117958.6	922445.5	Y
On-Site Ditches	Soil	TP	SOIL	WA-NIMO1	9/18/1997	3	3	1118206.8	922392.2	Y
On-Site Ditches	Soil	TP	SOIL	WA-NIMO1	9/18/1997	3	3	1118206.8	922392.2	Y
On-Site Ditches	Soil	TP	SOIL	WA-NIMO2	9/18/1997	3	3	1118155.3	922435.5	Y
On-Site Ditches	Soil	SS	SOIL	WA-NW DITCH #1	11/18/1997	0.5	1	1117936.8	922316.8	Y
On-Site Ditches	Soil	SS	SOIL	WA-NW DITCH #2	11/18/1997	0.5	1	1117897.2	922286.4	Y

APPENDIX A
Sample Summary Table - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Sample Code	Sample Matrix	Location ID[a]	Date Sampled	Start Depth (ft)	End Depth (ft)	East	North	Used in HHRA?
On-Site Ditches	Soil	SS	SOIL	WA-NW DITCH #3	10/1/1998	0	0.5	1117914.4	922299.4	Y
On-Site Ditches	Soil	SS	SOIL	WA-NW DITCH #3	10/1/1998	0.5	1	1117914.4	922299.4	Y
On-Site Ditches	Soil	SS	SOIL	WA-NW DITCH #3	10/1/1998	1	1.5	1117914.4	922299.4	Y
On-Site Ditches	Soil	SS	SOIL	WA-NW DITCH-S*	10/26/1999	0	0.5	1117921	922298.7	Y
On-Site Ditches	Soil	SS	SOIL	WA-SEMETDITCH	11/18/1997	0.5	1	1117982.9	922533.9	Y
Petroleum Storage Area	Ground Water	MW	WATER	WA-PS-1	10/2/1992	4	14	1116929.6	921094	Y
Petroleum Storage Area	Ground Water	MW	WATER	WA-PS-1	4/8/1992	4	14	1116929.6	921094	Y
Petroleum Storage Area	Ground Water	MW	WATER	WA-PS-2	10/2/1992	3.5	13.5	1117113.7	921176.7	Y
Petroleum Storage Area	Ground Water	MW	WATER	WA-PS-2	4/8/1992	3.5	13.5	1117113.7	921176.7	Y
Petroleum Storage Area	Ground Water	MW	WATER	WA-PS-3D	10/2/1992	31	41	1117023	921574.8	Y
Petroleum Storage Area	Ground Water	MW	WATER	WA-PS-3D	4/8/1992	31	41	1117023	921574.8	Y
Petroleum Storage Area	Ground Water	MW	WATER	WA-PS-3S	10/2/1992	4	14	1117024.4	921573.1	Y
Petroleum Storage Area	Ground Water	MW	WATER	WA-PS-3S	4/8/1992	4	14	1117024.4	921573.1	Y
Petroleum Storage Area	Soil	SB	SOIL	WA-PSA-1	9/29/1998	0	2	1116951.7	921138	Y
Petroleum Storage Area	Soil	SB	SOIL	WA-PSA-1	9/29/1998	2	10	1116951.7	921138	Y
Petroleum Storage Area	Soil	SB	SOIL	WA-PSA-2	9/29/1998	0	2	1117089.3	921158.5	Y
Petroleum Storage Area	Soil	SB	SOIL	WA-PSA-2	9/29/1998	2	10	1117089.3	921158.5	Y
Petroleum Storage Area	Soil	SB	SOIL	WA-PSA-3	9/30/1998	0	2	1117023.5	921525.4	Y
Petroleum Storage Area	Soil	SB	SOIL	WA-PSA-3	9/30/1998	2	10	1117023.5	921525.4	Y
Petroleum Storage Area	Soil	SB	SOIL	WA-PSA-3	9/30/1998	6	8	1117023.5	921525.4	Y
Petroleum Storage Area	Soil	SS	SOIL	WA-PSA-SS	10/26/1999	0	0.5	1117065.4	921379.5	Y
Plant Area	Ground Water	MW	WATER	WA-WA-04D	10/9/1992	60	70	1117269.1	922858.1	Y
Plant Area	Ground Water	MW	WATER	WA-WA-04D	3/30/1992	60	70	1117269.1	922858.1	Y
Plant Area	Ground Water	MW	WATER	WA-WA-04I	10/9/1992	40	50	1117263.1	922839	Y
Plant Area	Ground Water	MW	WATER	WA-WA-04I	3/30/1992	40	50	1117263.1	922839	Y
Plant Area	Ground Water	MW	WATER	WA-WA-04S	10/9/1992	23	33	1117279.3	922877.4	Y
Plant Area	Ground Water	MW	WATER	WA-WA-04S	3/30/1992	23	33	1117279.3	922877.4	Y
Plant Area	Ground Water	MW	WATER	WA-WA-05D	10/12/1992	40	50	1117081.4	922448.9	Y
Plant Area	Ground Water	MW	WATER	WA-WA-05D	3/30/1992	40	50	1117081.4	922448.9	Y
Plant Area	Ground Water	MW	WATER	WA-WA-05I	10/9/1992	26	36	1117088.1	922440.7	Y
Plant Area	Ground Water	MW	WATER	WA-WA-05I	3/30/1992	26	36	1117088.1	922440.7	Y
Plant Area	Ground Water	MW	WATER	WA-WA-05S	10/9/1992	12	22	1117090.6	922452.5	Y
Plant Area	Ground Water	MW	WATER	WA-WA-05S	3/30/1992	12	22	1117090.6	922452.5	Y
Plant Area	Ground Water	MW	WATER	WA-WA-07D	10/12/1992	70	80	1117641.4	922534.2	Y
Plant Area	Ground Water	MW	WATER	WA-WA-07D	3/30/1992	70	80	1117641.4	922534.2	Y
Plant Area	Ground Water	MW	WATER	WA-WA-07I	10/12/1992	30	40	1117649	922550.5	Y
Plant Area	Ground Water	MW	WATER	WA-WA-07I	3/30/1992	30	40	1117649	922550.5	Y
Plant Area	Ground Water	MW	WATER	WA-WA-07S	10/12/1992	10	20	1117660.3	922541.9	Y
Plant Area	Ground Water	MW	WATER	WA-WA-07S	3/30/1992	10	20	1117660.3	922541.9	Y

APPENDIX A
Sample Summary Table - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Sample Code	Sample Matrix	Location ID[a]	Date Sampled	Start Depth (ft)	End Depth (ft)	East	North	Used in HHRA?
Plant Area	Soil	SB	SOIL	WA-MC-B1	9/29/1997	4	6	1117628.4	921918.7	Y
Plant Area	Soil	SB	SOIL	WA-MC-B1	9/29/1997	30	32	1117628.4	921918.7	N
Plant Area	Soil	SB	SOIL	WA-MC-B1	9/29/1997	62	64	1117628.4	921918.7	N
Plant Area	Soil	SB	SOIL	WA-MC-B10	10/8/1997	16	18	1117522.2	921996	Y
Plant Area	Soil	SB	SOIL	WA-MC-B10	10/8/1997	34	36	1117522.2	921996	N
Plant Area	Soil	SB	SOIL	WA-MC-B11	10/9/1997	16	18	1117575.2	922029.1	Y
Plant Area	Soil	SB	SOIL	WA-MC-B11	10/9/1997	34	36	1117575.2	922029.1	N
Plant Area	Soil	SB	SOIL	WA-MC-B13	10/10/1997	34	36	1117522.7	922058.5	N
Plant Area	Soil	SB	SOIL	WA-MC-B14	10/10/1997	16	18	1117503.4	922070.4	Y
Plant Area	Soil	SB	SOIL	WA-MC-B14	10/10/1997	34	36	1117503.4	922070.4	N
Plant Area	Soil	SB	SOIL	WA-MC-B2	9/30/1997	6	8	1117510.9	921983.1	Y
Plant Area	Soil	SB	SOIL	WA-MC-B2	9/30/1997	28	30	1117510.9	921983.1	N
Plant Area	Soil	SB	SOIL	WA-MC-B2	9/30/1997	58.5	60.5	1117510.9	921983.1	N
Plant Area	Soil	SB	SOIL	WA-MC-B3	9/30/1997	3	4	1117424.9	922031.3	Y
Plant Area	Soil	SB	SOIL	WA-MC-B3	9/30/1997	24	26	1117424.9	922031.3	N
Plant Area	Soil	SB	SOIL	WA-MC-B3	10/1/1997	34	36	1117424.9	922031.3	N
Plant Area	Soil	SB	SOIL	WA-MC-B4A	10/1/1997	28	29	1117592.4	922063	N
Plant Area	Soil	SB	SOIL	WA-MC-B4A	10/1/1997	31	32	1117592.4	922063	N
Plant Area	Soil	SB	SOIL	WA-MC-B4A	10/1/1997	37	38	1117592.4	922063	N
Plant Area	Soil	SB	SOIL	WA-MC-B4A	10/2/1997	66	68	1117592.4	922063	N
Plant Area	Soil	SB	SOIL	WA-MC-B5	10/2/1997	18	20	1117456.2	922099.4	Y
Plant Area	Soil	SB	SOIL	WA-MC-B5	10/2/1997	34	36	1117456.2	922099.4	N
Plant Area	Soil	SB	SOIL	WA-MC-B5	10/3/1997	62	64	1117456.2	922099.4	N
Plant Area	Soil	SB	SOIL	WA-MC-B6	10/3/1997	6	8	1117672	921995.7	Y
Plant Area	Soil	SB	SOIL	WA-MC-B6	10/6/1997	34	37.3	1117672	921995.7	N
Plant Area	Soil	SB	SOIL	WA-MC-B6	10/6/1997	70	71	1117672	921995.7	N
Plant Area	Soil	SB	SOIL	WA-MC-B7	10/7/1997	36	38	1117557.6	922038.8	N
Plant Area	Soil	SB	SOIL	WA-MC-B8	10/7/1997	16	18	1117540.4	922029.2	Y
Plant Area	Soil	SB	SOIL	WA-MC-B8	10/7/1997	36	37	1117540.4	922029.2	N
Plant Area	Soil	SB	SOIL	WA-MC-B9	10/8/1997	16	18	1117531.2	922012	Y
Plant Area	Soil	SB	SOIL	WA-MC-B9	10/8/1997	36	37	1117531.2	922012	N
Plant Area	Soil	SS	SOIL	WA-MPS-SS	10/26/1999	0	0.5	1117342.9	922380	Y
Plant Area	Soil	TP	SOIL	WA-NWMATP#1	9/16/1997	3	5	1117921.7	922405.1	Y
Plant Area	Soil	TP	SOIL	WA-NWMATP#2	9/16/1997	5	7	1117875.2	922353.9	Y
Plant Area	Soil	SB	SOIL	WA-SB-1	9/29/1998	0	2	1117339.3	921907.7	Y
Plant Area	Soil	SB	SOIL	WA-SB-1	9/29/1998	0.5	1	1117339.3	921907.7	Y
Plant Area	Soil	SB	SOIL	WA-SB-10	9/28/1998	0	2	1117870.9	922482.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-10	9/28/1998	0.5	1	1117870.9	922482.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-10	9/28/1998	1	2	1117870.9	922482.3	Y

APPENDIX A
Sample Summary Table - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Sample Code	Sample Matrix	Location ID[a]	Date Sampled	Start Depth (ft)	End Depth (ft)	East	North	Used in HHRA?
Plant Area	Soil	SB	SOIL	WA-SB-10	9/28/1998	2	3	1117870.9	922482.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-10	9/28/1998	3	4	1117870.9	922482.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-10	9/28/1998	4	5	1117870.9	922482.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-11	9/28/1998	0	2	1117783.7	922682.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-11	9/28/1998	0.5	1	1117783.7	922682.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-11	9/28/1998	1	2	1117783.7	922682.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-11	9/28/1998	2	3	1117783.7	922682.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-11	9/28/1998	3	4	1117783.7	922682.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-11	9/28/1998	4	5	1117783.7	922682.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-12	9/28/1998	0	2	1117579.7	922729.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-12	9/28/1998	0.5	1	1117579.7	922729.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-12	9/28/1998	1	2	1117579.7	922729.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-12	9/28/1998	2	3	1117579.7	922729.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-12	9/28/1998	3	4	1117579.7	922729.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-12	9/28/1998	4	5	1117579.7	922729.3	Y
Plant Area	Soil	SB	SOIL	WA-SB-2	9/29/1998	0	2	1117533.8	921985.9	Y
Plant Area	Soil	SB	SOIL	WA-SB-2	9/29/1998	0.5	1	1117533.8	921985.9	Y
Plant Area	Soil	SB	SOIL	WA-SB-3	9/29/1998	0	2	1117287.6	922152.8	Y
Plant Area	Soil	SB	SOIL	WA-SB-3	9/29/1998	0.5	1	1117287.6	922152.8	Y
Plant Area	Soil	SB	SOIL	WA-SB-4	9/29/1998	0	2	1117132.2	922368.1	Y
Plant Area	Soil	SB	SOIL	WA-SB-4	9/29/1998	0.5	1	1117132.2	922368.1	Y
Plant Area	Soil	SB	SOIL	WA-SB-5	9/29/1998	0	2	1117632.2	922152	Y
Plant Area	Soil	SB	SOIL	WA-SB-5	9/29/1998	0.5	1	1117632.2	922152	Y
Plant Area	Soil	SB	SOIL	WA-SB-6	9/29/1998	0	2	1117422	922342.4	Y
Plant Area	Soil	SB	SOIL	WA-SB-6	9/29/1998	0.5	1	1117422	922342.4	Y
Plant Area	Soil	SB	SOIL	WA-SB-7	9/29/1998	0	2	1117739.5	922330.6	Y
Plant Area	Soil	SB	SOIL	WA-SB-7	9/29/1998	0.5	1	1117739.5	922330.6	Y
Plant Area	Soil	SB	SOIL	WA-SB-9	9/28/1998	0	2	1117294	922603.7	Y
Plant Area	Soil	SB	SOIL	WA-SB-9	9/28/1998	0.5	1	1117294	922603.7	Y
Plant Area	Soil	SB	SOIL	WA-SB-9	9/28/1998	1	2	1117294	922603.7	Y
Plant Area	Soil	SB	SOIL	WA-SB-9	9/28/1998	2	3	1117294	922603.7	Y
Plant Area	Soil	SB	SOIL	WA-SB-9	9/28/1998	3	4	1117294	922603.7	Y
Plant Area	Soil	SB	SOIL	WA-SB-9	9/28/1998	4	5	1117294	922603.7	Y
Plant Area	Soil	TP	SOIL	WA-SS#2	9/15/1997	9	9	1117744.6	922685.3	Y
Plant Area	Soil	TP	SOIL	WA-SWMATP1	9/22/1997	2	6	1117353.7	921913.2	Y
Plant Area	Soil	SB	SOIL	WA-WA-B1	1/27/1992	14	16	1117545	921962.9	Y
Plant Area	Soil	SB	SOIL	WA-WA-B1	1/27/1992	22	24	1117545	921962.9	N
Plant Area	Soil	SB	SOIL	WA-WA-B10	1/20/1992	20	22	1117796.4	922563.9	N
Plant Area	Soil	SB	SOIL	WA-WA-B10	1/20/1992	27	29	1117796.4	922563.9	N

APPENDIX A
Sample Summary Table - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Sample Code	Sample Matrix	Location ID[a]	Date Sampled	Start Depth (ft)	End Depth (ft)	East	North	Used in HHRA?
Plant Area	Soil	SB	SOIL	WA-WA-B10	1/20/1992	28	30	1117796.4	922563.9	N
Plant Area	Soil	SB	SOIL	WA-WA-B2	1/22/1992	4	6	1117615.7	922060.7	Y
Plant Area	Soil	SB	SOIL	WA-WA-B2	1/22/1992	24	26	1117615.7	922060.7	N
Plant Area	Soil	SB	SOIL	WA-WA-B3	1/21/1992	14	16	1117913.7	922576.5	Y
Plant Area	Soil	SB	SOIL	WA-WA-B3	1/21/1992	24	26	1117913.7	922576.5	N
Plant Area	Soil	SB	SOIL	WA-WA-B3	1/21/1992	26	28	1117913.7	922576.5	N
Plant Area	Soil	SB	SOIL	WA-WA-B3A	10/13/1997	4	6	1117935.8	922606	Y
Plant Area	Soil	SB	SOIL	WA-WA-B3A	10/13/1997	26	28	1117935.8	922606	N
Plant Area	Soil	SB	SOIL	WA-WA-B3A	10/14/1997	98	99	1117935.8	922606	N
Plant Area	Soil	SB	SOIL	WA-WA-B3B	10/14/1997	16	18	1117905.6	922625.2	Y
Plant Area	Soil	SB	SOIL	WA-WA-B3B	10/14/1997	24	26	1117905.6	922625.2	N
Plant Area	Soil	SB	SOIL	WA-WA-B3B	10/15/1997	100	102	1117905.6	922625.2	N
Plant Area	Soil	SB	SOIL	WA-WA-B4	1/17/1992	24	26	1117868.5	922644.7	N
Plant Area	Soil	SB	SOIL	WA-WA-B4	1/17/1992	30	32	1117868.5	922644.7	N
Plant Area	Soil	SB	SOIL	WA-WA-B5	1/30/1992	10	12	1117650	922539.3	Y
Plant Area	Soil	SB	SOIL	WA-WA-B5	1/30/1992	18	20	1117650	922539.3	Y
Plant Area	Soil	SB	SOIL	WA-WA-B6	1/15/1992	14	16	1117697.3	922775.3	Y
Plant Area	Soil	SB	SOIL	WA-WA-B6	1/15/1992	22	24	1117697.3	922775.3	N
Plant Area	Soil	SB	SOIL	WA-WA-B7	1/22/1992	16	18	1117740.4	922344.9	Y
Plant Area	Soil	SB	SOIL	WA-WA-B7	1/22/1992	26	28	1117740.4	922344.9	N
Plant Area	Soil	SB	SOIL	WA-WA-B7	1/22/1992	32	34	1117740.4	922344.9	N
Plant Area	Soil	SB	SOIL	WA-WA-B8	1/14/1992	6	8	1117540.5	922748.8	Y
Plant Area	Soil	SB	SOIL	WA-WA-B8	1/14/1992	24	26	1117540.5	922748.8	N
Plant Area	Soil	SB	SOIL	WA-WA-B9	1/13/1992	20	22	1117281.8	922548	N
Plant Area	Soil	SB	SOIL	WA-WA-B9	1/13/1992	22	24	1117281.8	922548	N
Site-Wide Potable Water	Ground Water	MW	WATER	WA-C-1	5/4/1992	3.4	13.7	1116617.4	921086.4	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-C-1	9/24/1992	3.4	13.7	1116617.4	921086.4	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-C-11	3/30/1992	4.3	14.6	1116662.3	920245.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-C-11	5/4/1992	4.3	14.6	1116662.3	920245.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-C-11	9/24/1992	4.3	14.6	1116662.3	920245.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-C-13	10/27/1997	4	14.3	1116702.6	920225.8	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-C-14	10/27/1997	3.1	24	1116679.7	920355.8	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-C-15	10/28/1997	6.8	17.5	1116693.9	919996.4	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-C-15	5/4/1992	6.8	17.5	1116693.9	919996.4	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-C-15	5/5/1992	6.8	17.5	1116693.9	919996.4	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-C-15	9/25/1992	6.8	17.5	1116693.9	919996.4	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-HR-1	5/4/1992	5	15	1116657.7	920613.1	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-HR-1	9/24/1992	5	15	1116657.7	920613.1	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-MW-111	10/27/1997	7	17	1116682.9	920250.9	Y

APPENDIX A
Sample Summary Table - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Sample Code	Sample Matrix	Location ID[a]	Date Sampled	Start Depth (ft)	End Depth (ft)	East	North	Used in HHRA?
Site-Wide Potable Water	Ground Water	MW	WATER	WA-MW-111	3/8/1995	7	17	1116682.9	920250.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-MW-111	5/4/1992	7	17	1116682.9	920250.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-MW-111	9/25/1992	7	17	1116682.9	920250.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-MW-PW	10/2/1992	4	14	1116776.6	920076.5	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-MW-PW	5/4/1992	4	14	1116776.6	920076.5	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-PS-1	10/2/1992	4	14	1116929.6	921094	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-PS-1	4/8/1992	4	14	1116929.6	921094	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-PS-2	10/2/1992	3.5	13.5	1117113.7	921176.7	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-PS-2	4/8/1992	3.5	13.5	1117113.7	921176.7	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-PS-3D	10/2/1992	31	41	1117023	921574.8	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-PS-3D	4/8/1992	31	41	1117023	921574.8	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-PS-3S	10/2/1992	4	14	1117024.4	921573.1	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-PS-3S	4/8/1992	4	14	1117024.4	921573.1	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-R-6-MW	5/4/1992	6.2	16.2	1116617.8	921269.5	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-R-6-MW	9/24/1992	6.2	16.2	1116617.8	921269.5	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-01D	10/15/1992	96.6	106.6	1118138.5	922746.5	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-01D	2/27/2007	96.6	106.6	1118138.5	922746.5	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-01D	4/7/1992	96.6	106.6	1118138.5	922746.5	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-01I	10/15/1992	28.5	38.5	1118135.6	922757.7	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-01I	4/7/1992	28.5	38.5	1118135.6	922757.7	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-01S	10/15/1992	6.5	16.5	1118122.9	922761.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-01S	10/28/1997	6.5	16.5	1118122.9	922761.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-01S	2/27/2007	6.5	16.5	1118122.9	922761.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-01S	4/7/1992	6.5	16.5	1118122.9	922761.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-02D	10/14/1992	73.5	83.5	1117869.2	923053.7	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-02D	2/27/2007	73.5	83.5	1117869.2	923053.7	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-02D	4/6/1992	73.5	83.5	1117869.2	923053.7	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-02I	10/14/1992	30	40	1117876.4	923056.8	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-02I	4/6/1992	30	40	1117876.4	923056.8	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-02S	10/14/1992	8	18	1117873.6	923048.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-02S	10/28/1997	8	18	1117873.6	923048.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-02S	2/27/2007	8	18	1117873.6	923048.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-02S	4/6/1992	8	18	1117873.6	923048.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-04D	10/9/1992	60	70	1117269.1	922858.1	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-04D	3/30/1992	60	70	1117269.1	922858.1	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-04I	10/9/1992	40	50	1117263.1	922839	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-04I	3/30/1992	40	50	1117263.1	922839	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-04S	10/9/1992	23	33	1117279.3	922877.4	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-04S	3/30/1992	23	33	1117279.3	922877.4	Y

APPENDIX A
Sample Summary Table - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Sample Code	Sample Matrix	Location ID[a]	Date Sampled	Start Depth (ft)	End Depth (ft)	East	North	Used in HHRA?
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-05D	10/12/1992	40	50	1117081.4	922448.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-05D	3/30/1992	40	50	1117081.4	922448.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-05I	10/9/1992	26	36	1117088.1	922440.7	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-05I	3/30/1992	26	36	1117088.1	922440.7	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-05S	10/9/1992	12	22	1117090.6	922452.5	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-05S	3/30/1992	12	22	1117090.6	922452.5	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-06D	10/13/1992	36	46	1117406.8	921706.3	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-06D	3/3/1992	36	46	1117406.8	921706.3	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-06D	3/30/1992	36	46	1117406.8	921706.3	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-06S	10/13/1992	16.5	26.5	1117419.2	921695.4	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-06S	3/3/1992	16.5	26.5	1117419.2	921695.4	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-06S	3/30/1992	16.5	26.5	1117419.2	921695.4	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-07D	10/12/1992	70	80	1117641.4	922534.2	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-07D	3/30/1992	70	80	1117641.4	922534.2	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-07I	10/12/1992	30	40	1117649	922550.5	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-07I	3/30/1992	30	40	1117649	922550.5	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-07S	10/12/1992	10	20	1117660.3	922541.9	Y
Site-Wide Potable Water	Ground Water	MW	WATER	WA-WA-07S	3/30/1992	10	20	1117660.3	922541.9	Y
SW-Outfall -006	Ground Water	MW	WATER	WA-WA-06D	10/13/1992	36	46	1117406.8	921706.3	Y
SW-Outfall -006	Ground Water	MW	WATER	WA-WA-06D	3/3/1992	36	46	1117406.8	921706.3	Y
SW-Outfall -006	Ground Water	MW	WATER	WA-WA-06D	3/30/1992	36	46	1117406.8	921706.3	Y
SW-Outfall -006	Ground Water	MW	WATER	WA-WA-06S	10/13/1992	16.5	26.5	1117419.2	921695.4	Y
SW-Outfall -006	Ground Water	MW	WATER	WA-WA-06S	3/3/1992	16.5	26.5	1117419.2	921695.4	Y
SW-Outfall -006	Ground Water	MW	WATER	WA-WA-06S	3/30/1992	16.5	26.5	1117419.2	921695.4	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006A	10/1/1998	0	0.5	1117441.2	921549.4	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006A	9/15/1997	0	0.5	1117441.2	921549.4	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006A	10/1/1998	0.5	1	1117441.2	921549.4	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006A	10/1/1998	1	1.5	1117441.2	921549.4	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006A	9/15/1997	1	1.5	1117441.2	921549.4	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006B	10/1/1998	0	0.5	1117456.9	921573	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006B	9/15/1997	0	0.5	1117456.9	921573	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006B	10/1/1998	0.5	1	1117456.9	921573	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006B	10/1/1998	1	1.5	1117456.9	921573	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006B	9/15/1997	1	1.5	1117456.9	921573	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006MASS#1	10/23/1998	0	2	1117491.3	921803.7	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006MASS#2	10/23/1998	0	2	1117467.7	921651.6	Y
SW-Outfall -006	Soil	SS	SOIL	WA-006MASS#3	10/23/1998	0	2	1117334	921687.8	Y
SW-Outfall -006	Soil	TP	SOIL	WA-006MATP1	9/16/1997	2	8	1117493.8	921795.7	Y
SW-Outfall -006	Soil	TP	SOIL	WA-006MATP2A	9/17/1997	4	6	1117332.4	921671.8	Y

APPENDIX A
Sample Summary Table - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Sample Code	Sample Matrix	Location ID[a]	Date Sampled	Start Depth (ft)	End Depth (ft)	East	North	Used in HHRA?
SW-Outfall -006	Soil	SS	SOIL	WA-OUT006-SS	10/26/1999	0	0.5	1117426.6	921517.5	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SD-D	1/17/1991	0	0.5	1119218.5	921108.2	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SD-D	6/25/1991	0	0.5	1119218.5	921108.2	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SD-M	1/17/1991	0	0.5	1118855	920521.4	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SD-M	6/25/1991	0	0.5	1118855	920521.4	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SD-U	1/17/1991	0	0.5	1117407.3	921404.6	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SD-U	6/25/1991	0	0.5	1117407.3	921404.6	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SED-1	10/27/1999	0	0.5	1119218.5	921108.2	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SED-2	10/26/1999	0	0.5	1118897.7	920576.2	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SED-2	10/27/1999	0	0.5	1118897.7	920576.2	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SED-3	10/26/1999	0	0.5	1118507.8	920174.2	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SED-3	10/27/1999	0	0.5	1118507.8	920174.2	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SED-4	10/26/1999	0	0.5	1117383	921437.1	Y
Tributary 5A	Sediment	SED	SOIL	WA-5A-SED-4	10/27/1999	0	0.5	1117383	921437.1	Y
Tributary 5A	Surface Water	SW	WATER	WA-5A-SW-1	10/25/1999	0	0	1119218.5	921108.2	Y
Tributary 5A	Surface Water	SW	WATER	WA-5A-SW-2	10/25/1999	0	0	1118897.7	920576.2	Y
Tributary 5A	Surface Water	SW	WATER	WA-5A-SW-3	10/25/1999	0	0	1118507.8	920174.2	Y
Tributary 5A	Surface Water	SW	WATER	WA-5A-SW-4	10/25/1999	0	0	1117383	921437.1	Y
Tributary 5A	Surface Water	SW	WATER	WA-5A-WA-D	1/17/1991	0	0	1119218.5	921108.2	Y
Tributary 5A	Surface Water	SW	WATER	WA-5A-WA-D	6/25/1991	0	0	1119218.5	921108.2	Y
Tributary 5A	Surface Water	SW	WATER	WA-5A-WA-M	1/17/1991	0	0	1118855	920521.4	Y
Tributary 5A	Surface Water	SW	WATER	WA-5A-WA-M	6/25/1991	0	0	1118855	920521.4	Y
Tributary 5A	Surface Water	SW	WATER	WA-5A-WA-U	1/17/1991	0	0	1117407.3	921404.6	Y
Tributary 5A	Surface Water	SW	WATER	WA-5A-WA-U	6/25/1991	0	0	1117407.3	921404.6	Y

Notes:
* = Samples identified as QC samples from this location (samples with Sample Code WA9351)
a = Samples with Sample Codes ending in "N" (indicating NYSDEC sample) were not utilized in the HHRA.

APPENDIX B

Willis Avenue Dataset

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	71-55-6	1,1,1-TRICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	79-34-5	1,1,2,2-TETRACHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	79-00-5	1,1,2-TRICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	75-34-3	1,1-DICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	75-35-4	1,1-DICHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	120-82-1	1,2,4-TRICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	95-50-1	1,2-DICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	107-06-2	1,2-DICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	540-59-0	1,2-DICHLOROETHENE (TOTAL)	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	78-87-5	1,2-DICHLOROPROPANE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	541-73-1	1,3-DICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	106-46-7	1,4-DICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	95-95-4	2,4,5-TRICHLOROPHENOL	5/4/92	50	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	88-06-2	2,4,6-TRICHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	120-83-2	2,4-DICHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	105-67-9	2,4-DIMETHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	51-28-5	2,4-DINITROPHENOL	5/4/92	50	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	121-14-2	2,4-DINITROTOLUENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	606-20-2	2,6-DINITROTOLUENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	78-93-3	2-BUTANONE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	91-58-7	2-CHLORONAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	95-57-8	2-CHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	591-78-6	2-HEXANONE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	91-57-6	2-METHYLNAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	95-48-7	2-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	88-74-4	2-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	88-75-5	2-NITROPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	99-09-2	3-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	534-52-1	4,6-DINITRO-2-METHYLPHENOL	5/4/92	50	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	101-55-3	4-BROMOPHENYL PHENYL ETHER	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	59-50-7	4-CHLORO-3-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	106-47-8	4-CHLOROANILINE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	108-10-1	4-METHYL-2-PENTANONE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	106-44-5	4-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	100-01-6	4-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	100-02-7	4-NITROPHENOL	5/4/92	50	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	83-32-9	ACENAPHTHENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	208-96-8	ACENAPHTHYLENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	67-64-1	ACETONE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7429-90-5	ALUMINUM	5/4/92	1.25	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7429-90-5	ALUMINUM	5/4/92	98	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	120-12-7	ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-36-0	ANTIMONY	5/4/92	0.0342	mg/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-36-0	ANTIMONY	5/4/92	0.014	mg/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-38-2	ARSENIC	5/4/92	0.0169	mg/L	Y	Y	J	1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-38-2	ARSENIC	5/4/92	0.0174	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-39-3	BARIUM	5/4/92	0.591	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-39-3	BARIUM	5/4/92	0.0156	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	71-43-2	BENZENE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	56-55-3	BENZO(A)ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	50-32-8	BENZO(A)PYRENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	205-99-2	BENZO(B)FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	191-24-2	BENZO(G,H,I)PERYLENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	207-08-9	BENZO(K)FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	65-85-0	BENZOIC ACID	5/4/92	50	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	100-51-6	BENZYL ALCOHOL	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-41-7	BERYLLIUM	5/4/92	0.001	mg/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-41-7	BERYLLIUM	5/4/92	0.0044	mg/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	111-91-1	BIS(2-CHLOROETHOXY)METHANE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	111-44-4	BIS(2-CHLOROETHYL)ETHER	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	5/4/92	74	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	75-27-4	BROMODICHLOROMETHANE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	75-25-2	BROMOFORM	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	74-83-9	BROMOMETHANE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	85-68-7	BUTYLBENZYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-43-9	CADMIUM	5/4/92	0.002	mg/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-43-9	CADMIUM	5/4/92	0.002	mg/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-70-2	CALCIUM	5/4/92	380	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-70-2	CALCIUM	5/4/92	9.79	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	75-15-0	CARBON DISULFIDE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	56-23-5	CARBON TETRACHLORIDE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	108-90-7	CHLOROBENZENE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	124-48-1	CHLORODIBROMOMETHANE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	75-00-3	CHLOROETHANE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	67-66-3	CHLOROFORM	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	74-87-3	CHLOROMETHANE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-47-3	CHROMIUM	5/4/92	0.0231	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-47-3	CHROMIUM	5/4/92	2.11	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	218-01-9	CHRYSENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	10061-01-5	CIS-1,3-DICHLOROPROPENE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-48-4	COBALT	5/4/92	0.0897	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-48-4	COBALT	5/4/92	0.003	mg/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-50-8	COPPER	5/4/92	0.0213	mg/L	Y	Y	J	1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-50-8	COPPER	5/4/92	0.505	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	57-12-5	CYANIDE	5/4/92	0.01	mg/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	53-70-3	DIBENZO(A,H)ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	132-64-9	DIBENZOFURAN	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	84-66-2	DIETHYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	131-11-3	DIMETHYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	84-74-2	DI-N-BUTYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	117-84-0	DI-N-OCTYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	100-41-4	ETHYLBENZENE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	206-44-0	FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	86-73-7	FLUORENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	118-74-1	HEXACHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	87-68-3	HEXACHLOROBUTADIENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	77-47-4	HEXACHLOROCYCLOPENTADIENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	67-72-1	HEXACHLOROETHANE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	193-39-5	INDENO(1,2,3-CD)PYRENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7439-89-6	IRON	5/4/92	146	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7439-89-6	IRON	5/4/92	1.47	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	78-59-1	ISOPHORONE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7439-92-1	LEAD	5/4/92	0.001	mg/L	Y	N	UJ	1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7439-92-1	LEAD	5/4/92	0.148	mg/L	Y	Y	J	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7439-95-4	MAGNESIUM	5/4/92	160	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7439-95-4	MAGNESIUM	5/4/92	3.54	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7439-96-5	MANGANESE	5/4/92	0.0486	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7439-96-5	MANGANESE	5/4/92	3.45	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7439-97-6	MERCURY	5/4/92	0.003	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7439-97-6	MERCURY	5/4/92	0.00033	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	75-09-2	METHYLENE CHLORIDE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	91-20-3	NAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-02-0	NICKEL	5/4/92	0.162	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-02-0	NICKEL	5/4/92	0.996	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	98-95-3	NITROBENZENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	86-30-6	N-NITROSODIPHENYLAMINE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	87-86-5	PENTACHLOROPHENOL	5/4/92	50	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	85-01-8	PHENANTHRENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	108-95-2	PHENOL	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-09-7	POTASSIUM	5/4/92	23.5	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-09-7	POTASSIUM	5/4/92	5.8	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	129-00-0	PYRENE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7782-49-2	SELENIUM	5/4/92	0.002	mg/L	Y	N	UJ	1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7782-49-2	SELENIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-22-4	SILVER	5/4/92	0.003	mg/L	Y	N	UJ	1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-22-4	SILVER	5/4/92	0.003	mg/L	Y	N	UJ	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-23-5	SODIUM	5/4/92	484	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-23-5	SODIUM	5/4/92	484	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	100-42-5	STYRENE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	127-18-4	TETRACHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-28-0	THALLIUM	5/4/92	0.002	mg/L	Y	N	UJ	1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-28-0	THALLIUM	5/4/92	0.002	mg/L	Y	N	UJ	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	108-88-3	TOLUENE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	10061-02-6	TRANS-1,3-DICHLOROPROPENE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	79-01-6	TRICHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-62-2	VANADIUM	5/4/92	0.2	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-62-2	VANADIUM	5/4/92	0.009	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	75-01-4	VINYL CHLORIDE	5/4/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	1330-20-7	XYLENES, TOTAL	5/4/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044F	7440-66-6	ZINC	5/4/92	0.0065	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9044	7440-66-6	ZINC	5/4/92	0.404	mg/L	Y	Y		1116617.4	921086.4	3.4	13.7	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	71-55-6	1,1,1-TRICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	79-00-5	1,1,2-TRICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	75-34-3	1,1-DICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	75-35-4	1,1-DICHLOROETHENE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	95-50-1	1,2-DICHLOROBENZENE	9/24/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	107-06-2	1,2-DICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	78-87-5	1,2-DICHLOROPROPANE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	541-73-1	1,3-DICHLOROBENZENE	9/24/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	106-46-7	1,4-DICHLOROBENZENE	9/24/92	5	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	110-75-8	2-CHLOROETHYL VINYL ETHER	9/24/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	71-43-2	BENZENE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	75-27-4	BROMODICHLOROMETHANE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	75-25-2	BROMOFORM	9/24/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	74-83-9	BROMOMETHANE	9/24/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	56-23-5	CARBON TETRACHLORIDE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	108-90-7	CHLOROBENZENE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	124-48-1	CHLORODIBROMOMETHANE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	75-00-3	CHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	67-66-3	CHLOROFORM	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	74-87-3	CHLOROMETHANE	9/24/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	75-71-8	DICHLORODIFLUOROMETHANE	9/24/92	10	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	100-41-4	ETHYLBENZENE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	75-09-2	METHYLENE CHLORIDE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	127-18-4	TETRACHLOROETHENE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	108-88-3	TOLUENE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	79-01-6	TRICHLOROETHENE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	75-69-4	TRICHLOROFLUOROMETHANE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	75-01-4	VINYL CHLORIDE	9/24/92	1	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-1	WA9045	1330-20-7	XYLENES, TOTAL	9/24/92	3	ug/L	Y	N	U	1116617.4	921086.4	3.4	13.7	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	120-82-1	1,2,4-TRICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	95-50-1	1,2-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	541-73-1	1,3-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	106-46-7	1,4-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	95-95-4	2,4,5-TRICHLOROPHENOL	3/30/92	50	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	88-06-2	2,4,6-TRICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	120-83-2	2,4-DICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	105-67-9	2,4-DIMETHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	51-28-5	2,4-DINITROPHENOL	3/30/92	50	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	121-14-2	2,4-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	606-20-2	2,6-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	91-58-7	2-CHLORONAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	95-57-8	2-CHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	91-57-6	2-METHYLNAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	95-48-7	2-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	88-74-4	2-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	88-75-5	2-NITROPHENOL	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	99-09-2	3-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3/30/92	50	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	101-55-3	4-BROMOPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	59-50-7	4-CHLORO-3-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	106-47-8	4-CHLOROANILINE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	106-44-5	4-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	100-01-6	4-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	100-02-7	4-NITROPHENOL	3/30/92	50	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	83-32-9	ACENAPHTHENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	208-96-8	ACENAPHTHYLENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	120-12-7	ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	56-55-3	BENZO(A)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	50-32-8	BENZO(A)PYRENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	205-99-2	BENZO(B)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	191-24-2	BENZO(G,H,I)PERYLENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	207-08-9	BENZO(K)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	65-85-0	BENZOIC ACID	3/30/92	50	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	100-51-6	BENZYL ALCOHOL	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	111-91-1	BIS(2-CHLOROETHOXY)METHANE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	111-44-4	BIS(2-CHLOROETHYL)ETHER	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	3/30/92	57	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	85-68-7	BUTYLBENZYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	218-01-9	CHRYSENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	53-70-3	DIBENZO(A,H)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	132-64-9	DIBENZOFURAN	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	84-66-2	DIETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	131-11-3	DIMETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	84-74-2	DI-N-BUTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	117-84-0	DI-N-OCTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	206-44-0	FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	86-73-7	FLUORENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	118-74-1	HEXACHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	87-68-3	HEXACHLOROBUTADIENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	77-47-4	HEXACHLOROCYCLOPENTADIENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	67-72-1	HEXACHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	193-39-5	INDENO(1,2,3-CD)PYRENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	78-59-1	ISOPHORONE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	91-20-3	NAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	98-95-3	NITROBENZENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	86-30-6	N-NITROSODIPHENYLAMINE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	87-86-5	PENTACHLOROPHENOL	3/30/92	50	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	85-01-8	PHENANTHRENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	108-95-2	PHENOL	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9046	129-00-0	PYRENE	3/30/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	71-55-6	1,1,1-TRICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	79-34-5	1,1,2,2-TETRACHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	79-00-5	1,1,2-TRICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	75-34-3	1,1-DICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	75-35-4	1,1-DICHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	107-06-2	1,2-DICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	540-59-0	1,2-DICHLOROETHENE (TOTAL)	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	78-87-5	1,2-DICHLOROPROPANE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	78-93-3	2-BUTANONE	5/4/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	591-78-6	2-HEXANONE	5/4/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	108-10-1	4-METHYL-2-PENTANONE	5/4/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	67-64-1	ACETONE	5/4/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7429-90-5	ALUMINUM	5/4/92	0.0372	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7429-90-5	ALUMINUM	5/4/92	32.8	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-36-0	ANTIMONY	5/4/92	0.014	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-36-0	ANTIMONY	5/4/92	0.014	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-38-2	ARSENIC	5/4/92	0.0082	mg/L	Y	Y	J	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-38-2	ARSENIC	5/4/92	0.0206	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-39-3	BARIUM	5/4/92	0.524	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-39-3	BARIUM	5/4/92	0.102	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	71-43-2	BENZENE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-41-7	BERYLLIUM	5/4/92	0.001	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-41-7	BERYLLIUM	5/4/92	0.0038	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	75-27-4	BROMODICHLOROMETHANE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	75-25-2	BROMOFORM	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	74-83-9	BROMOMETHANE	5/4/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-43-9	CADMIUM	5/4/92	0.002	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-43-9	CADMIUM	5/4/92	0.002	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-70-2	CALCIUM	5/4/92	157	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-70-2	CALCIUM	5/4/92	53.3	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	75-15-0	CARBON DISULFIDE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	56-23-5	CARBON TETRACHLORIDE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	108-90-7	CHLOROBENZENE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	124-48-1	CHLORODIBROMOMETHANE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	75-00-3	CHLOROETHANE	5/4/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	67-66-3	CHLOROFORM	5/4/92	1	ug/L	Y	Y	J	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	74-87-3	CHLOROMETHANE	5/4/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-47-3	CHROMIUM	5/4/92	0.003	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-47-3	CHROMIUM	5/4/92	0.0943	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	10061-01-5	CIS-1,3-DICHLOROPROPENE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-48-4	COBALT	5/4/92	0.0371	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-48-4	COBALT	5/4/92	0.003	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-50-8	COPPER	5/4/92	0.0049	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-50-8	COPPER	5/4/92	0.184	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	57-12-5	CYANIDE	5/4/92	0.643	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	100-41-4	ETHYLBENZENE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7439-89-6	IRON	5/4/92	61.3	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7439-89-6	IRON	5/4/92	0.207	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7439-92-1	LEAD	5/4/92	0.0102	mg/L	Y	N	UJ	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7439-92-1	LEAD	5/4/92	0.245	mg/L	Y	Y	J	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7439-95-4	MAGNESIUM	5/4/92	42.5	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7439-95-4	MAGNESIUM	5/4/92	18.5	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7439-96-5	MANGANESE	5/4/92	0.171	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7439-96-5	MANGANESE	5/4/92	1.11	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7439-97-6	MERCURY	5/4/92	0.0077	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7439-97-6	MERCURY	5/4/92	0.002	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	75-09-2	METHYLENE CHLORIDE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-02-0	NICKEL	5/4/92	0.01	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-02-0	NICKEL	5/4/92	0.126	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-09-7	POTASSIUM	5/4/92	14.1	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-09-7	POTASSIUM	5/4/92	10.2	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7782-49-2	SELENIUM	5/4/92	0.0064	mg/L	Y	Y	J	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7782-49-2	SELENIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-22-4	SILVER	5/4/92	0.003	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-22-4	SILVER	5/4/92	0.0058	mg/L	Y	N	UJ	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-23-5	SODIUM	5/4/92	322	mg/L	Y	Y	J	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-23-5	SODIUM	5/4/92	376	mg/L	Y	Y	J	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	100-42-5	STYRENE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	127-18-4	TETRACHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-28-0	THALLIUM	5/4/92	0.002	mg/L	Y	N	UJ	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-28-0	THALLIUM	5/4/92	0.002	mg/L	Y	N	UJ	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	108-88-3	TOLUENE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	10061-02-6	TRANS-1,3-DICHLOROPROPENE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	79-01-6	TRICHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-62-2	VANADIUM	5/4/92	0.0911	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-62-2	VANADIUM	5/4/92	0.0106	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	75-01-4	VINYL CHLORIDE	5/4/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	1330-20-7	XYLENES, TOTAL	5/4/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047F	7440-66-6	ZINC	5/4/92	0.003	mg/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9047	7440-66-6	ZINC	5/4/92	0.373	mg/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	71-55-6	1,1,1-TRICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	79-00-5	1,1,2-TRICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	75-34-3	1,1-DICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	75-35-4	1,1-DICHLOROETHENE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	95-50-1	1,2-DICHLOROBENZENE	9/24/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	107-06-2	1,2-DICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	78-87-5	1,2-DICHLOROPROPANE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	541-73-1	1,3-DICHLOROBENZENE	9/24/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	106-46-7	1,4-DICHLOROBENZENE	9/24/92	5	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	110-75-8	2-CHLOROETHYL VINYL ETHER	9/24/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	71-43-2	BENZENE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	75-27-4	BROMODICHLOROMETHANE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	75-25-2	BROMOFORM	9/24/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	74-83-9	BROMOMETHANE	9/24/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	56-23-5	CARBON TETRACHLORIDE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	108-90-7	CHLOROBENZENE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	124-48-1	CHLORODIBROMOMETHANE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	75-00-3	CHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	67-66-3	CHLOROFORM	9/24/92	1	ug/L	Y	Y		1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	74-87-3	CHLOROMETHANE	9/24/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	75-71-8	DICHLORODIFLUOROMETHANE	9/24/92	10	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	100-41-4	ETHYLBENZENE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	75-09-2	METHYLENE CHLORIDE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	127-18-4	TETRACHLOROETHENE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	108-88-3	TOLUENE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	79-01-6	TRICHLOROETHENE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	75-69-4	TRICHLOROFLUOROMETHANE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	75-01-4	VINYL CHLORIDE	9/24/92	1	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-11	WA9048	1330-20-7	XYLENES, TOTAL	9/24/92	3	ug/L	Y	N	U	1116662.3	920245.9	4.3	14.6	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	630-20-6	1,1,1,2-TETRACHLOROETHANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	71-55-6	1,1,1-TRICHLOROETHANE	10/27/97	14	ug/L	Y	Y	J	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/27/97	25	ug/L	Y	N	UJ	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	79-00-5	1,1,2-TRICHLOROETHANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	75-34-3	1,1-DICHLOROETHANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	75-35-4	1,1-DICHLOROETHENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	563-58-6	1,1-DICHLOROPROPENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	87-61-6	1,2,3-TRICHLOROBENZENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	96-18-4	1,2,3-TRICHLOROPROPANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	120-82-1	1,2,4-TRICHLOROBENZENE	10/27/97	51	ug/L	Y	Y		1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	95-63-6	1,2,4-TRIMETHYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	106-93-4	1,2-DIBROMOETHANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	95-50-1	1,2-DICHLOROBENZENE	10/27/97	3800	ug/L	Y	Y		1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	107-06-2	1,2-DICHLOROETHANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	78-87-5	1,2-DICHLOROPROPANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	108-67-8	1,3,5-TRIMETHYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	541-73-1	1,3-DICHLOROBENZENE	10/27/97	140	ug/L	Y	Y		1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	142-28-9	1,3-DICHLOROPROPANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	106-46-7	1,4-DICHLOROBENZENE	10/27/97	9600	ug/L	Y	Y		1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	594-20-7	2,2-DICHLOROPROPANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	95-49-8	2-CHLOROTOLUENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	106-43-4	4-CHLOROTOLUENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	71-43-2	BENZENE	10/27/97	5500	ug/L	Y	Y		1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	108-86-1	BROMOBENZENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	74-97-5	BROMOCHLOROMETHANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	75-27-4	BROMODICHLOROMETHANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	75-25-2	BROMOFORM	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	74-83-9	BROMOMETHANE	10/27/97	50	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	104-51-8	BUTYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	56-23-5	CARBON TETRACHLORIDE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	108-90-7	CHLOROBENZENE	10/27/97	25000	ug/L	Y	Y		1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	124-48-1	CHLORODIBROMOMETHANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	75-00-3	CHLOROETHANE	10/27/97	50	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	67-66-3	CHLOROFORM	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	74-87-3	CHLOROMETHANE	10/27/97	50	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	156-59-2	CIS-1,2-DICHLOROETHENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	74-95-3	DIBROMOMETHANE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	75-71-8	DICHLORODIFLUOROMETHANE	10/27/97	50	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	100-41-4	ETHYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	87-68-3	HEXACHLOROBUTADIENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	98-82-8	ISOPROPYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	7439-97-6	MERCURY	10/27/97	0.0002	mg/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	245.1
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	75-09-2	METHYLENE CHLORIDE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	91-20-3	NAPHTHALENE	10/27/97	6.8	ug/L	Y	Y	J	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	103-65-1	N-PROPYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	99-87-6	P-ISOPROPYLTOLUENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	135-98-8	SEC-BUTYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	100-42-5	STYRENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	98-06-6	TERT-BUTYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	127-18-4	TETRACHLOROETHENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	108-88-3	TOLUENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	156-60-5	TRANS-1,2-DICHLOROETHENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	79-01-6	TRICHLOROETHENE	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	75-69-4	TRICHLOROFLUOROMETHANE	10/27/97	50	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	75-01-4	VINYL CHLORIDE	10/27/97	50	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-13	WA9049	1330-20-7	XYLENES, TOTAL	10/27/97	25	ug/L	Y	N	U	1116702.6	920225.8	4	14.3	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	630-20-6	1,1,1,2-TETRACHLOROETHANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	71-55-6	1,1,1-TRICHLOROETHANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/27/97	2.5	ug/L	Y	N	UJ	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	79-00-5	1,1,2-TRICHLOROETHANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	75-34-3	1,1-DICHLOROETHANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	75-35-4	1,1-DICHLOROETHENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	563-58-6	1,1-DICHLOROPROPENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	87-61-6	1,2,3-TRICHLOROBENZENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	96-18-4	1,2,3-TRICHLOROPROPANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	120-82-1	1,2,4-TRICHLOROBENZENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	95-63-6	1,2,4-TRIMETHYLBENZENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	106-93-4	1,2-DIBROMOETHANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	95-50-1	1,2-DICHLOROBENZENE	10/27/97	9.4	ug/L	Y	Y		1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	107-06-2	1,2-DICHLOROETHANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	78-87-5	1,2-DICHLOROPROPANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	108-67-8	1,3,5-TRIMETHYLBENZENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	541-73-1	1,3-DICHLOROBENZENE	10/27/97	0.78	ug/L	Y	Y	J	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	142-28-9	1,3-DICHLOROPROPANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	106-46-7	1,4-DICHLOROBENZENE	10/27/97	36	ug/L	Y	Y		1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	594-20-7	2,2-DICHLOROPROPANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	95-49-8	2-CHLOROTOLUENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	106-43-4	4-CHLOROTOLUENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	71-43-2	BENZENE	10/27/97	3.9	ug/L	Y	Y		1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	108-86-1	BROMOBENZENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	74-97-5	BROMOCHLOROMETHANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	75-27-4	BROMODICHLOROMETHANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	75-25-2	BROMOFORM	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	74-83-9	BROMOMETHANE	10/27/97	5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	104-51-8	BUTYLBENZENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	56-23-5	CARBON TETRACHLORIDE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	108-90-7	CHLOROBENZENE	10/27/97	130	ug/L	Y	Y		1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	124-48-1	CHLORODIBROMOMETHANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	75-00-3	CHLOROETHANE	10/27/97	5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	67-66-3	CHLOROFORM	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	74-87-3	CHLOROMETHANE	10/27/97	5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	156-59-2	CIS-1,2-DICHLOROETHENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	74-95-3	DIBROMOMETHANE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	75-71-8	DICHLORODIFLUOROMETHANE	10/27/97	5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	100-41-4	ETHYLBENZENE	10/27/97	1.6	ug/L	Y	Y	J	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	87-68-3	HEXACHLOROBUTADIENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	98-82-8	ISOPROPYLBENZENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	7439-97-6	MERCURY	10/27/97	0.0002	mg/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	245.1
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	75-09-2	METHYLENE CHLORIDE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	91-20-3	NAPHTHALENE	10/27/97	1.1	ug/L	Y	Y	J	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	103-65-1	N-PROPYLBENZENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	99-87-6	P-ISOPROPYLTOLUENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	135-98-8	SEC-BUTYLBENZENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	100-42-5	STYRENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	98-06-6	TERT-BUTYLBENZENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	127-18-4	TETRACHLOROETHENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	108-88-3	TOLUENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	156-60-5	TRANS-1,2-DICHLOROETHENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	79-01-6	TRICHLOROETHENE	10/27/97	2.5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	75-69-4	TRICHLOROFLUOROMETHANE	10/27/97	5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	75-01-4	VINYL CHLORIDE	10/27/97	5	ug/L	Y	N	U	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-14	WA9050	1330-20-7	XYLENES, TOTAL	10/27/97	0.59	ug/L	Y	Y	J	1116679.7	920355.8	3.1	24	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7429-90-5	ALUMINUM	5/4/92	0.0303	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-36-0	ANTIMONY	5/4/92	0.0211	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-38-2	ARSENIC	5/4/92	0.001	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-39-3	BARIUM	5/4/92	0.0615	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-41-7	BERYLLIUM	5/4/92	0.0028	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-43-9	CADMIUM	5/4/92	0.002	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-70-2	CALCIUM	5/4/92	579	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-47-3	CHROMIUM	5/4/92	0.003	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-48-4	COBALT	5/4/92	0.003	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-50-8	COPPER	5/4/92	0.002	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7439-89-6	IRON	5/4/92	39.5	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7439-92-1	LEAD	5/4/92	0.001	mg/L	Y	N	UJ	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7439-95-4	MAGNESIUM	5/4/92	29.3	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7439-96-5	MANGANESE	5/4/92	0.546	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7439-97-6	MERCURY	5/4/92	0.0002	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-02-0	NICKEL	5/4/92	0.0293	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-09-7	POTASSIUM	5/4/92	22.2	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7782-49-2	SELENIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-22-4	SILVER	5/4/92	0.003	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-23-5	SODIUM	5/4/92	301	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-28-0	THALLIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-62-2	VANADIUM	5/4/92	0.025	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9051	7440-66-6	ZINC	5/4/92	0.0163	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	71-55-6	1,1,1-TRICHLOROETHANE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	79-34-5	1,1,2,2-TETRACHLOROETHANE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	79-00-5	1,1,2-TRICHLOROETHANE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	75-34-3	1,1-DICHLOROETHANE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	75-35-4	1,1-DICHLOROETHENE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	120-82-1	1,2,4-TRICHLOROBENZENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	95-50-1	1,2-DICHLOROBENZENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	107-06-2	1,2-DICHLOROETHANE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	540-59-0	1,2-DICHLOROETHENE (TOTAL)	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	78-87-5	1,2-DICHLOROPROPANE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	541-73-1	1,3-DICHLOROBENZENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	106-46-7	1,4-DICHLOROBENZENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	95-95-4	2,4,5-TRICHLOROPHENOL	5/5/92	50	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	88-06-2	2,4,6-TRICHLOROPHENOL	5/5/92	10	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	120-83-2	2,4-DICHLOROPHENOL	5/5/92	10	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	105-67-9	2,4-DIMETHYLPHENOL	5/5/92	10	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	51-28-5	2,4-DINITROPHENOL	5/5/92	50	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	121-14-2	2,4-DINITROTOLUENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	606-20-2	2,6-DINITROTOLUENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	78-93-3	2-BUTANONE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	91-58-7	2-CHLORONAPHTHALENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	95-57-8	2-CHLOROPHENOL	5/5/92	10	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	591-78-6	2-HEXANONE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	91-57-6	2-METHYLNAPHTHALENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	95-48-7	2-METHYLPHENOL	5/5/92	10	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	88-74-4	2-NITROANILINE	5/5/92	50	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	88-75-5	2-NITROPHENOL	5/5/92	10	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	99-09-2	3-NITROANILINE	5/5/92	50	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	534-52-1	4,6-DINITRO-2-METHYLPHENOL	5/5/92	50	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	101-55-3	4-BROMOPHENYL PHENYL ETHER	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	59-50-7	4-CHLORO-3-METHYLPHENOL	5/5/92	10	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	106-47-8	4-CHLOROANILINE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	108-10-1	4-METHYL-2-PENTANONE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	106-44-5	4-METHYLPHENOL	5/5/92	10	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	100-01-6	4-NITROANILINE	5/5/92	50	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	100-02-7	4-NITROPHENOL	5/5/92	50	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	83-32-9	ACENAPHTHENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	208-96-8	ACENAPHTHYLENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	67-64-1	ACETONE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7429-90-5	ALUMINUM	5/5/92	0.0303	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7429-90-5	ALUMINUM	5/5/92	6.86	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	120-12-7	ANTHRACENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-36-0	ANTIMONY	5/5/92	0.0151	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-36-0	ANTIMONY	5/5/92	0.0211	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-38-2	ARSENIC	5/5/92	0.001	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-38-2	ARSENIC	5/5/92	0.0054	mg/L	Y	Y	J	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-39-3	BARIUM	5/5/92	0.219	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-39-3	BARIUM	5/5/92	0.0615	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	71-43-2	BENZENE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	56-55-3	BENZO(A)ANTHRACENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	50-32-8	BENZO(A)PYRENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	205-99-2	BENZO(B)FLUORANTHENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	191-24-2	BENZO(G,H,I)PERYLENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	207-08-9	BENZO(K)FLUORANTHENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	65-85-0	BENZOIC ACID	5/5/92	50	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	100-51-6	BENZYL ALCOHOL	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-41-7	BERYLLIUM	5/5/92	0.0028	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-41-7	BERYLLIUM	5/5/92	0.001	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	111-91-1	BIS(2-CHLOROETHOXY)METHANE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	111-44-4	BIS(2-CHLOROETHYL)ETHER	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	5/5/92	33	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	75-27-4	BROMODICHLOROMETHANE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	75-25-2	BROMOFORM	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	74-83-9	BROMOMETHANE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	85-68-7	BUTYLBENZYL PHTHALATE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-43-9	CADMIUM	5/5/92	0.002	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-43-9	CADMIUM	5/5/92	0.002	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-70-2	CALCIUM	5/5/92	699	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-70-2	CALCIUM	5/5/92	579	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	75-15-0	CARBON DISULFIDE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	56-23-5	CARBON TETRACHLORIDE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	108-90-7	CHLOROBENZENE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	124-48-1	CHLORODIBROMOMETHANE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	75-00-3	CHLOROETHANE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	67-66-3	CHLOROFORM	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	74-87-3	CHLOROMETHANE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-47-3	CHROMIUM	5/5/92	0.003	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-47-3	CHROMIUM	5/5/92	0.145	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	218-01-9	CHRYSENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	10061-01-5	CIS-1,3-DICHLOROPROPENE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-48-4	COBALT	5/5/92	0.0159	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-48-4	COBALT	5/5/92	0.003	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-50-8	COPPER	5/5/92	0.002	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-50-8	COPPER	5/5/92	0.0415	mg/L	Y	Y	J	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	57-12-5	CYANIDE	5/5/92	0.01	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	53-70-3	DIBENZO(A,H)ANTHRACENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	132-64-9	DIBENZOFURAN	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	84-66-2	DIETHYL PHTHALATE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	131-11-3	DIMETHYL PHTHALATE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	84-74-2	DI-N-BUTYL PHTHALATE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	117-84-0	DI-N-OCTYL PHTHALATE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	100-41-4	ETHYLBENZENE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	206-44-0	FLUORANTHENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	86-73-7	FLUORENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	118-74-1	HEXACHLOROBENZENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	87-68-3	HEXACHLOROBUTADIENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	77-47-4	HEXACHLOROCYCLOPENTADIENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	67-72-1	HEXACHLOROETHANE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	193-39-5	INDENO(1,2,3-CD)PYRENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7439-89-6	IRON	5/5/92	58.1	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7439-89-6	IRON	5/5/92	39.5	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	78-59-1	ISOPHORONE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7439-92-1	LEAD	5/5/92	0.001	mg/L	Y	N	UJ	1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7439-92-1	LEAD	5/5/92	0.0091	mg/L	Y	Y	J	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7439-95-4	MAGNESIUM	5/5/92	47.3	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7439-95-4	MAGNESIUM	5/5/92	29.3	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7439-96-5	MANGANESE	5/5/92	0.546	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7439-96-5	MANGANESE	5/5/92	1.35	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7439-97-6	MERCURY	5/5/92	0.0002	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7439-97-6	MERCURY	5/5/92	0.0002	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	75-09-2	METHYLENE CHLORIDE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	91-20-3	NAPHTHALENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-02-0	NICKEL	5/5/92	0.0293	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-02-0	NICKEL	5/5/92	0.177	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	98-95-3	NITROBENZENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	86-30-6	N-NITROSODIPHENYLAMINE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	87-86-5	PENTACHLOROPHENOL	5/5/92	50	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	85-01-8	PHENANTHRENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	108-95-2	PHENOL	5/5/92	10	ug/L	Y	N	R	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-09-7	POTASSIUM	5/5/92	19.3	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-09-7	POTASSIUM	5/5/92	22.2	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	129-00-0	PYRENE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7782-49-2	SELENIUM	5/5/92	0.02	mg/L	Y	N	UJ	1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7782-49-2	SELENIUM	5/5/92	0.02	mg/L	Y	N	UJ	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-22-4	SILVER	5/5/92	0.003	mg/L	Y	N	UJ	1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-22-4	SILVER	5/5/92	0.003	mg/L	Y	N	UJ	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-23-5	SODIUM	5/5/92	338	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-23-5	SODIUM	5/5/92	301	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	100-42-5	STYRENE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	127-18-4	TETRACHLOROETHENE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-28-0	THALLIUM	5/5/92	0.02	mg/L	Y	N	UJ	1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-28-0	THALLIUM	5/5/92	0.002	mg/L	Y	N	UJ	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	108-88-3	TOLUENE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	10061-02-6	TRANS-1,3-DICHLOROPROPENE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	79-01-6	TRICHLOROETHENE	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-62-2	VANADIUM	5/5/92	0.0457	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-62-2	VANADIUM	5/5/92	0.025	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	75-01-4	VINYL CHLORIDE	5/5/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	1330-20-7	XYLENES, TOTAL	5/5/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052F	7440-66-6	ZINC	5/5/92	0.0163	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9052	7440-66-6	ZINC	5/5/92	0.0399	mg/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	71-55-6	1,1,1-TRICHLOROETHANE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	79-00-5	1,1,2-TRICHLOROETHANE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	75-34-3	1,1-DICHLOROETHANE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	75-35-4	1,1-DICHLOROETHENE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	95-50-1	1,2-DICHLOROBENZENE	9/25/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	107-06-2	1,2-DICHLOROETHANE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	78-87-5	1,2-DICHLOROPROPANE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	541-73-1	1,3-DICHLOROBENZENE	9/25/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	106-46-7	1,4-DICHLOROBENZENE	9/25/92	5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	110-75-8	2-CHLOROETHYL VINYL ETHER	9/25/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	71-43-2	BENZENE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	75-27-4	BROMODICHLOROMETHANE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	75-25-2	BROMOFORM	9/25/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	74-83-9	BROMOMETHANE	9/25/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	56-23-5	CARBON TETRACHLORIDE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	108-90-7	CHLOROBENZENE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	124-48-1	CHLORODIBROMOMETHANE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	75-00-3	CHLOROETHANE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	67-66-3	CHLOROFORM	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	74-87-3	CHLOROMETHANE	9/25/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	75-71-8	DICHLORODIFLUOROMETHANE	9/25/92	10	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	100-41-4	ETHYLBENZENE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	75-09-2	METHYLENE CHLORIDE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	127-18-4	TETRACHLOROETHENE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	108-88-3	TOLUENE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	79-01-6	TRICHLOROETHENE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	75-69-4	TRICHLOROFLUOROMETHANE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	75-01-4	VINYL CHLORIDE	9/25/92	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9053	1330-20-7	XYLENES, TOTAL	9/25/92	3	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	630-20-6	1,1,1,2-TETRACHLOROETHANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	71-55-6	1,1,1-TRICHLOROETHANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/28/97	0.5	ug/L	Y	N	UJ	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	79-00-5	1,1,2-TRICHLOROETHANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	75-34-3	1,1-DICHLOROETHANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	75-35-4	1,1-DICHLOROETHENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	563-58-6	1,1-DICHLOROPROPENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	87-61-6	1,2,3-TRICHLOROBENZENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	96-18-4	1,2,3-TRICHLOROPROPANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	120-82-1	1,2,4-TRICHLOROBENZENE	10/28/97	0.2	ug/L	Y	Y	J	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	95-63-6	1,2,4-TRIMETHYLBENZENE	10/28/97	0.45	ug/L	Y	Y	J	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	106-93-4	1,2-DIBROMOETHANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	95-50-1	1,2-DICHLOROBENZENE	10/28/97	1.8	ug/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	107-06-2	1,2-DICHLOROETHANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	78-87-5	1,2-DICHLOROPROPANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	108-67-8	1,3,5-TRIMETHYLBENZENE	10/28/97	0.11	ug/L	Y	Y	J	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	541-73-1	1,3-DICHLOROBENZENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	142-28-9	1,3-DICHLOROPROPANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	106-46-7	1,4-DICHLOROBENZENE	10/28/97	3.9	ug/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	594-20-7	2,2-DICHLOROPROPANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	95-49-8	2-CHLOROTOLUENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	106-43-4	4-CHLOROTOLUENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	71-43-2	BENZENE	10/28/97	2.1	ug/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	108-86-1	BROMOBENZENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	74-97-5	BROMOCHLOROMETHANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	75-27-4	BROMODICHLOROMETHANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	75-25-2	BROMOFORM	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	74-83-9	BROMOMETHANE	10/28/97	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	104-51-8	BUTYLBENZENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	56-23-5	CARBON TETRACHLORIDE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	108-90-7	CHLOROBENZENE	10/28/97	6.9	ug/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	124-48-1	CHLORODIBROMOMETHANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	75-00-3	CHLOROETHANE	10/28/97	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	67-66-3	CHLOROFORM	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	74-87-3	CHLOROMETHANE	10/28/97	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	156-59-2	CIS-1,2-DICHLOROETHENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	74-95-3	DIBROMOMETHANE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	75-71-8	DICHLORODIFLUOROMETHANE	10/28/97	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	100-41-4	ETHYLBENZENE	10/28/97	0.38	ug/L	Y	Y	J	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	87-68-3	HEXACHLOROBUTADIENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	98-82-8	ISOPROPYLBENZENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	7439-97-6	MERCURY	10/28/97	0.0002	mg/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	245.1
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	75-09-2	METHYLENE CHLORIDE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	91-20-3	NAPHTHALENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	103-65-1	N-PROPYLBENZENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	99-87-6	P-ISOPROPYLTOLUENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	135-98-8	SEC-BUTYLBENZENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	100-42-5	STYRENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	98-06-6	TERT-BUTYLBENZENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	127-18-4	TETRACHLOROETHENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	108-88-3	TOLUENE	10/28/97	0.38	ug/L	Y	Y	J	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	156-60-5	TRANS-1,2-DICHLOROETHENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	79-01-6	TRICHLOROETHENE	10/28/97	0.5	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	75-69-4	TRICHLOROFLUOROMETHANE	10/28/97	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	75-01-4	VINYL CHLORIDE	10/28/97	1	ug/L	Y	N	U	1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-C-15	WA9054	1330-20-7	XYLENES, TOTAL	10/28/97	1.3	ug/L	Y	Y		1116693.9	919996.4	6.8	17.5	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	71-55-6	1,1,1-TRICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	79-34-5	1,1,2,2-TETRACHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	79-00-5	1,1,2-TRICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	75-34-3	1,1-DICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	75-35-4	1,1-DICHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	120-82-1	1,2,4-TRICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	95-50-1	1,2-DICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	107-06-2	1,2-DICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	540-59-0	1,2-DICHLOROETHENE (TOTAL)	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	78-87-5	1,2-DICHLOROPROPANE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	541-73-1	1,3-DICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	106-46-7	1,4-DICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	95-95-4	2,4,5-TRICHLOROPHENOL	5/4/92	50	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	88-06-2	2,4,6-TRICHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	120-83-2	2,4-DICHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	105-67-9	2,4-DIMETHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	51-28-5	2,4-DINITROPHENOL	5/4/92	50	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	121-14-2	2,4-DINITROTOLUENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	606-20-2	2,6-DINITROTOLUENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	78-93-3	2-BUTANONE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	91-58-7	2-CHLORONAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	95-57-8	2-CHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	591-78-6	2-HEXANONE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	91-57-6	2-METHYLNAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	95-48-7	2-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	88-74-4	2-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	88-75-5	2-NITROPHENOL	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	99-09-2	3-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	534-52-1	4,6-DINITRO-2-METHYLPHENOL	5/4/92	50	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	101-55-3	4-BROMOPHENYL PHENYL ETHER	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	59-50-7	4-CHLORO-3-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	106-47-8	4-CHLOROANILINE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	108-10-1	4-METHYL-2-PENTANONE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	106-44-5	4-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	100-01-6	4-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	100-02-7	4-NITROPHENOL	5/4/92	50	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	83-32-9	ACENAPHTHENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	208-96-8	ACENAPHTHYLENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	67-64-1	ACETONE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7429-90-5	ALUMINUM	5/4/92	0.596	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7429-90-5	ALUMINUM	5/4/92	65.4	mg/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	120-12-7	ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-36-0	ANTIMONY	5/4/92	0.014	mg/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-36-0	ANTIMONY	5/4/92	0.0184	mg/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-38-2	ARSENIC	5/4/92	0.0078	mg/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-38-2	ARSENIC	5/4/92	0.0292	mg/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-39-3	BARIUM	5/4/92	0.528	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-39-3	BARIUM	5/4/92	0.512	mg/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	71-43-2	BENZENE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	56-55-3	BENZO(A)ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	50-32-8	BENZO(A)PYRENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	205-99-2	BENZO(B)FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	191-24-2	BENZO(G,H,I)PERYLENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	207-08-9	BENZO(K)FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	65-85-0	BENZOIC ACID	5/4/92	50	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	100-51-6	BENZYL ALCOHOL	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-41-7	BERYLLIUM	5/4/92	0.0032	mg/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-41-7	BERYLLIUM	5/4/92	0.001	mg/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	111-91-1	BIS(2-CHLOROETHOXY)METHANE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	111-44-4	BIS(2-CHLOROETHYL)ETHER	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	5/4/92	93	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	75-27-4	BROMODICHLOROMETHANE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	75-25-2	BROMOFORM	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	74-83-9	BROMOMETHANE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	85-68-7	BUTYLBENZYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-43-9	CADMIUM	5/4/92	0.002	mg/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-43-9	CADMIUM	5/4/92	0.002	mg/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-70-2	CALCIUM	5/4/92	15.4	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-70-2	CALCIUM	5/4/92	188	mg/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	75-15-0	CARBON DISULFIDE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	56-23-5	CARBON TETRACHLORIDE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	108-90-7	CHLOROBENZENE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	124-48-1	CHLORODIBROMOMETHANE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	75-00-3	CHLOROETHANE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	67-66-3	CHLOROFORM	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	74-87-3	CHLOROMETHANE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-47-3	CHROMIUM	5/4/92	0.172	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-47-3	CHROMIUM	5/4/92	0.215	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	218-01-9	CHRYSENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	10061-01-5	CIS-1,3-DICHLOROPROPENE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-48-4	COBALT	5/4/92	0.003	mg/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-48-4	COBALT	5/4/92	0.0562	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-50-8	COPPER	5/4/92	0.294	mg/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-50-8	COPPER	5/4/92	0.0119	mg/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	57-12-5	CYANIDE	5/4/92	0.01	mg/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	53-70-3	DIBENZO(A,H)ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	132-64-9	DIBENZOFURAN	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	84-66-2	DIETHYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	131-11-3	DIMETHYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	84-74-2	DI-N-BUTYL PHTHALATE	5/4/92	20	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	117-84-0	DI-N-OCTYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	100-41-4	ETHYLBENZENE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	206-44-0	FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	86-73-7	FLUORENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	118-74-1	HEXACHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	87-68-3	HEXACHLOROBUTADIENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	77-47-4	HEXACHLOROCYCLOPENTADIENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	67-72-1	HEXACHLOROETHANE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	193-39-5	INDENO(1,2,3-CD)PYRENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7439-89-6	IRON	5/4/92	124	mg/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7439-89-6	IRON	5/4/92	1.63	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	78-59-1	ISOPHORONE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7439-92-1	LEAD	5/4/92	0.0075	mg/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7439-92-1	LEAD	5/4/92	0.258	mg/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7439-95-4	MAGNESIUM	5/4/92	32.8	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7439-95-4	MAGNESIUM	5/4/92	5.68	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7439-96-5	MANGANESE	5/4/92	0.0169	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7439-96-5	MANGANESE	5/4/92	1.7	mg/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7439-97-6	MERCURY	5/4/92	0.0016	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7439-97-6	MERCURY	5/4/92	0.0002	mg/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	75-09-2	METHYLENE CHLORIDE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	91-20-3	NAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-02-0	NICKEL	5/4/92	0.0159	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-02-0	NICKEL	5/4/92	0.103	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	98-95-3	NITROBENZENE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	86-30-6	N-NITROSODIPHENYLAMINE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	87-86-5	PENTACHLOROPHENOL	5/4/92	50	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	85-01-8	PHENANTHRENE	5/4/92	2	ug/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	108-95-2	PHENOL	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-09-7	POTASSIUM	5/4/92	19.4	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-09-7	POTASSIUM	5/4/92	7.62	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	129-00-0	PYRENE	5/4/92	3	ug/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7782-49-2	SELENIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7782-49-2	SELENIUM	5/4/92	0.002	mg/L	Y	N	UJ	1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-22-4	SILVER	5/4/92	0.003	mg/L	Y	N	UJ	1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-22-4	SILVER	5/4/92	0.003	mg/L	Y	N	UJ	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-23-5	SODIUM	5/4/92	866	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-23-5	SODIUM	5/4/92	764	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	100-42-5	STYRENE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	127-18-4	TETRACHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-28-0	THALLIUM	5/4/92	0.002	mg/L	Y	N	UJ	1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-28-0	THALLIUM	5/4/92	0.002	mg/L	Y	N	UJ	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	108-88-3	TOLUENE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	10061-02-6	TRANS-1,3-DICHLOROPROPENE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	79-01-6	TRICHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-62-2	VANADIUM	5/4/92	0.0308	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-62-2	VANADIUM	5/4/92	0.223	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	75-01-4	VINYL CHLORIDE	5/4/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	1330-20-7	XYLENES, TOTAL	5/4/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097	7440-66-6	ZINC	5/4/92	0.335	mg/L	Y	Y	J	1116657.7	920613.1	5	15	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9097F	7440-66-6	ZINC	5/4/92	0.0117	mg/L	Y	Y		1116657.7	920613.1	5	15	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	71-55-6	1,1,1-TRICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	79-00-5	1,1,2-TRICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	75-34-3	1,1-DICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	75-35-4	1,1-DICHLOROETHENE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	95-50-1	1,2-DICHLOROBENZENE	9/24/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	107-06-2	1,2-DICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	78-87-5	1,2-DICHLOROPROPANE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	541-73-1	1,3-DICHLOROBENZENE	9/24/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	106-46-7	1,4-DICHLOROBENZENE	9/24/92	5	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	110-75-8	2-CHLOROETHYL VINYL ETHER	9/24/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	71-43-2	BENZENE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	75-27-4	BROMODICHLOROMETHANE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	75-25-2	BROMOFORM	9/24/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	74-83-9	BROMOMETHANE	9/24/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	56-23-5	CARBON TETRACHLORIDE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	108-90-7	CHLOROBENZENE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	124-48-1	CHLORODIBROMOMETHANE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	75-00-3	CHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	67-66-3	CHLOROFORM	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	74-87-3	CHLOROMETHANE	9/24/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	75-71-8	DICHLORODIFLUOROMETHANE	9/24/92	10	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	100-41-4	ETHYLBENZENE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	75-09-2	METHYLENE CHLORIDE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	127-18-4	TETRACHLOROETHENE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	108-88-3	TOLUENE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	79-01-6	TRICHLOROETHENE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	75-69-4	TRICHLOROFLUOROMETHANE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	75-01-4	VINYL CHLORIDE	9/24/92	1	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-HR-1	WA9098	1330-20-7	XYLENES, TOTAL	9/24/92	3	ug/L	Y	N	U	1116657.7	920613.1	5	15	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	71-55-6	1,1,1-TRICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	79-34-5	1,1,2,2-TETRACHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	79-00-5	1,1,2-TRICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	75-34-3	1,1-DICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	75-35-4	1,1-DICHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	120-82-1	1,2,4-TRICHLOROBENZENE	5/4/92	240	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	95-50-1	1,2-DICHLOROBENZENE	5/4/92	170	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	107-06-2	1,2-DICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	540-59-0	1,2-DICHLOROETHENE (TOTAL)	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	78-87-5	1,2-DICHLOROPROPANE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	541-73-1	1,3-DICHLOROBENZENE	5/4/92	26	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	106-46-7	1,4-DICHLOROBENZENE	5/4/92	240	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	95-95-4	2,4,5-TRICHLOROPHENOL	5/4/92	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	88-06-2	2,4,6-TRICHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	120-83-2	2,4-DICHLOROPHENOL	5/4/92	4	ug/L	Y	Y	J	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	105-67-9	2,4-DIMETHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	51-28-5	2,4-DINITROPHENOL	5/4/92	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	121-14-2	2,4-DINITROTOLUENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	606-20-2	2,6-DINITROTOLUENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	78-93-3	2-BUTANONE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	91-58-7	2-CHLORONAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	95-57-8	2-CHLOROPHENOL	5/4/92	1	ug/L	Y	Y	J	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	591-78-6	2-HEXANONE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	91-57-6	2-METHYLNAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	95-48-7	2-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	88-74-4	2-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	88-75-5	2-NITROPHENOL	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	99-09-2	3-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	534-52-1	4,6-DINITRO-2-METHYLPHENOL	5/4/92	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	101-55-3	4-BROMOPHENYL PHENYL ETHER	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	59-50-7	4-CHLORO-3-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	106-47-8	4-CHLOROANILINE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	108-10-1	4-METHYL-2-PENTANONE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	106-44-5	4-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	100-01-6	4-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	100-02-7	4-NITROPHENOL	5/4/92	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	83-32-9	ACENAPHTHENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	208-96-8	ACENAPHTHYLENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	67-64-1	ACETONE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7429-90-5	ALUMINUM	5/4/92	0.0335	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7429-90-5	ALUMINUM	5/4/92	1.9	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	120-12-7	ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-36-0	ANTIMONY	5/4/92	0.0267	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-36-0	ANTIMONY	5/4/92	0.014	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-38-2	ARSENIC	5/4/92	0.0059	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-38-2	ARSENIC	5/4/92	0.0023	mg/L	Y	Y	J	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-39-3	BARIUM	5/4/92	0.0469	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-39-3	BARIUM	5/4/92	0.0697	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	71-43-2	BENZENE	5/4/92	15	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	56-55-3	BENZO(A)ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	50-32-8	BENZO(A)PYRENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	205-99-2	BENZO(B)FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	191-24-2	BENZO(G,H,I)PERYLENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	207-08-9	BENZO(K)FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	65-85-0	BENZOIC ACID	5/4/92	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	100-51-6	BENZYL ALCOHOL	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-41-7	BERYLLIUM	5/4/92	0.001	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-41-7	BERYLLIUM	5/4/92	0.001	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	111-91-1	BIS(2-CHLOROETHOXY)METHANE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	111-44-4	BIS(2-CHLOROETHYL)ETHER	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	5/4/92	56	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	75-27-4	BROMODICHLOROMETHANE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	75-25-2	BROMOFORM	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	74-83-9	BROMOMETHANE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	85-68-7	BUTYLBENZYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-43-9	CADMIUM	5/4/92	0.002	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-43-9	CADMIUM	5/4/92	0.002	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-70-2	CALCIUM	5/4/92	71	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-70-2	CALCIUM	5/4/92	91.2	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	75-15-0	CARBON DISULFIDE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	56-23-5	CARBON TETRACHLORIDE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	108-90-7	CHLOROBENZENE	5/4/92	180	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	124-48-1	CHLORODIBROMOMETHANE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	75-00-3	CHLOROETHANE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	67-66-3	CHLOROFORM	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	74-87-3	CHLOROMETHANE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-47-3	CHROMIUM	5/4/92	0.0137	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-47-3	CHROMIUM	5/4/92	0.003	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	218-01-9	CHRYSENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	10061-01-5	CIS-1,3-DICHLOROPROPENE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-48-4	COBALT	5/4/92	0.003	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-48-4	COBALT	5/4/92	0.0046	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-50-8	COPPER	5/4/92	0.0206	mg/L	Y	Y	J	1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-50-8	COPPER	5/4/92	0.0027	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	57-12-5	CYANIDE	5/4/92	0.01	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	53-70-3	DIBENZO(A,H)ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	132-64-9	DIBENZOFURAN	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	84-66-2	DIETHYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	131-11-3	DIMETHYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	84-74-2	DI-N-BUTYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	117-84-0	DI-N-OCTYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	100-41-4	ETHYLBENZENE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	206-44-0	FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	86-73-7	FLUORENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	118-74-1	HEXACHLOROBENZENE	5/4/92	2	ug/L	Y	Y	J	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	87-68-3	HEXACHLOROBUTADIENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	77-47-4	HEXACHLOROCYCLOPENTADIENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	67-72-1	HEXACHLOROETHANE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	193-39-5	INDENO(1,2,3-CD)PYRENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7439-89-6	IRON	5/4/92	9.38	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7439-89-6	IRON	5/4/92	0.725	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	78-59-1	ISOPHORONE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7439-92-1	LEAD	5/4/92	0.001	mg/L	Y	N	UJ	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7439-92-1	LEAD	5/4/92	0.0159	mg/L	Y	Y	J	1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7439-95-4	MAGNESIUM	5/4/92	14.9	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7439-95-4	MAGNESIUM	5/4/92	11.7	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7439-96-5	MANGANESE	5/4/92	0.0254	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7439-96-5	MANGANESE	5/4/92	0.135	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7439-97-6	MERCURY	5/4/92	0.00033	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7439-97-6	MERCURY	5/4/92	0.0002	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	75-09-2	METHYLENE CHLORIDE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	91-20-3	NAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-02-0	NICKEL	5/4/92	0.01	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-02-0	NICKEL	5/4/92	0.0122	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	98-95-3	NITROBENZENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	86-30-6	N-NITROSODIPHENYLAMINE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	87-86-5	PENTACHLOROPHENOL	5/4/92	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	85-01-8	PHENANTHRENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	108-95-2	PHENOL	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-09-7	POTASSIUM	5/4/92	3.69	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-09-7	POTASSIUM	5/4/92	5.15	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	129-00-0	PYRENE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7782-49-2	SELENIUM	5/4/92	0.0029	mg/L	Y	Y	J	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7782-49-2	SELENIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-22-4	SILVER	5/4/92	0.003	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-22-4	SILVER	5/4/92	0.003	mg/L	Y	N	UJ	1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-23-5	SODIUM	5/4/92	33.7	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-23-5	SODIUM	5/4/92	37.2	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	100-42-5	STYRENE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	127-18-4	TETRACHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-28-0	THALLIUM	5/4/92	0.002	mg/L	Y	N	UJ	1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-28-0	THALLIUM	5/4/92	0.002	mg/L	Y	N	UJ	1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	108-88-3	TOLUENE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	10061-02-6	TRANS-1,3-DICHLOROPROPENE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	79-01-6	TRICHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-62-2	VANADIUM	5/4/92	0.0108	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-62-2	VANADIUM	5/4/92	0.0121	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	75-01-4	VINYL CHLORIDE	5/4/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	1330-20-7	XYLENES, TOTAL	5/4/92	5	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138	7440-66-6	ZINC	5/4/92	0.55	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9138F	7440-66-6	ZINC	5/4/92	0.0042	mg/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	71-55-6	1,1,1-TRICHLOROETHANE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	79-00-5	1,1,2-TRICHLOROETHANE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	75-34-3	1,1-DICHLOROETHANE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	75-35-4	1,1-DICHLOROETHENE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	107-06-2	1,2-DICHLOROETHANE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	78-87-5	1,2-DICHLOROPROPANE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	541-73-1	1,3-DICHLOROBENZENE	9/25/92	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	106-46-7	1,4-DICHLOROBENZENE	9/25/92	1100	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	110-75-8	2-CHLOROETHYL VINYL ETHER	9/25/92	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	71-43-2	BENZENE	9/25/92	11	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	75-27-4	BROMODICHLOROMETHANE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	75-25-2	BROMOFORM	9/25/92	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	74-83-9	BROMOMETHANE	9/25/92	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	56-23-5	CARBON TETRACHLORIDE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	108-90-7	CHLOROBENZENE	9/25/92	160	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	124-48-1	CHLORODIBROMOMETHANE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	75-00-3	CHLOROETHANE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	67-66-3	CHLOROFORM	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	74-87-3	CHLOROMETHANE	9/25/92	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	75-71-8	DICHLORODIFLUOROMETHANE	9/25/92	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	100-41-4	ETHYLBENZENE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	75-09-2	METHYLENE CHLORIDE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	127-18-4	TETRACHLOROETHENE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	108-88-3	TOLUENE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	79-01-6	TRICHLOROETHENE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	75-69-4	TRICHLOROFLUOROMETHANE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	75-01-4	VINYL CHLORIDE	9/25/92	10	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9139	1330-20-7	XYLENES, TOTAL	9/25/92	30	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	71-55-6	1,1,1-TRICHLOROETHANE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	79-34-5	1,1,2,2-TETRACHLOROETHANE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	79-00-5	1,1,2-TRICHLOROETHANE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	75-34-3	1,1-DICHLOROETHANE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	75-35-4	1,1-DICHLOROETHENE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	95-50-1	1,2-DICHLOROBENZENE	3/8/95	3200	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	107-06-2	1,2-DICHLOROETHANE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	540-59-0	1,2-DICHLOROETHENE (TOTAL)	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	78-87-5	1,2-DICHLOROPROPANE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	541-73-1	1,3-DICHLOROBENZENE	3/8/95	500	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	106-46-7	1,4-DICHLOROBENZENE	3/8/95	4800	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	110-75-8	2-CHLOROETHYL VINYL ETHER	3/8/95	1000	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	71-43-2	BENZENE	3/8/95	100	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	75-27-4	BROMODICHLOROMETHANE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	75-25-2	BROMOFORM	3/8/95	1000	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	74-83-9	BROMOMETHANE	3/8/95	1000	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	56-23-5	CARBON TETRACHLORIDE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	108-90-7	CHLOROBENZENE	3/8/95	1400	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	124-48-1	CHLORODIBROMOMETHANE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	75-00-3	CHLOROETHANE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	67-66-3	CHLOROFORM	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	74-87-3	CHLOROMETHANE	3/8/95	1000	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	10061-01-5	CIS-1,3-DICHLOROPROPENE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	75-71-8	DICHLORODIFLUOROMETHANE	3/8/95	1000	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	100-41-4	ETHYLBENZENE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	75-09-2	METHYLENE CHLORIDE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	127-18-4	TETRACHLOROETHENE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	108-88-3	TOLUENE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	10061-02-6	TRANS-1,3-DICHLOROPROPENE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	79-01-6	TRICHLOROETHENE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	75-69-4	TRICHLOROFLUOROMETHANE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	75-01-4	VINYL CHLORIDE	3/8/95	100	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9140	1330-20-7	XYLENES, TOTAL	3/8/95	300	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	630-20-6	1,1,1,2-TETRACHLOROETHANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	71-55-6	1,1,1-TRICHLOROETHANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/27/97	25	ug/L	Y	N	UJ	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	79-00-5	1,1,2-TRICHLOROETHANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	75-34-3	1,1-DICHLOROETHANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	75-35-4	1,1-DICHLOROETHENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	563-58-6	1,1-DICHLOROPROPENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	87-61-6	1,2,3-TRICHLOROBENZENE	10/27/97	150	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	96-18-4	1,2,3-TRICHLOROPROPANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	120-82-1	1,2,4-TRICHLOROBENZENE	10/27/97	360	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	95-63-6	1,2,4-TRIMETHYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	106-93-4	1,2-DIBROMOETHANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	95-50-1	1,2-DICHLOROBENZENE	10/27/97	2800	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	107-06-2	1,2-DICHLOROETHANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	78-87-5	1,2-DICHLOROPROPANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	108-67-8	1,3,5-TRIMETHYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	541-73-1	1,3-DICHLOROBENZENE	10/27/97	160	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	142-28-9	1,3-DICHLOROPROPANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	106-46-7	1,4-DICHLOROBENZENE	10/27/97	3600	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	594-20-7	2,2-DICHLOROPROPANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	95-49-8	2-CHLOROTOLUENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	106-43-4	4-CHLOROTOLUENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	71-43-2	BENZENE	10/27/97	750	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	108-86-1	BROMOBENZENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	74-97-5	BROMOCHLOROMETHANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	75-27-4	BROMODICHLOROMETHANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	75-25-2	BROMOFORM	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	74-83-9	BROMOMETHANE	10/27/97	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	104-51-8	BUTYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	56-23-5	CARBON TETRACHLORIDE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	108-90-7	CHLOROBENZENE	10/27/97	4200	ug/L	Y	Y		1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	124-48-1	CHLORODIBROMOMETHANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	75-00-3	CHLOROETHANE	10/27/97	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	67-66-3	CHLOROFORM	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	74-87-3	CHLOROMETHANE	10/27/97	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	156-59-2	CIS-1,2-DICHLOROETHENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	74-95-3	DIBROMOMETHANE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	75-71-8	DICHLORODIFLUOROMETHANE	10/27/97	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	100-41-4	ETHYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	87-68-3	HEXACHLOROBUTADIENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	98-82-8	ISOPROPYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	7439-97-6	MERCURY	10/27/97	0.0002	mg/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	245.1
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	75-09-2	METHYLENE CHLORIDE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	91-20-3	NAPHTHALENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	103-65-1	N-PROPYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	99-87-6	P-ISOPROPYLTOLUENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	135-98-8	SEC-BUTYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	100-42-5	STYRENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	98-06-6	TERT-BUTYLBENZENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	127-18-4	TETRACHLOROETHENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	108-88-3	TOLUENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	156-60-5	TRANS-1,2-DICHLOROETHENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	79-01-6	TRICHLOROETHENE	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	75-69-4	TRICHLOROFLUOROMETHANE	10/27/97	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	75-01-4	VINYL CHLORIDE	10/27/97	50	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-111	WA9141	1330-20-7	XYLENES, TOTAL	10/27/97	25	ug/L	Y	N	U	1116682.9	920250.9	7	17	MW	WATER	Water	SW8260
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	71-55-6	1,1,1-TRICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	79-34-5	1,1,2,2-TETRACHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	79-00-5	1,1,2-TRICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	75-34-3	1,1-DICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	75-35-4	1,1-DICHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	120-82-1	1,2,4-TRICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	95-50-1	1,2-DICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	107-06-2	1,2-DICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	540-59-0	1,2-DICHLOROETHENE (TOTAL)	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	78-87-5	1,2-DICHLOROPROPANE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	541-73-1	1,3-DICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	106-46-7	1,4-DICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	95-95-4	2,4,5-TRICHLOROPHENOL	5/4/92	50	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	88-06-2	2,4,6-TRICHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	120-83-2	2,4-DICHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	105-67-9	2,4-DIMETHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	51-28-5	2,4-DINITROPHENOL	5/4/92	50	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	121-14-2	2,4-DINITROTOLUENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	606-20-2	2,6-DINITROTOLUENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	78-93-3	2-BUTANONE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	91-58-7	2-CHLORONAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	95-57-8	2-CHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	591-78-6	2-HEXANONE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	91-57-6	2-METHYLNAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	95-48-7	2-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	88-74-4	2-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	88-75-5	2-NITROPHENOL	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	99-09-2	3-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	534-52-1	4,6-DINITRO-2-METHYLPHENOL	5/4/92	50	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	101-55-3	4-BROMOPHENYL PHENYL ETHER	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	59-50-7	4-CHLORO-3-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	106-47-8	4-CHLOROANILINE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	108-10-1	4-METHYL-2-PENTANONE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	106-44-5	4-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	100-01-6	4-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	100-02-7	4-NITROPHENOL	5/4/92	50	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	83-32-9	ACENAPHTHENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	208-96-8	ACENAPHTHYLENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	67-64-1	ACETONE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7429-90-5	ALUMINUM	5/4/92	0.055	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7429-90-5	ALUMINUM	5/4/92	0.44	mg/L	Y	Y		1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	120-12-7	ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-36-0	ANTIMONY	5/4/92	0.07	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-36-0	ANTIMONY	5/4/92	0.031	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-38-2	ARSENIC	5/4/92	0.23	mg/L	Y	Y	J	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-38-2	ARSENIC	5/4/92	0.261	mg/L	Y	Y	J	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-39-3	BARIUM	5/4/92	0.01	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-39-3	BARIUM	5/4/92	0.0121	mg/L	Y	Y		1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	71-43-2	BENZENE	5/4/92	0.7	ug/L	Y	Y		1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	56-55-3	BENZO(A)ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	50-32-8	BENZO(A)PYRENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	205-99-2	BENZO(B)FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	191-24-2	BENZO(G,H,I)PERYLENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	207-08-9	BENZO(K)FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	65-85-0	BENZOIC ACID	5/4/92	50	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	100-51-6	BENZYL ALCOHOL	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-41-7	BERYLLIUM	5/4/92	0.002	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-41-7	BERYLLIUM	5/4/92	0.005	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	111-91-1	BIS(2-CHLOROETHOXY)METHANE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	111-44-4	BIS(2-CHLOROETHYL)ETHER	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	5/4/92	38	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	75-27-4	BROMODICHLOROMETHANE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	75-25-2	BROMOFORM	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	74-83-9	BROMOMETHANE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	85-68-7	BUTYLBENZYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-43-9	CADMIUM	5/4/92	0.01	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-43-9	CADMIUM	5/4/92	0.004	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-70-2	CALCIUM	5/4/92	0.488	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-70-2	CALCIUM	5/4/92	5.63	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	75-15-0	CARBON DISULFIDE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	56-23-5	CARBON TETRACHLORIDE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	108-90-7	CHLOROBENZENE	5/4/92	1	ug/L	Y	Y	J	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	124-48-1	CHLORODIBROMOMETHANE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	75-00-3	CHLOROETHANE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	67-66-3	CHLOROFORM	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	74-87-3	CHLOROMETHANE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-47-3	CHROMIUM	5/4/92	0.006	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-47-3	CHROMIUM	5/4/92	0.015	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	218-01-9	CHRYSENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	10061-01-5	CIS-1,3-DICHLOROPROPENE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-48-4	COBALT	5/4/92	0.015	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-48-4	COBALT	5/4/92	0.006	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-50-8	COPPER	5/4/92	0.0063	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-50-8	COPPER	5/4/92	0.01	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	57-12-5	CYANIDE	5/4/92	0.01	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	53-70-3	DIBENZO(A,H)ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	132-64-9	DIBENZOFURAN	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	84-66-2	DIETHYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	131-11-3	DIMETHYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	84-74-2	DI-N-BUTYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	117-84-0	DI-N-OCTYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	100-41-4	ETHYLBENZENE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	206-44-0	FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	86-73-7	FLUORENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	118-74-1	HEXACHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	87-68-3	HEXACHLOROBUTADIENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	77-47-4	HEXACHLOROCYCLOPENTADIENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	67-72-1	HEXACHLOROETHANE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	193-39-5	INDENO(1,2,3-CD)PYRENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7439-89-6	IRON	5/4/92	0.658	mg/L	Y	Y		1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7439-89-6	IRON	5/4/92	0.01	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	78-59-1	ISOPHORONE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7439-92-1	LEAD	5/4/92	0.01	mg/L	Y	N	UJ	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7439-92-1	LEAD	5/4/92	0.01	mg/L	Y	N	UJ	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7439-95-4	MAGNESIUM	5/4/92	0.08	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7439-95-4	MAGNESIUM	5/4/92	0.623	mg/L	Y	Y		1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7439-96-5	MANGANESE	5/4/92	0.0146	mg/L	Y	Y		1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7439-96-5	MANGANESE	5/4/92	0.005	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7439-97-6	MERCURY	5/4/92	0.0002	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7439-97-6	MERCURY	5/4/92	0.0002	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	75-09-2	METHYLENE CHLORIDE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	91-20-3	NAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-02-0	NICKEL	5/4/92	0.02	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-02-0	NICKEL	5/4/92	0.05	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	98-95-3	NITROBENZENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	86-30-6	N-NITROSODIPHENYLAMINE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	87-86-5	PENTACHLOROPHENOL	5/4/92	50	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	85-01-8	PHENANTHRENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	108-95-2	PHENOL	5/4/92	5	ug/L	Y	Y	J	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-09-7	POTASSIUM	5/4/92	3.16	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-09-7	POTASSIUM	5/4/92	1.26	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	129-00-0	PYRENE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7782-49-2	SELENIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7782-49-2	SELENIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-22-4	SILVER	5/4/92	0.006	mg/L	Y	N	UJ	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-22-4	SILVER	5/4/92	0.015	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-23-5	SODIUM	5/4/92	3170	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-23-5	SODIUM	5/4/92	2880	mg/L	Y	Y		1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	100-42-5	STYRENE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	127-18-4	TETRACHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-28-0	THALLIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-28-0	THALLIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	108-88-3	TOLUENE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	10061-02-6	TRANS-1,3-DICHLOROPROPENE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	79-01-6	TRICHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-62-2	VANADIUM	5/4/92	0.015	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-62-2	VANADIUM	5/4/92	0.006	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	75-01-4	VINYL CHLORIDE	5/4/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	1330-20-7	XYLENES, TOTAL	5/4/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142	7440-66-6	ZINC	5/4/92	0.0178	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9142F	7440-66-6	ZINC	5/4/92	0.015	mg/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	71-55-6	1,1,1-TRICHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	79-00-5	1,1,2-TRICHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	75-34-3	1,1-DICHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	75-35-4	1,1-DICHLOROETHENE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	95-50-1	1,2-DICHLOROBENZENE	10/2/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	107-06-2	1,2-DICHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	78-87-5	1,2-DICHLOROPROPANE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	541-73-1	1,3-DICHLOROBENZENE	10/2/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	106-46-7	1,4-DICHLOROBENZENE	10/2/92	5	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	110-75-8	2-CHLOROETHYL VINYL ETHER	10/2/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	71-43-2	BENZENE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	75-27-4	BROMODICHLOROMETHANE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	75-25-2	BROMOFORM	10/2/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	74-83-9	BROMOMETHANE	10/2/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	56-23-5	CARBON TETRACHLORIDE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	108-90-7	CHLOROBENZENE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	124-48-1	CHLORODIBROMOMETHANE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	75-00-3	CHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	67-66-3	CHLOROFORM	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	74-87-3	CHLOROMETHANE	10/2/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	75-71-8	DICHLORODIFLUOROMETHANE	10/2/92	10	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	100-41-4	ETHYLBENZENE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	75-09-2	METHYLENE CHLORIDE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	127-18-4	TETRACHLOROETHENE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	108-88-3	TOLUENE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	79-01-6	TRICHLOROETHENE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	75-69-4	TRICHLOROFLUOROMETHANE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	75-01-4	VINYL CHLORIDE	10/2/92	1	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-MW-PW	WA9143	1330-20-7	XYLENES, TOTAL	10/2/92	3	ug/L	Y	N	U	1116776.6	920076.5	4	14	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	71-55-6	1,1,1-TRICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	79-34-5	1,1,2,2-TETRACHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	79-00-5	1,1,2-TRICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	75-34-3	1,1-DICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	75-35-4	1,1-DICHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	120-82-1	1,2,4-TRICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	95-50-1	1,2-DICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	107-06-2	1,2-DICHLOROETHANE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	540-59-0	1,2-DICHLOROETHENE (TOTAL)	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	78-87-5	1,2-DICHLOROPROPANE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	541-73-1	1,3-DICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	106-46-7	1,4-DICHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	95-95-4	2,4,5-TRICHLOROPHENOL	5/4/92	50	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	88-06-2	2,4,6-TRICHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	120-83-2	2,4-DICHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	105-67-9	2,4-DIMETHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	51-28-5	2,4-DINITROPHENOL	5/4/92	50	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	121-14-2	2,4-DINITROTOLUENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	606-20-2	2,6-DINITROTOLUENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	78-93-3	2-BUTANONE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	91-58-7	2-CHLORONAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	95-57-8	2-CHLOROPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	591-78-6	2-HEXANONE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	91-57-6	2-METHYLNAPHTHALENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	95-48-7	2-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	88-74-4	2-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	88-75-5	2-NITROPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	99-09-2	3-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	534-52-1	4,6-DINITRO-2-METHYLPHENOL	5/4/92	50	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	101-55-3	4-BROMOPHENYL PHENYL ETHER	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	59-50-7	4-CHLORO-3-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	106-47-8	4-CHLOROANILINE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	108-10-1	4-METHYL-2-PENTANONE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	106-44-5	4-METHYLPHENOL	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	100-01-6	4-NITROANILINE	5/4/92	50	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	100-02-7	4-NITROPHENOL	5/4/92	50	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	83-32-9	ACENAPHTHENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	208-96-8	ACENAPHTHYLENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	67-64-1	ACETONE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7429-90-5	ALUMINUM	5/4/92	0.0425	mg/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7429-90-5	ALUMINUM	5/4/92	6.93	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	120-12-7	ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-36-0	ANTIMONY	5/4/92	0.014	mg/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-36-0	ANTIMONY	5/4/92	0.014	mg/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-38-2	ARSENIC	5/4/92	0.0154	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-38-2	ARSENIC	5/4/92	0.0276	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-39-3	BARIUM	5/4/92	0.111	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-39-3	BARIUM	5/4/92	0.0511	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	71-43-2	BENZENE	5/4/92	33	ug/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	56-55-3	BENZO(A)ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	50-32-8	BENZO(A)PYRENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	205-99-2	BENZO(B)FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	191-24-2	BENZO(G,H,I)PERYLENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	207-08-9	BENZO(K)FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	65-85-0	BENZOIC ACID	5/4/92	50	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	100-51-6	BENZYL ALCOHOL	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-41-7	BERYLLIUM	5/4/92	0.001	mg/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-41-7	BERYLLIUM	5/4/92	0.001	mg/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	111-91-1	BIS(2-CHLOROETHOXY)METHANE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	111-44-4	BIS(2-CHLOROETHYL)ETHER	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	5/4/92	55	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	75-27-4	BROMODICHLOROMETHANE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	75-25-2	BROMOFORM	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	74-83-9	BROMOMETHANE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	85-68-7	BUTYLBENZYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-43-9	CADMIUM	5/4/92	0.002	mg/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-43-9	CADMIUM	5/4/92	0.002	mg/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-70-2	CALCIUM	5/4/92	27.3	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-70-2	CALCIUM	5/4/92	2.96	mg/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	75-15-0	CARBON DISULFIDE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	56-23-5	CARBON TETRACHLORIDE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	108-90-7	CHLOROBENZENE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	124-48-1	CHLORODIBROMOMETHANE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	75-00-3	CHLOROETHANE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	67-66-3	CHLOROFORM	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	74-87-3	CHLOROMETHANE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-47-3	CHROMIUM	5/4/92	0.003	mg/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-47-3	CHROMIUM	5/4/92	0.0195	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	218-01-9	CHRYSENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	10061-01-5	CIS-1,3-DICHLOROPROPENE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-48-4	COBALT	5/4/92	0.0152	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-48-4	COBALT	5/4/92	0.003	mg/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-50-8	COPPER	5/4/92	0.0212	mg/L	Y	Y	J	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-50-8	COPPER	5/4/92	0.0624	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	57-12-5	CYANIDE	5/4/92	0.206	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	53-70-3	DIBENZO(A,H)ANTHRACENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	132-64-9	DIBENZOFURAN	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	84-66-2	DIETHYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	131-11-3	DIMETHYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	84-74-2	DI-N-BUTYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	117-84-0	DI-N-OCTYL PHTHALATE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	100-41-4	ETHYLBENZENE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	206-44-0	FLUORANTHENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	86-73-7	FLUORENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	118-74-1	HEXACHLOROBENZENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	87-68-3	HEXACHLOROBUTADIENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	77-47-4	HEXACHLOROCYCLOPENTADIENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	67-72-1	HEXACHLOROETHANE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	193-39-5	INDENO(1,2,3-CD)PYRENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7439-89-6	IRON	5/4/92	13.2	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7439-89-6	IRON	5/4/92	0.245	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	78-59-1	ISOPHORONE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7439-92-1	LEAD	5/4/92	0.01	mg/L	Y	N	UJ	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7439-92-1	LEAD	5/4/92	0.01	mg/L	Y	N	UJ	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7439-92-1	LEAD	5/4/92	0.0106	mg/L	Y	Y	J	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7439-95-4	MAGNESIUM	5/4/92	8.35	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7439-95-4	MAGNESIUM	5/4/92	0.751	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7439-96-5	MANGANESE	5/4/92	0.0122	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7439-96-5	MANGANESE	5/4/92	0.328	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7439-97-6	MERCURY	5/4/92	0.0092	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7439-97-6	MERCURY	5/4/92	0.00044	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	75-09-2	METHYLENE CHLORIDE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	91-20-3	NAPHTHALENE	5/4/92	2	ug/L	Y	Y	J	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-02-0	NICKEL	5/4/92	0.0212	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-02-0	NICKEL	5/4/92	0.0418	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	98-95-3	NITROBENZENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	86-30-6	N-NITROSODIPHENYLAMINE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	87-86-5	PENTACHLOROPHENOL	5/4/92	50	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	85-01-8	PHENANTHRENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	108-95-2	PHENOL	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-09-7	POTASSIUM	5/4/92	568	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-09-7	POTASSIUM	5/4/92	524	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	129-00-0	PYRENE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7782-49-2	SELENIUM	5/4/92	0.002	mg/L	Y	N	UJ	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7782-49-2	SELENIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-22-4	SILVER	5/4/92	0.003	mg/L	Y	N	UJ	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-22-4	SILVER	5/4/92	0.003	mg/L	Y	N	UJ	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-23-5	SODIUM	5/4/92	1760	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-23-5	SODIUM	5/4/92	1520	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	100-42-5	STYRENE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	127-18-4	TETRACHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-28-0	THALLIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-28-0	THALLIUM	5/4/92	0.02	mg/L	Y	N	UJ	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	108-88-3	TOLUENE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	10061-02-6	TRANS-1,3-DICHLOROPROPENE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	79-01-6	TRICHLOROETHENE	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-62-2	VANADIUM	5/4/92	0.0496	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-62-2	VANADIUM	5/4/92	0.0118	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	75-01-4	VINYL CHLORIDE	5/4/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	1330-20-7	XYLENES, TOTAL	5/4/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182F	7440-66-6	ZINC	5/4/92	0.003	mg/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	WATER	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9182	7440-66-6	ZINC	5/4/92	0.0544	mg/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	METALS
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	71-55-6	1,1,1-TRICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	79-00-5	1,1,2-TRICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	75-34-3	1,1-DICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	75-35-4	1,1-DICHLOROETHENE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	95-50-1	1,2-DICHLOROBENZENE	9/24/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	107-06-2	1,2-DICHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	78-87-5	1,2-DICHLOROPROPANE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	541-73-1	1,3-DICHLOROBENZENE	9/24/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	106-46-7	1,4-DICHLOROBENZENE	9/24/92	5	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	E601/602
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	110-75-8	2-CHLOROETHYL VINYL ETHER	9/24/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	71-43-2	BENZENE	9/24/92	56	ug/L	Y	Y		1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	75-27-4	BROMODICHLOROMETHANE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	75-25-2	BROMOFORM	9/24/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	74-83-9	BROMOMETHANE	9/24/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	56-23-5	CARBON TETRACHLORIDE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	108-90-7	CHLOROBENZENE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	124-48-1	CHLORODIBROMOMETHANE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	75-00-3	CHLOROETHANE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	67-66-3	CHLOROFORM	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	74-87-3	CHLOROMETHANE	9/24/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	75-71-8	DICHLORODIFLUOROMETHANE	9/24/92	10	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	100-41-4	ETHYLBENZENE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	75-09-2	METHYLENE CHLORIDE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	127-18-4	TETRACHLOROETHENE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	108-88-3	TOLUENE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	79-01-6	TRICHLOROETHENE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	75-69-4	TRICHLOROFLUOROMETHANE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	75-01-4	VINYL CHLORIDE	9/24/92	1	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Ground Water	WA-R-6-MW	WA9183	1330-20-7	XYLENES, TOTAL	9/24/92	3	ug/L	Y	N	U	1116617.8	921269.5	6.2	16.2	MW	WATER	Water	VOA
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	75-34-3	1,1-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	75-35-4	1,1-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	350	ug/Kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	95-50-1	1,2-DICHLOROBENZENE	9/30/98	560	ug/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	107-06-2	1,2-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	78-87-5	1,2-DICHLOROPROPANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	541-73-1	1,3-DICHLOROBENZENE	9/30/98	370	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	106-46-7	1,4-DICHLOROBENZENE	9/30/98	470	ug/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	920	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	120-83-2	2,4-DICHLOROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	51-28-5	2,4-DINITROPHENOL	9/30/98	920	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	121-14-2	2,4-DINITROTOLUENE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	606-20-2	2,6-DINITROTOLUENE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	78-93-3	2-BUTANONE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	91-58-7	2-CHLORONAPHTHALENE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	95-57-8	2-CHLOROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	591-78-6	2-HEXANONE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	91-57-6	2-METHYLNAPHTHALENE	9/30/98	38	ug/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	95-48-7	2-METHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	88-74-4	2-NITROANILINE	9/30/98	920	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	88-75-5	2-NITROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	370	ug/Kg	Y	N	UJ	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	99-09-2	3-NITROANILINE	9/30/98	920	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	72-54-8	4,4'-DDD	9/30/98	740	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	72-55-9	4,4'-DDE	9/30/98	740	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	50-29-3	4,4'-DDT	9/30/98	740	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	920	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	106-47-8	4-CHLOROANILINE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	108-10-1	4-METHYL-2-PENTANONE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	106-44-5	4-METHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	100-01-6	4-NITROANILINE	9/30/98	920	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	100-02-7	4-NITROPHENOL	9/30/98	920	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	83-32-9	ACENAPHTHENE	9/30/98	37	ug/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	208-96-8	ACENAPHTHYLENE	9/30/98	370	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	67-64-1	ACETONE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	309-00-2	ALDRIN	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	319-84-6	ALPHA-BHC	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	5103-71-9	ALPHA-CHLORDANE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7429-90-5	ALUMINUM	9/30/98	3860	mg/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	120-12-7	ANTHRACENE	9/30/98	100	ug/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-36-0	ANTIMONY	9/30/98	0.64	mg/kg	Y	N	UJ	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	12674-11-2	AROCLOR-1016	9/30/98	7400	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	11104-28-2	AROCLOR-1221	9/30/98	15000	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	11141-16-5	AROCLOR-1232	9/30/98	7400	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	53469-21-9	AROCLOR-1242	9/30/98	7400	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	12672-29-6	AROCLOR-1248	9/30/98	7400	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	11097-69-1	AROCLOR-1254	9/30/98	6200	ug/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	11096-82-5	AROCLOR-1260	9/30/98	7400	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-38-2	ARSENIC	9/30/98	9	mg/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-39-3	BARIUM	9/30/98	45.4	mg/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	71-43-2	BENZENE	9/30/98	11	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	56-55-3	BENZO(A)ANTHRACENE	9/30/98	320	ug/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	50-32-8	BENZO(A)PYRENE	9/30/98	270	ug/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	450	ug/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	230	ug/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	140	ug/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-41-7	BERYLLIUM	9/30/98	0.47	mg/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	319-85-7	BETA-BHC	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	140	ug/Kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	75-27-4	BROMODICHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	75-25-2	BROMOFORM	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	74-83-9	BROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-43-9	CADMIUM	9/30/98	0.53	mg/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-70-2	CALCIUM	9/30/98	196000	mg/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	86-74-8	CARBAZOLE	9/30/98	41	ug/Kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	75-15-0	CARBON DISULFIDE	9/30/98	11	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	56-23-5	CARBON TETRACHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	108-90-7	CHLOROBENZENE	9/30/98	2	ug/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	124-48-1	CHLORODIBROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	75-00-3	CHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	67-66-3	CHLOROFORM	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	74-87-3	CHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-47-3	CHROMIUM	9/30/98	11.4	mg/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	218-01-9	CHRYSENE	9/30/98	400	ug/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-48-4	COBALT	9/30/98	5.2	mg/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-50-8	COPPER	9/30/98	27.3	mg/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	57-12-5	CYANIDE	9/30/98	0.55	mg/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	319-86-8	DELTA-BHC	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	370	ug/kg	Y	N	UJ	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	132-64-9	DIBENZOFURAN	9/30/98	370	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	60-57-1	DIELDRIN	9/30/98	740	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	84-66-2	DIETHYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	131-11-3	DIMETHYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	UJ	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	959-98-8	ENDOSULFAN I	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	33213-65-9	ENDOSULFAN II	9/30/98	740	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	1031-07-8	ENDOSULFAN SULFATE	9/30/98	740	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	72-20-8	ENDRIN	9/30/98	740	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7421-93-4	ENDRIN ALDEHYDE	9/30/98	740	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	53494-70-5	ENDRIN KETONE	9/30/98	740	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	100-41-4	ETHYLBENZENE	9/30/98	11	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	206-44-0	FLUORANTHENE	9/30/98	560	ug/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	86-73-7	FLUORENE	9/30/98	44	ug/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	5566-34-7	GAMMA-CHLORDANE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	76-44-8	HEPTACHLOR	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	118-74-1	HEXACHLOROBENZENE	9/30/98	38	ug/Kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	87-68-3	HEXACHLOROBUTADIENE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	370	ug/Kg	Y	N	UJ	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	67-72-1	HEXACHLOROETHANE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	180	ug/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7439-89-6	IRON	9/30/98	11500	mg/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	78-59-1	ISOPHORONE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7439-92-1	LEAD	9/30/98	93.3	mg/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7439-95-4	MAGNESIUM	9/30/98	14300	mg/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7439-96-5	MANGANESE	9/30/98	308	mg/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7439-97-6	MERCURY	9/30/98	0.53	mg/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	245.1M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	72-43-5	METHOXYCHLOR	9/30/98	3700	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	75-09-2	METHYLENE CHLORIDE	9/30/98	11	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	91-20-3	NAPHTHALENE	9/30/98	38	ug/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-02-0	NICKEL	9/30/98	16.5	mg/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	98-95-3	NITROBENZENE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	370	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	87-86-5	PENTACHLOROPHENOL	9/30/98	920	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	85-01-8	PHENANTHRENE	9/30/98	470	ug/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	108-95-2	PHENOL	9/30/98	370	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-09-7	POTASSIUM	9/30/98	565	mg/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	129-00-0	PYRENE	9/30/98	670	ug/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7782-49-2	SELENIUM	9/30/98	1.1	mg/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-22-4	SILVER	9/30/98	0.24	mg/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-23-5	SODIUM	9/30/98	310	mg/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	100-42-5	STYRENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	127-18-4	TETRACHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-28-0	THALLIUM	9/30/98	1.6	mg/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	108-88-3	TOLUENE	9/30/98	11	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	TSO	TOTAL SOLIDS	9/30/98	90.7	%	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	2540-G

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	8001-35-2	TOXAPHENE	9/30/98	37000	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	79-01-6	TRICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-62-2	VANADIUM	9/30/98	9.7	mg/kg	Y	Y	J	1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	75-01-4	VINYL CHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	1330-20-7	XYLENES, TOTAL	9/30/98	11	ug/kg	Y	N	U	1116685.7	920068.7	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9055	7440-66-6	ZINC	9/30/98	53.5	mg/kg	Y	Y		1116685.7	920068.7	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	75-34-3	1,1-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	75-35-4	1,1-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	850	ug/Kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	95-50-1	1,2-DICHLOROBENZENE	9/30/98	440	ug/kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	107-06-2	1,2-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	78-87-5	1,2-DICHLOROPROPANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	541-73-1	1,3-DICHLOROBENZENE	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	106-46-7	1,4-DICHLOROBENZENE	9/30/98	750	ug/kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	900	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	120-83-2	2,4-DICHLOROPHENOL	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	51-28-5	2,4-DINITROPHENOL	9/30/98	900	ug/Kg	Y	N	UJ	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	121-14-2	2,4-DINITROTOLUENE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	606-20-2	2,6-DINITROTOLUENE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	78-93-3	2-BUTANONE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	91-58-7	2-CHLORONAPHTHALENE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	95-57-8	2-CHLOROPHENOL	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	591-78-6	2-HEXANONE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	91-57-6	2-METHYLNAPHTHALENE	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	95-48-7	2-METHYLPHENOL	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	88-74-4	2-NITROANILINE	9/30/98	900	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	88-75-5	2-NITROPHENOL	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	99-09-2	3-NITROANILINE	9/30/98	900	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	72-54-8	4,4'-DDD	9/30/98	36	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	72-55-9	4,4'-DDE	9/30/98	36	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	50-29-3	4,4'-DDT	9/30/98	36	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	900	ug/Kg	Y	N	UJ	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	106-47-8	4-CHLOROANILINE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	108-10-1	4-METHYL-2-PENTANONE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	106-44-5	4-METHYLPHENOL	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	100-01-6	4-NITROANILINE	9/30/98	900	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	100-02-7	4-NITROPHENOL	9/30/98	900	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	83-32-9	ACENAPHTHENE	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	208-96-8	ACENAPHTHYLENE	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	67-64-1	ACETONE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	309-00-2	ALDRIN	9/30/98	18	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	319-84-6	ALPHA-BHC	9/30/98	18	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	5103-71-9	ALPHA-CHLORDANE	9/30/98	18	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7429-90-5	ALUMINUM	9/30/98	827	mg/kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	120-12-7	ANTHRACENE	9/30/98	39	ug/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-36-0	ANTIMONY	9/30/98	0.62	mg/kg	Y	N	UJ	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	12674-11-2	AROCLOR-1016	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	11104-28-2	AROCLOR-1221	9/30/98	710	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	11141-16-5	AROCLOR-1232	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	53469-21-9	AROCLOR-1242	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	12672-29-6	AROCLOR-1248	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	11097-69-1	AROCLOR-1254	9/30/98	410	ug/kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	11096-82-5	AROCLOR-1260	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-38-2	ARSENIC	9/30/98	6	mg/kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-39-3	BARIUM	9/30/98	8.7	mg/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	71-43-2	BENZENE	9/30/98	2	ug/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	56-55-3	BENZO(A)ANTHRACENE	9/30/98	85	ug/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	50-32-8	BENZO(A)PYRENE	9/30/98	67	ug/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	94	ug/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-41-7	BERYLLIUM	9/30/98	0.25	mg/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	319-85-7	BETA-BHC	9/30/98	18	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	720	ug/Kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	75-27-4	BROMODICHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	75-25-2	BROMOFORM	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	74-83-9	BROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-43-9	CADMIUM	9/30/98	0.61	mg/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-70-2	CALCIUM	9/30/98	305000	mg/kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	86-74-8	CARBAZOLE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	75-15-0	CARBON DISULFIDE	9/30/98	11	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	56-23-5	CARBON TETRACHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	108-90-7	CHLOROBENZENE	9/30/98	56	ug/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	124-48-1	CHLORODIBROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	75-00-3	CHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	67-66-3	CHLOROFORM	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	74-87-3	CHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-47-3	CHROMIUM	9/30/98	4.8	mg/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	218-01-9	CHRYSENE	9/30/98	100	ug/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-48-4	COBALT	9/30/98	5.5	mg/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-50-8	COPPER	9/30/98	10.2	mg/kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	57-12-5	CYANIDE	9/30/98	0.54	mg/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	319-86-8	DELTA-BHC	9/30/98	18	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	132-64-9	DIBENZOFURAN	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	60-57-1	DIELDRIN	9/30/98	36	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	84-66-2	DIETHYL PHTHALATE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	131-11-3	DIMETHYL PHTHALATE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	959-98-8	ENDOSULFAN I	9/30/98	18	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	33213-65-9	ENDOSULFAN II	9/30/98	36	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	1031-07-8	ENDOSULFAN SULFATE	9/30/98	36	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	72-20-8	ENDRIN	9/30/98	36	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7421-93-4	ENDRIN ALDEHYDE	9/30/98	17	ug/Kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	53494-70-5	ENDRIN KETONE	9/30/98	36	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	100-41-4	ETHYLBENZENE	9/30/98	11	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	206-44-0	FLUORANTHENE	9/30/98	170	ug/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	86-73-7	FLUORENE	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	18	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	5566-34-7	GAMMA-CHLORDANE	9/30/98	18	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	76-44-8	HEPTACHLOR	9/30/98	18	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	1.9	ug/Kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	118-74-1	HEXACHLOROBENZENE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	87-68-3	HEXACHLOROBUTADIENE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	360	ug/Kg	Y	N	UJ	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	67-72-1	HEXACHLOROETHANE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7439-89-6	IRON	9/30/98	5210	mg/kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	78-59-1	ISOPHORONE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7439-92-1	LEAD	9/30/98	13	mg/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7439-95-4	MAGNESIUM	9/30/98	11000	mg/kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7439-96-5	MANGANESE	9/30/98	365	mg/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7439-97-6	MERCURY	9/30/98	0.05	mg/kg	Y	N	UJ	1116685.7	920068.7	2	10	SB	SOIL	Soil	245.1M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	72-43-5	METHOXYCHLOR	9/30/98	180	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	75-09-2	METHYLENE CHLORIDE	9/30/98	11	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	91-20-3	NAPHTHALENE	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-02-0	NICKEL	9/30/98	10.7	mg/kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	98-95-3	NITROBENZENE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	360	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	87-86-5	PENTACHLOROPHENOL	9/30/98	900	ug/Kg	Y	N	UJ	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	85-01-8	PHENANTHRENE	9/30/98	150	ug/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	108-95-2	PHENOL	9/30/98	360	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-09-7	POTASSIUM	9/30/98	371	mg/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	129-00-0	PYRENE	9/30/98	140	ug/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7782-49-2	SELENIUM	9/30/98	1	mg/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-22-4	SILVER	9/30/98	0.24	mg/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-23-5	SODIUM	9/30/98	326	mg/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	100-42-5	STYRENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	127-18-4	TETRACHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-28-0	THALLIUM	9/30/98	1.6	mg/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	108-88-3	TOLUENE	9/30/98	11	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	TSO	TOTAL SOLIDS	9/30/98	93.4	%	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	2540-G
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	8001-35-2	TOXAPHENE	9/30/98	1800	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	79-01-6	TRICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-62-2	VANADIUM	9/30/98	3.2	mg/kg	Y	Y	J	1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	75-01-4	VINYL CHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	1330-20-7	XYLENES, TOTAL	9/30/98	11	ug/kg	Y	N	U	1116685.7	920068.7	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-1	WA9056	7440-66-6	ZINC	9/30/98	8.3	mg/kg	Y	Y		1116685.7	920068.7	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	75-34-3	1,1-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	75-35-4	1,1-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	17000	ug/Kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	95-50-1	1,2-DICHLOROBENZENE	9/30/98	5900	ug/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	107-06-2	1,2-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	78-87-5	1,2-DICHLOROPROPANE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	541-73-1	1,3-DICHLOROBENZENE	9/30/98	350	ug/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	106-46-7	1,4-DICHLOROBENZENE	9/30/98	6500	ug/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	940	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	120-83-2	2,4-DICHLOROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	51-28-5	2,4-DINITROPHENOL	9/30/98	940	ug/Kg	Y	N	UJ	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	121-14-2	2,4-DINITROTOLUENE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	606-20-2	2,6-DINITROTOLUENE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	78-93-3	2-BUTANONE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	91-58-7	2-CHLORONAPHTHALENE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	95-57-8	2-CHLOROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	591-78-6	2-HEXANONE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	91-57-6	2-METHYLNAPHTHALENE	9/30/98	95	ug/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	95-48-7	2-METHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	88-74-4	2-NITROANILINE	9/30/98	940	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	88-75-5	2-NITROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	99-09-2	3-NITROANILINE	9/30/98	940	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	72-54-8	4,4'-DDD	9/30/98	19000	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	72-55-9	4,4'-DDE	9/30/98	19000	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	50-29-3	4,4'-DDT	9/30/98	19000	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	940	ug/Kg	Y	N	UJ	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	106-47-8	4-CHLOROANILINE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	108-10-1	4-METHYL-2-PENTANONE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	106-44-5	4-METHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	100-01-6	4-NITROANILINE	9/30/98	940	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	100-02-7	4-NITROPHENOL	9/30/98	940	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	83-32-9	ACENAPHTHENE	9/30/98	370	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	208-96-8	ACENAPHTHYLENE	9/30/98	370	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	67-64-1	ACETONE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	309-00-2	ALDRIN	9/30/98	9400	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	319-84-6	ALPHA-BHC	9/30/98	9400	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	5103-71-9	ALPHA-CHLORDANE	9/30/98	9400	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7429-90-5	ALUMINUM	9/30/98	2680	mg/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	120-12-7	ANTHRACENE	9/30/98	120	ug/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-36-0	ANTIMONY	9/30/98	0.65	mg/kg	Y	N	UJ	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	12674-11-2	AROCLOR-1016	9/30/98	190000	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	11104-28-2	AROCLOR-1221	9/30/98	370000	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	11141-16-5	AROCLOR-1232	9/30/98	190000	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	53469-21-9	AROCLOR-1242	9/30/98	190000	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	12672-29-6	AROCLOR-1248	9/30/98	190000	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	11097-69-1	AROCLOR-1254	9/30/98	120000	ug/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	11096-82-5	AROCLOR-1260	9/30/98	190000	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-38-2	ARSENIC	9/30/98	6	mg/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-39-3	BARIUM	9/30/98	71.4	mg/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	71-43-2	BENZENE	9/30/98	8	ug/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	56-55-3	BENZO(A)ANTHRACENE	9/30/98	480	ug/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	50-32-8	BENZO(A)PYRENE	9/30/98	570	ug/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	1600	ug/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	1400	ug/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	380	ug/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-41-7	BERYLLIUM	9/30/98	0.51	mg/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	319-85-7	BETA-BHC	9/30/98	9400	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	410	ug/Kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	75-27-4	BROMODICHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	75-25-2	BROMOFORM	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	74-83-9	BROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-43-9	CADMIUM	9/30/98	0.55	mg/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-70-2	CALCIUM	9/30/98	210000	mg/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	86-74-8	CARBAZOLE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	75-15-0	CARBON DISULFIDE	9/30/98	11	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	56-23-5	CARBON TETRACHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	108-90-7	CHLOROBENZENE	9/30/98	46	ug/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	124-48-1	CHLORODIBROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	75-00-3	CHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	67-66-3	CHLOROFORM	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	74-87-3	CHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-47-3	CHROMIUM	9/30/98	14.2	mg/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	218-01-9	CHRYSENE	9/30/98	710	ug/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-48-4	COBALT	9/30/98	5.4	mg/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-50-8	COPPER	9/30/98	42.2	mg/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	57-12-5	CYANIDE	9/30/98	0.56	mg/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	319-86-8	DELTA-BHC	9/30/98	9400	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	330	ug/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	132-64-9	DIBENZOFURAN	9/30/98	63	ug/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	60-57-1	DIELDRIN	9/30/98	19000	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	84-66-2	DIETHYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	131-11-3	DIMETHYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	959-98-8	ENDOSULFAN I	9/30/98	9400	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	33213-65-9	ENDOSULFAN II	9/30/98	19000	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	1031-07-8	ENDOSULFAN SULFATE	9/30/98	19000	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	72-20-8	ENDRIN	9/30/98	19000	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7421-93-4	ENDRIN ALDEHYDE	9/30/98	19000	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	53494-70-5	ENDRIN KETONE	9/30/98	19000	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	100-41-4	ETHYLBENZENE	9/30/98	11	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	206-44-0	FLUORANTHENE	9/30/98	670	ug/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	86-73-7	FLUORENE	9/30/98	370	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	9400	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	5566-34-7	GAMMA-CHLORDANE	9/30/98	9400	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	76-44-8	HEPTACHLOR	9/30/98	9400	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	9400	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	118-74-1	HEXACHLOROBENZENE	9/30/98	5400	ug/Kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	87-68-3	HEXACHLOROBUTADIENE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	370	ug/Kg	Y	N	UJ	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	67-72-1	HEXACHLOROETHANE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	890	ug/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7439-89-6	IRON	9/30/98	15200	mg/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	78-59-1	ISOPHORONE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7439-92-1	LEAD	9/30/98	55.4	mg/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7439-95-4	MAGNESIUM	9/30/98	9930	mg/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7439-96-5	MANGANESE	9/30/98	287	mg/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7439-97-6	MERCURY	9/30/98	1	mg/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	245.1M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	72-43-5	METHOXYCHLOR	9/30/98	94000	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	75-09-2	METHYLENE CHLORIDE	9/30/98	11	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	91-20-3	NAPHTHALENE	9/30/98	93	ug/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-02-0	NICKEL	9/30/98	26.1	mg/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	98-95-3	NITROBENZENE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	370	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	87-86-5	PENTACHLOROPHENOL	9/30/98	940	ug/Kg	Y	N	UJ	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	85-01-8	PHENANTHRENE	9/30/98	390	ug/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	108-95-2	PHENOL	9/30/98	370	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-09-7	POTASSIUM	9/30/98	293	mg/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	129-00-0	PYRENE	9/30/98	630	ug/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7782-49-2	SELENIUM	9/30/98	1.1	mg/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-22-4	SILVER	9/30/98	0.25	mg/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-23-5	SODIUM	9/30/98	1200	mg/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	100-42-5	STYRENE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	127-18-4	TETRACHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-28-0	THALLIUM	9/30/98	1.7	mg/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	108-88-3	TOLUENE	9/30/98	11	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	TSO	TOTAL SOLIDS	9/30/98	89	%	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	2540-G
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	8001-35-2	TOXAPHENE	9/30/98	940000	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	79-01-6	TRICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-62-2	VANADIUM	9/30/98	8.2	mg/kg	Y	Y	J	1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	75-01-4	VINYL CHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	1330-20-7	XYLENES, TOTAL	9/30/98	11	ug/kg	Y	N	U	1116671.5	920264.2	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9057	7440-66-6	ZINC	9/30/98	112	mg/kg	Y	Y		1116671.5	920264.2	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	75-34-3	1,1-DICHLOROETHANE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	75-35-4	1,1-DICHLOROETHENE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	3000000	ug/Kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	95-50-1	1,2-DICHLOROBENZENE	9/30/98	1400000	ug/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	107-06-2	1,2-DICHLOROETHANE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	78-87-5	1,2-DICHLOROPROPANE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	541-73-1	1,3-DICHLOROBENZENE	9/30/98	63000	ug/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	106-46-7	1,4-DICHLOROBENZENE	9/30/98	2000000	ug/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	29000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	120-83-2	2,4-DICHLOROPHENOL	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	51-28-5	2,4-DINITROPHENOL	9/30/98	29000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	121-14-2	2,4-DINITROTOLUENE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	606-20-2	2,6-DINITROTOLUENE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	78-93-3	2-BUTANONE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	91-58-7	2-CHLORONAPHTHALENE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	95-57-8	2-CHLOROPHENOL	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	591-78-6	2-HEXANONE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	91-57-6	2-METHYLNAPHTHALENE	9/30/98	1300	ug/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	95-48-7	2-METHYLPHENOL	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	88-74-4	2-NITROANILINE	9/30/98	29000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	88-75-5	2-NITROPHENOL	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	99-09-2	3-NITROANILINE	9/30/98	29000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	72-54-8	4,4'-DDD	9/30/98	8300	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	72-55-9	4,4'-DDE	9/30/98	8300	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	50-29-3	4,4'-DDT	9/30/98	8300	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	29000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	106-47-8	4-CHLOROANILINE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	108-10-1	4-METHYL-2-PENTANONE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	106-44-5	4-METHYLPHENOL	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	100-01-6	4-NITROANILINE	9/30/98	29000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	100-02-7	4-NITROPHENOL	9/30/98	29000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	83-32-9	ACENAPHTHENE	9/30/98	12000	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	208-96-8	ACENAPHTHYLENE	9/30/98	12000	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	67-64-1	ACETONE	9/30/98	120	ug/Kg	Y	N	UJ	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	309-00-2	ALDRIN	9/30/98	4200	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	319-84-6	ALPHA-BHC	9/30/98	4200	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	5103-71-9	ALPHA-CHLORDANE	9/30/98	4200	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7429-90-5	ALUMINUM	9/30/98	7580	mg/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	120-12-7	ANTHRACENE	9/30/98	5400	ug/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-36-0	ANTIMONY	9/30/98	0.72	mg/kg	Y	N	UJ	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	12674-11-2	AROCLOR-1016	9/30/98	83000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	11104-28-2	AROCLOR-1221	9/30/98	170000	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	11141-16-5	AROCLOR-1232	9/30/98	83000	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	53469-21-9	AROCLOR-1242	9/30/98	83000	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	12672-29-6	AROCLOR-1248	9/30/98	83000	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	11097-69-1	AROCLOR-1254	9/30/98	92000	ug/kg	Y	Y	JN	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	11096-82-5	AROCLOR-1260	9/30/98	83000	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-38-2	ARSENIC	9/30/98	3	mg/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-39-3	BARIUM	9/30/98	54.1	mg/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	71-43-2	BENZENE	9/30/98	2400	ug/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	56-55-3	BENZO(A)ANTHRACENE	9/30/98	17000	ug/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	50-32-8	BENZO(A)PYRENE	9/30/98	12000	ug/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	17000	ug/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	5200	ug/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	6300	ug/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-41-7	BERYLLIUM	9/30/98	0.53	mg/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	319-85-7	BETA-BHC	9/30/98	4200	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	75-27-4	BROMODICHLOROMETHANE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	75-25-2	BROMOFORM	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	74-83-9	BROMOMETHANE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-43-9	CADMIUM	9/30/98	0.17	mg/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-70-2	CALCIUM	9/30/98	93300	mg/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	86-74-8	CARBAZOLE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	75-15-0	CARBON DISULFIDE	9/30/98	120	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	56-23-5	CARBON TETRACHLORIDE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	108-90-7	CHLOROBENZENE	9/30/98	56000	ug/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	124-48-1	CHLORODIBROMOMETHANE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	75-00-3	CHLOROETHANE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	67-66-3	CHLOROFORM	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	74-87-3	CHLOROMETHANE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-47-3	CHROMIUM	9/30/98	12.7	mg/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	218-01-9	CHRYSENE	9/30/98	19000	ug/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-48-4	COBALT	9/30/98	4.9	mg/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-50-8	COPPER	9/30/98	19.4	mg/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	57-12-5	CYANIDE	9/30/98	0.62	mg/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	319-86-8	DELTA-BHC	9/30/98	4200	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	2300	ug/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	132-64-9	DIBENZOFURAN	9/30/98	12000	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	60-57-1	DIELDRIN	9/30/98	8300	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	84-66-2	DIETHYL PHTHALATE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	131-11-3	DIMETHYL PHTHALATE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	12000	ug/Kg	Y	N	UJ	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	959-98-8	ENDOSULFAN I	9/30/98	4200	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	33213-65-9	ENDOSULFAN II	9/30/98	8300	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	1031-07-8	ENDOSULFAN SULFATE	9/30/98	8300	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	72-20-8	ENDRIN	9/30/98	8300	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7421-93-4	ENDRIN ALDEHYDE	9/30/98	8300	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	53494-70-5	ENDRIN KETONE	9/30/98	8300	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	100-41-4	ETHYLBENZENE	9/30/98	120	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	206-44-0	FLUORANTHENE	9/30/98	22000	ug/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	86-73-7	FLUORENE	9/30/98	12000	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	4200	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	5566-34-7	GAMMA-CHLORDANE	9/30/98	4200	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	76-44-8	HEPTACHLOR	9/30/98	4200	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	4200	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	118-74-1	HEXACHLOROBENZENE	9/30/98	13000	ug/Kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	87-68-3	HEXACHLOROBUTADIENE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	67-72-1	HEXACHLOROETHANE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	5000	ug/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7439-89-6	IRON	9/30/98	13100	mg/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	78-59-1	ISOPHORONE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7439-92-1	LEAD	9/30/98	24.9	mg/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7439-95-4	MAGNESIUM	9/30/98	18100	mg/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7439-96-5	MANGANESE	9/30/98	416	mg/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7439-97-6	MERCURY	9/30/98	0.22	mg/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	245.1M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	72-43-5	METHOXYCHLOR	9/30/98	42000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	75-09-2	METHYLENE CHLORIDE	9/30/98	120	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	91-20-3	NAPHTHALENE	9/30/98	3600	ug/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-02-0	NICKEL	9/30/98	14.4	mg/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	98-95-3	NITROBENZENE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	12000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	87-86-5	PENTACHLOROPHENOL	9/30/98	29000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	85-01-8	PHENANTHRENE	9/30/98	9200	ug/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	108-95-2	PHENOL	9/30/98	12000	ug/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-09-7	POTASSIUM	9/30/98	1060	mg/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	129-00-0	PYRENE	9/30/98	24000	ug/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7782-49-2	SELENIUM	9/30/98	1.2	mg/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-22-4	SILVER	9/30/98	0.27	mg/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-23-5	SODIUM	9/30/98	1330	mg/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	100-42-5	STYRENE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	127-18-4	TETRACHLOROETHENE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-28-0	THALLIUM	9/30/98	1.8	mg/kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	108-88-3	TOLUENE	9/30/98	21	ug/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	TSO	TOTAL SOLIDS	9/30/98	80.3	%	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	2540-G
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	8001-35-2	TOXAPHENE	9/30/98	420000	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	79-01-6	TRICHLOROETHENE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-62-2	VANADIUM	9/30/98	12	mg/kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	75-01-4	VINYL CHLORIDE	9/30/98	120	ug/Kg	Y	N	U	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	1330-20-7	XYLENES, TOTAL	9/30/98	24	ug/Kg	Y	Y	J	1116671.5	920264.2	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-2	WA9058	7440-66-6	ZINC	9/30/98	141	mg/kg	Y	Y		1116671.5	920264.2	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	75-34-3	1,1-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	75-35-4	1,1-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	95-50-1	1,2-DICHLOROBENZENE	9/30/98	10000	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	107-06-2	1,2-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	78-87-5	1,2-DICHLOROPROPANE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	541-73-1	1,3-DICHLOROBENZENE	9/30/98	10000	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	106-46-7	1,4-DICHLOROBENZENE	9/30/98	10000	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	26000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	120-83-2	2,4-DICHLOROPHENOL	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	51-28-5	2,4-DINITROPHENOL	9/30/98	26000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	121-14-2	2,4-DINITROTOLUENE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	606-20-2	2,6-DINITROTOLUENE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	78-93-3	2-BUTANONE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	91-58-7	2-CHLORONAPHTHALENE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	95-57-8	2-CHLOROPHENOL	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	591-78-6	2-HEXANONE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	91-57-6	2-METHYLNAPHTHALENE	9/30/98	2200	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	95-48-7	2-METHYLPHENOL	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	88-74-4	2-NITROANILINE	9/30/98	26000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	88-75-5	2-NITROPHENOL	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	99-09-2	3-NITROANILINE	9/30/98	26000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	72-54-8	4,4'-DDD	9/30/98	180	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	72-55-9	4,4'-DDE	9/30/98	180	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	50-29-3	4,4'-DDT	9/30/98	180	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	26000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	106-47-8	4-CHLOROANILINE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	108-10-1	4-METHYL-2-PENTANONE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	106-44-5	4-METHYLPHENOL	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	100-01-6	4-NITROANILINE	9/30/98	26000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	100-02-7	4-NITROPHENOL	9/30/98	26000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	83-32-9	ACENAPHTHENE	9/30/98	2200	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	208-96-8	ACENAPHTHYLENE	9/30/98	10000	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	67-64-1	ACETONE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	309-00-2	ALDRIN	9/30/98	9.2	ug/Kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	319-84-6	ALPHA-BHC	9/30/98	92	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	5103-71-9	ALPHA-CHLORDANE	9/30/98	92	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7429-90-5	ALUMINUM	9/30/98	2100	mg/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	120-12-7	ANTHRACENE	9/30/98	6800	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-36-0	ANTIMONY	9/30/98	0.85	mg/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	12674-11-2	AROCLOR-1016	9/30/98	1800	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	11104-28-2	AROCLOR-1221	9/30/98	3700	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	11141-16-5	AROCLOR-1232	9/30/98	1800	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	53469-21-9	AROCLOR-1242	9/30/98	1800	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	12672-29-6	AROCLOR-1248	9/30/98	1800	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	11097-69-1	AROCLOR-1254	9/30/98	750	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	11096-82-5	AROCLOR-1260	9/30/98	1800	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-38-2	ARSENIC	9/30/98	11.7	mg/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-39-3	BARIUM	9/30/98	76	mg/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	71-43-2	BENZENE	9/30/98	11	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	56-55-3	BENZO(A)ANTHRACENE	9/30/98	17000	ug/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	50-32-8	BENZO(A)PYRENE	9/30/98	14000	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	22000	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	8700	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	6800	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-41-7	BERYLLIUM	9/30/98	0.36	mg/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	319-85-7	BETA-BHC	9/30/98	92	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	75-27-4	BROMODICHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	75-25-2	BROMOFORM	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	74-83-9	BROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-43-9	CADMIUM	9/30/98	0.7	mg/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-70-2	CALCIUM	9/30/98	164000	mg/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	86-74-8	CARBAZOLE	9/30/98	1300	ug/Kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	75-15-0	CARBON DISULFIDE	9/30/98	11	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	56-23-5	CARBON TETRACHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	108-90-7	CHLOROBENZENE	9/30/98	2	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	124-48-1	CHLORODIBROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	75-00-3	CHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	67-66-3	CHLOROFORM	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	74-87-3	CHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-47-3	CHROMIUM	9/30/98	20.3	mg/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	218-01-9	CHRYSENE	9/30/98	19000	ug/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-48-4	COBALT	9/30/98	6.4	mg/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-50-8	COPPER	9/30/98	159	mg/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	57-12-5	CYANIDE	9/30/98	0.55	mg/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	319-86-8	DELTA-BHC	9/30/98	92	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	3000	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	132-64-9	DIBENZOFURAN	9/30/98	2700	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	60-57-1	DIELDRIN	9/30/98	180	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	84-66-2	DIETHYL PHTHALATE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	131-11-3	DIMETHYL PHTHALATE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	10000	ug/Kg	Y	N	UJ	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	959-98-8	ENDOSULFAN I	9/30/98	92	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	33213-65-9	ENDOSULFAN II	9/30/98	29	ug/Kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	1031-07-8	ENDOSULFAN SULFATE	9/30/98	180	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	72-20-8	ENDRIN	9/30/98	180	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7421-93-4	ENDRIN ALDEHYDE	9/30/98	180	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	53494-70-5	ENDRIN KETONE	9/30/98	88	ug/Kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	100-41-4	ETHYLBENZENE	9/30/98	11	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	206-44-0	FLUORANTHENE	9/30/98	31000	ug/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	86-73-7	FLUORENE	9/30/98	3700	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	92	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	5566-34-7	GAMMA-CHLORDANE	9/30/98	92	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	76-44-8	HEPTACHLOR	9/30/98	92	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	92	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	118-74-1	HEXACHLOROBENZENE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	87-68-3	HEXACHLOROBUTADIENE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	67-72-1	HEXACHLOROETHANE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	7900	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7439-89-6	IRON	9/30/98	21700	mg/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	78-59-1	ISOPHORONE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7439-92-1	LEAD	9/30/98	134	mg/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7439-95-4	MAGNESIUM	9/30/98	11000	mg/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7439-96-5	MANGANESE	9/30/98	238	mg/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7439-97-6	MERCURY	9/30/98	0.65	mg/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	245.1M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	72-43-5	METHOXYCHLOR	9/30/98	920	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	75-09-2	METHYLENE CHLORIDE	9/30/98	11	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	91-20-3	NAPHTHALENE	9/30/98	1900	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-02-0	NICKEL	9/30/98	32.5	mg/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	98-95-3	NITROBENZENE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	10000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	87-86-5	PENTACHLOROPHENOL	9/30/98	26000	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	85-01-8	PHENANTHRENE	9/30/98	25000	ug/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	108-95-2	PHENOL	9/30/98	10000	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-09-7	POTASSIUM	9/30/98	384	mg/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	129-00-0	PYRENE	9/30/98	33000	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7782-49-2	SELENIUM	9/30/98	1.1	mg/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-22-4	SILVER	9/30/98	0.24	mg/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-23-5	SODIUM	9/30/98	341	mg/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	100-42-5	STYRENE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	127-18-4	TETRACHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-28-0	THALLIUM	9/30/98	1.6	mg/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	108-88-3	TOLUENE	9/30/98	11	ug/kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	TSO	TOTAL SOLIDS	9/30/98	91.3	%	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	2540-G
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	8001-35-2	TOXAPHENE	9/30/98	9200	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	79-01-6	TRICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-62-2	VANADIUM	9/30/98	7.5	mg/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	75-01-4	VINYL CHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	1330-20-7	XYLENES, TOTAL	9/30/98	2	ug/kg	Y	Y	J	1116667.3	920431.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9059	7440-66-6	ZINC	9/30/98	109	mg/kg	Y	Y		1116667.3	920431.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	75-34-3	1,1-DICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	75-35-4	1,1-DICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	95-50-1	1,2-DICHLOROBENZENE	9/30/98	390	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	107-06-2	1,2-DICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	78-87-5	1,2-DICHLOROPROPANE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	541-73-1	1,3-DICHLOROBENZENE	9/30/98	390	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	106-46-7	1,4-DICHLOROBENZENE	9/30/98	390	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	970	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	120-83-2	2,4-DICHLOROPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	51-28-5	2,4-DINITROPHENOL	9/30/98	970	ug/Kg	Y	N	UJ	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	121-14-2	2,4-DINITROTOLUENE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	606-20-2	2,6-DINITROTOLUENE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	78-93-3	2-BUTANONE	9/30/98	2	ug/Kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	91-58-7	2-CHLORONAPHTHALENE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	95-57-8	2-CHLOROPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	591-78-6	2-HEXANONE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	91-57-6	2-METHYLNAPHTHALENE	9/30/98	390	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	95-48-7	2-METHYLPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	88-74-4	2-NITROANILINE	9/30/98	970	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	88-75-5	2-NITROPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	99-09-2	3-NITROANILINE	9/30/98	970	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	72-54-8	4,4'-DDD	9/30/98	3.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	72-55-9	4,4'-DDE	9/30/98	3.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	50-29-3	4,4'-DDT	9/30/98	3.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	970	ug/Kg	Y	N	UJ	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	106-47-8	4-CHLOROANILINE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	108-10-1	4-METHYL-2-PENTANONE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	106-44-5	4-METHYLPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	100-01-6	4-NITROANILINE	9/30/98	970	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	100-02-7	4-NITROPHENOL	9/30/98	970	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	83-32-9	ACENAPHTHENE	9/30/98	390	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	208-96-8	ACENAPHTHYLENE	9/30/98	390	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	67-64-1	ACETONE	9/30/98	12	ug/Kg	Y	N	UJ	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	309-00-2	ALDRIN	9/30/98	1.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	319-84-6	ALPHA-BHC	9/30/98	1.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	5103-71-9	ALPHA-CHLORDANE	9/30/98	1.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7429-90-5	ALUMINUM	9/30/98	5460	mg/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	120-12-7	ANTHRACENE	9/30/98	180	ug/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-36-0	ANTIMONY	9/30/98	0.68	mg/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	12674-11-2	AROCLOR-1016	9/30/98	39	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	11104-28-2	AROCLOR-1221	9/30/98	78	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	11141-16-5	AROCLOR-1232	9/30/98	39	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	53469-21-9	AROCLOR-1242	9/30/98	39	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	12672-29-6	AROCLOR-1248	9/30/98	39	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	11097-69-1	AROCLOR-1254	9/30/98	44	ug/kg	Y	Y	JN	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	11096-82-5	AROCLOR-1260	9/30/98	39	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-38-2	ARSENIC	9/30/98	4.3	mg/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-39-3	BARIUM	9/30/98	68.8	mg/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	71-43-2	BENZENE	9/30/98	12	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	56-55-3	BENZO(A)ANTHRACENE	9/30/98	830	ug/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	50-32-8	BENZO(A)PYRENE	9/30/98	690	ug/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	1000	ug/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	480	ug/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	300	ug/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-41-7	BERYLLIUM	9/30/98	0.31	mg/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	319-85-7	BETA-BHC	9/30/98	1.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	260	ug/Kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	75-27-4	BROMODICHLOROMETHANE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	75-25-2	BROMOFORM	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	74-83-9	BROMOMETHANE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-43-9	CADMIUM	9/30/98	0.18	mg/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-70-2	CALCIUM	9/30/98	74200	mg/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	86-74-8	CARBAZOLE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	75-15-0	CARBON DISULFIDE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	56-23-5	CARBON TETRACHLORIDE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	108-90-7	CHLOROBENZENE	9/30/98	12	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	124-48-1	CHLORODIBROMOMETHANE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	75-00-3	CHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	67-66-3	CHLOROFORM	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	74-87-3	CHLOROMETHANE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-47-3	CHROMIUM	9/30/98	11.1	mg/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	218-01-9	CHRYSENE	9/30/98	950	ug/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-48-4	COBALT	9/30/98	6	mg/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-50-8	COPPER	9/30/98	30.8	mg/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	57-12-5	CYANIDE	9/30/98	0.58	mg/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	319-86-8	DELTA-BHC	9/30/98	1.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	150	ug/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	132-64-9	DIBENZOFURAN	9/30/98	390	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	60-57-1	DIELDRIN	9/30/98	3.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	84-66-2	DIETHYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	131-11-3	DIMETHYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	959-98-8	ENDOSULFAN I	9/30/98	1.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	33213-65-9	ENDOSULFAN II	9/30/98	3.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	1031-07-8	ENDOSULFAN SULFATE	9/30/98	3.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	72-20-8	ENDRIN	9/30/98	3.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7421-93-4	ENDRIN ALDEHYDE	9/30/98	3.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	53494-70-5	ENDRIN KETONE	9/30/98	2	ug/Kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	100-41-4	ETHYLBENZENE	9/30/98	12	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	206-44-0	FLUORANTHENE	9/30/98	970	ug/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	86-73-7	FLUORENE	9/30/98	43	ug/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	1.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	5566-34-7	GAMMA-CHLORDANE	9/30/98	1.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	76-44-8	HEPTACHLOR	9/30/98	1.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	1.9	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	118-74-1	HEXACHLOROBENZENE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	87-68-3	HEXACHLOROBUTADIENE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	390	ug/Kg	Y	N	UJ	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	67-72-1	HEXACHLOROETHANE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	330	ug/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7439-89-6	IRON	9/30/98	11900	mg/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	78-59-1	ISOPHORONE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7439-92-1	LEAD	9/30/98	16.5	mg/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7439-95-4	MAGNESIUM	9/30/98	19400	mg/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7439-96-5	MANGANESE	9/30/98	410	mg/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7439-97-6	MERCURY	9/30/98	2.3	mg/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	245.1M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	72-43-5	METHOXYCHLOR	9/30/98	19	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	75-09-2	METHYLENE CHLORIDE	9/30/98	12	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	91-20-3	NAPHTHALENE	9/30/98	58	ug/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-02-0	NICKEL	9/30/98	12.9	mg/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	98-95-3	NITROBENZENE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	390	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	87-86-5	PENTACHLOROPHENOL	9/30/98	970	ug/Kg	Y	N	UJ	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	85-01-8	PHENANTHRENE	9/30/98	380	ug/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	108-95-2	PHENOL	9/30/98	390	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-09-7	POTASSIUM	9/30/98	832	mg/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	129-00-0	PYRENE	9/30/98	750	ug/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7782-49-2	SELENIUM	9/30/98	1.1	mg/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-22-4	SILVER	9/30/98	0.26	mg/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-23-5	SODIUM	9/30/98	1260	mg/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	100-42-5	STYRENE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	127-18-4	TETRACHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-28-0	THALLIUM	9/30/98	1.7	mg/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	108-88-3	TOLUENE	9/30/98	12	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	TSO	TOTAL SOLIDS	9/30/98	85.7	%	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	2540-G
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	8001-35-2	TOXAPHENE	9/30/98	190	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	79-01-6	TRICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-62-2	VANADIUM	9/30/98	9.7	mg/kg	Y	Y	J	1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	75-01-4	VINYL CHLORIDE	9/30/98	12	ug/Kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	1330-20-7	XYLENES, TOTAL	9/30/98	12	ug/kg	Y	N	U	1116667.3	920431.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-3	WA9060	7440-66-6	ZINC	9/30/98	34.5	mg/kg	Y	Y		1116667.3	920431.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	75-34-3	1,1-DICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	75-35-4	1,1-DICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	42	ug/Kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	95-50-1	1,2-DICHLOROBENZENE	9/30/98	50	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	107-06-2	1,2-DICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	78-87-5	1,2-DICHLOROPROPANE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	541-73-1	1,3-DICHLOROBENZENE	9/30/98	390	ug/kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	106-46-7	1,4-DICHLOROBENZENE	9/30/98	110	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	970	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	120-83-2	2,4-DICHLOROPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	51-28-5	2,4-DINITROPHENOL	9/30/98	970	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	121-14-2	2,4-DINITROTOLUENE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	606-20-2	2,6-DINITROTOLUENE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	78-93-3	2-BUTANONE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	91-58-7	2-CHLORONAPHTHALENE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	95-57-8	2-CHLOROPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	591-78-6	2-HEXANONE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	91-57-6	2-METHYLNAPHTHALENE	9/30/98	100	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	95-48-7	2-METHYLPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	88-74-4	2-NITROANILINE	9/30/98	970	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	88-75-5	2-NITROPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	390	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	99-09-2	3-NITROANILINE	9/30/98	970	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	72-54-8	4,4'-DDD	9/30/98	39	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	72-55-9	4,4'-DDE	9/30/98	39	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	50-29-3	4,4'-DDT	9/30/98	39	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	970	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	106-47-8	4-CHLOROANILINE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	108-10-1	4-METHYL-2-PENTANONE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	106-44-5	4-METHYLPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	100-01-6	4-NITROANILINE	9/30/98	970	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	100-02-7	4-NITROPHENOL	9/30/98	970	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	83-32-9	ACENAPHTHENE	9/30/98	42	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	208-96-8	ACENAPHTHYLENE	9/30/98	200	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	67-64-1	ACETONE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	309-00-2	ALDRIN	9/30/98	19	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	319-84-6	ALPHA-BHC	9/30/98	19	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	5103-71-9	ALPHA-CHLORDANE	9/30/98	19	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7429-90-5	ALUMINUM	9/30/98	2800	mg/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	120-12-7	ANTHRACENE	9/30/98	230	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-36-0	ANTIMONY	9/30/98	1	mg/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	12674-11-2	AROCLOR-1016	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	11104-28-2	AROCLOR-1221	9/30/98	770	ug/kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	11141-16-5	AROCLOR-1232	9/30/98	390	ug/kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	53469-21-9	AROCLOR-1242	9/30/98	390	ug/kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	12672-29-6	AROCLOR-1248	9/30/98	390	ug/kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	11097-69-1	AROCLOR-1254	9/30/98	710	ug/kg	Y	Y	JN	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	11096-82-5	AROCLOR-1260	9/30/98	390	ug/kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-38-2	ARSENIC	9/30/98	18.6	mg/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-39-3	BARIUM	9/30/98	168	mg/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	71-43-2	BENZENE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	56-55-3	BENZO(A)ANTHRACENE	9/30/98	1900	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	50-32-8	BENZO(A)PYRENE	9/30/98	2500	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	4600	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	3400	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	1600	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-41-7	BERYLLIUM	9/30/98	0.46	mg/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	319-85-7	BETA-BHC	9/30/98	19	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	650	ug/Kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	75-27-4	BROMODICHLOROMETHANE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	75-25-2	BROMOFORM	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	74-83-9	BROMOMETHANE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-43-9	CADMIUM	9/30/98	0.5	mg/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-70-2	CALCIUM	9/30/98	68600	mg/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	86-74-8	CARBAZOLE	9/30/98	60	ug/Kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	75-15-0	CARBON DISULFIDE	9/30/98	12	ug/kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	56-23-5	CARBON TETRACHLORIDE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	108-90-7	CHLOROBENZENE	9/30/98	12	ug/kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	124-48-1	CHLORODIBROMOMETHANE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	75-00-3	CHLOROETHANE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	67-66-3	CHLOROFORM	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	74-87-3	CHLOROMETHANE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-47-3	CHROMIUM	9/30/98	33.9	mg/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	218-01-9	CHRYSENE	9/30/98	2600	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-48-4	COBALT	9/30/98	7.8	mg/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-50-8	COPPER	9/30/98	57.9	mg/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	57-12-5	CYANIDE	9/30/98	0.58	mg/kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	319-86-8	DELTA-BHC	9/30/98	19	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	1200	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	132-64-9	DIBENZOFURAN	9/30/98	84	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	60-57-1	DIELDRIN	9/30/98	39	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	84-66-2	DIETHYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	131-11-3	DIMETHYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	959-98-8	ENDOSULFAN I	9/30/98	19	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	33213-65-9	ENDOSULFAN II	9/30/98	18	ug/Kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	1031-07-8	ENDOSULFAN SULFATE	9/30/98	39	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	72-20-8	ENDRIN	9/30/98	39	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7421-93-4	ENDRIN ALDEHYDE	9/30/98	39	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	53494-70-5	ENDRIN KETONE	9/30/98	50	ug/Kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	100-41-4	ETHYLBENZENE	9/30/98	12	ug/kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	206-44-0	FLUORANTHENE	9/30/98	1600	ug/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	86-73-7	FLUORENE	9/30/98	390	ug/kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	19	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	5566-34-7	GAMMA-CHLORDANE	9/30/98	19	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	76-44-8	HEPTACHLOR	9/30/98	19	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	19	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	118-74-1	HEXACHLOROBENZENE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	87-68-3	HEXACHLOROBUTADIENE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	390	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	67-72-1	HEXACHLOROETHANE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	2300	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7439-89-6	IRON	9/30/98	26800	mg/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	78-59-1	ISOPHORONE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7439-92-1	LEAD	9/30/98	96.5	mg/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7439-95-4	MAGNESIUM	9/30/98	3610	mg/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7439-96-5	MANGANESE	9/30/98	243	mg/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7439-97-6	MERCURY	9/30/98	3.5	mg/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	245.1M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	72-43-5	METHOXYCHLOR	9/30/98	190	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	75-09-2	METHYLENE CHLORIDE	9/30/98	12	ug/kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	91-20-3	NAPHTHALENE	9/30/98	120	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-02-0	NICKEL	9/30/98	27.7	mg/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	98-95-3	NITROBENZENE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	390	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	87-86-5	PENTACHLOROPHENOL	9/30/98	970	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	85-01-8	PHENANTHRENE	9/30/98	700	ug/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	108-95-2	PHENOL	9/30/98	390	ug/kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-09-7	POTASSIUM	9/30/98	372	mg/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	129-00-0	PYRENE	9/30/98	2200	ug/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7782-49-2	SELENIUM	9/30/98	1.1	mg/kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-22-4	SILVER	9/30/98	0.26	mg/kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-23-5	SODIUM	9/30/98	441	mg/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	100-42-5	STYRENE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	127-18-4	TETRACHLOROETHENE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-28-0	THALLIUM	9/30/98	1.7	mg/kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	108-88-3	TOLUENE	9/30/98	12	ug/kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	TSO	TOTAL SOLIDS	9/30/98	86.2	%	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	2540-G
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	8001-35-2	TOXAPHENE	9/30/98	1900	ug/Kg	Y	N	U	1116661.8	920551.3	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	79-01-6	TRICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-62-2	VANADIUM	9/30/98	10.3	mg/kg	Y	Y	J	1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	75-01-4	VINYL CHLORIDE	9/30/98	12	ug/Kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	1330-20-7	XYLENES, TOTAL	9/30/98	12	ug/kg	Y	N	UJ	1116661.8	920551.3	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9061	7440-66-6	ZINC	9/30/98	102	mg/kg	Y	Y		1116661.8	920551.3	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	75-34-3	1,1-DICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	75-35-4	1,1-DICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	95-50-1	1,2-DICHLOROBENZENE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	107-06-2	1,2-DICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	78-87-5	1,2-DICHLOROPROPANE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	541-73-1	1,3-DICHLOROBENZENE	9/30/98	410	ug/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	106-46-7	1,4-DICHLOROBENZENE	9/30/98	68	ug/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	1000	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	120-83-2	2,4-DICHLOROPHENOL	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	51-28-5	2,4-DINITROPHENOL	9/30/98	1000	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	121-14-2	2,4-DINITROTOLUENE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	606-20-2	2,6-DINITROTOLUENE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	78-93-3	2-BUTANONE	9/30/98	5	ug/Kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	91-58-7	2-CHLORONAPHTHALENE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	95-57-8	2-CHLOROPHENOL	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	591-78-6	2-HEXANONE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	91-57-6	2-METHYLNAPHTHALENE	9/30/98	410	ug/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	95-48-7	2-METHYLPHENOL	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	88-74-4	2-NITROANILINE	9/30/98	1000	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	88-75-5	2-NITROPHENOL	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	99-09-2	3-NITROANILINE	9/30/98	1000	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	72-54-8	4,4'-DDD	9/30/98	4.1	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	72-55-9	4,4'-DDE	9/30/98	4.1	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	50-29-3	4,4'-DDT	9/30/98	4.1	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	1000	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	106-47-8	4-CHLOROANILINE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	108-10-1	4-METHYL-2-PENTANONE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	106-44-5	4-METHYLPHENOL	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	100-01-6	4-NITROANILINE	9/30/98	1000	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	100-02-7	4-NITROPHENOL	9/30/98	1000	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	83-32-9	ACENAPHTHENE	9/30/98	410	ug/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	208-96-8	ACENAPHTHYLENE	9/30/98	410	ug/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	67-64-1	ACETONE	9/30/98	96	ug/Kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	309-00-2	ALDRIN	9/30/98	2	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	319-84-6	ALPHA-BHC	9/30/98	2	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	5103-71-9	ALPHA-CHLORDANE	9/30/98	2	ug/Kg	Y	N	R	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7429-90-5	ALUMINUM	9/30/98	6800	mg/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	120-12-7	ANTHRACENE	9/30/98	69	ug/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-36-0	ANTIMONY	9/30/98	0.71	mg/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	12674-11-2	AROCLOR-1016	9/30/98	41	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	11104-28-2	AROCLOR-1221	9/30/98	82	ug/kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	11141-16-5	AROCLOR-1232	9/30/98	41	ug/kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	53469-21-9	AROCLOR-1242	9/30/98	41	ug/kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	12672-29-6	AROCLOR-1248	9/30/98	41	ug/kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	11097-69-1	AROCLOR-1254	9/30/98	41	ug/kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	11096-82-5	AROCLOR-1260	9/30/98	41	ug/kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-38-2	ARSENIC	9/30/98	8.3	mg/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-39-3	BARIUM	9/30/98	83.9	mg/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	71-43-2	BENZENE	9/30/98	12	ug/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	56-55-3	BENZO(A)ANTHRACENE	9/30/98	380	ug/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	50-32-8	BENZO(A)PYRENE	9/30/98	430	ug/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	640	ug/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	390	ug/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	220	ug/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-41-7	BERYLLIUM	9/30/98	0.43	mg/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	319-85-7	BETA-BHC	9/30/98	2	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	810	ug/Kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	75-27-4	BROMODICHLOROMETHANE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	75-25-2	BROMOFORM	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	74-83-9	BROMOMETHANE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-43-9	CADMIUM	9/30/98	0.31	mg/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-70-2	CALCIUM	9/30/98	112000	mg/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	86-74-8	CARBAZOLE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	75-15-0	CARBON DISULFIDE	9/30/98	2	ug/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	56-23-5	CARBON TETRACHLORIDE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	108-90-7	CHLOROBENZENE	9/30/98	10	ug/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	124-48-1	CHLORODIBROMOMETHANE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	75-00-3	CHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	67-66-3	CHLOROFORM	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	74-87-3	CHLOROMETHANE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-47-3	CHROMIUM	9/30/98	22.3	mg/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	218-01-9	CHRYSENE	9/30/98	480	ug/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-48-4	COBALT	9/30/98	6.6	mg/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-50-8	COPPER	9/30/98	41.4	mg/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	57-12-5	CYANIDE	9/30/98	0.61	mg/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	319-86-8	DELTA-BHC	9/30/98	2	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	97	ug/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	132-64-9	DIBENZOFURAN	9/30/98	410	ug/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	60-57-1	DIELDRIN	9/30/98	4.1	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	84-66-2	DIETHYL PHTHALATE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	131-11-3	DIMETHYL PHTHALATE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	959-98-8	ENDOSULFAN I	9/30/98	2	ug/Kg	Y	N	R	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	33213-65-9	ENDOSULFAN II	9/30/98	4.4	ug/Kg	Y	Y	JN	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	1031-07-8	ENDOSULFAN SULFATE	9/30/98	4.1	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	72-20-8	ENDRIN	9/30/98	4.1	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7421-93-4	ENDRIN ALDEHYDE	9/30/98	8.4	ug/Kg	Y	N	R	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	53494-70-5	ENDRIN KETONE	9/30/98	4.1	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	100-41-4	ETHYLBENZENE	9/30/98	12	ug/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	206-44-0	FLUORANTHENE	9/30/98	470	ug/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	86-73-7	FLUORENE	9/30/98	410	ug/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	2	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	5566-34-7	GAMMA-CHLORDANE	9/30/98	2	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	76-44-8	HEPTACHLOR	9/30/98	2	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	2	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	118-74-1	HEXACHLOROBENZENE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	87-68-3	HEXACHLOROBUTADIENE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	410	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	67-72-1	HEXACHLOROETHANE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	250	ug/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7439-89-6	IRON	9/30/98	18200	mg/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	78-59-1	ISOPHORONE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7439-92-1	LEAD	9/30/98	65.5	mg/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7439-95-4	MAGNESIUM	9/30/98	22100	mg/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7439-96-5	MANGANESE	9/30/98	453	mg/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7439-97-6	MERCURY	9/30/98	5.8	mg/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	245.1M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	72-43-5	METHOXYCHLOR	9/30/98	20	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	75-09-2	METHYLENE CHLORIDE	9/30/98	12	ug/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	91-20-3	NAPHTHALENE	9/30/98	46	ug/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-02-0	NICKEL	9/30/98	14.3	mg/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	98-95-3	NITROBENZENE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	410	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	87-86-5	PENTACHLOROPHENOL	9/30/98	1000	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	85-01-8	PHENANTHRENE	9/30/98	160	ug/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	108-95-2	PHENOL	9/30/98	410	ug/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-09-7	POTASSIUM	9/30/98	1090	mg/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	129-00-0	PYRENE	9/30/98	450	ug/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7782-49-2	SELENIUM	9/30/98	1.2	mg/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-22-4	SILVER	9/30/98	0.27	mg/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-23-5	SODIUM	9/30/98	1900	mg/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	100-42-5	STYRENE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	127-18-4	TETRACHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-28-0	THALLIUM	9/30/98	1.8	mg/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	108-88-3	TOLUENE	9/30/98	12	ug/kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	TSO	TOTAL SOLIDS	9/30/98	81.7	%	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	2540-G
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	8001-35-2	TOXAPHENE	9/30/98	200	ug/Kg	Y	N	UJ	1116661.8	920551.3	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	79-01-6	TRICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-62-2	VANADIUM	9/30/98	14.2	mg/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	75-01-4	VINYL CHLORIDE	9/30/98	12	ug/Kg	Y	N	U	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	1330-20-7	XYLENES, TOTAL	9/30/98	2	ug/kg	Y	Y	J	1116661.8	920551.3	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-4	WA9062	7440-66-6	ZINC	9/30/98	46.2	mg/kg	Y	Y		1116661.8	920551.3	2	10	SB	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	75-34-3	1,1-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	75-35-4	1,1-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	91	ug/Kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	95-50-1	1,2-DICHLOROBENZENE	9/30/98	190	ug/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	107-06-2	1,2-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	78-87-5	1,2-DICHLOROPROPANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	541-73-1	1,3-DICHLOROBENZENE	9/30/98	400	ug/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	106-46-7	1,4-DICHLOROBENZENE	9/30/98	200	ug/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	990	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	120-83-2	2,4-DICHLOROPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	51-28-5	2,4-DINITROPHENOL	9/30/98	990	ug/Kg	Y	N	UJ	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	121-14-2	2,4-DINITROTOLUENE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	606-20-2	2,6-DINITROTOLUENE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	78-93-3	2-BUTANONE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	91-58-7	2-CHLORONAPHTHALENE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	95-57-8	2-CHLOROPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	591-78-6	2-HEXANONE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	91-57-6	2-METHYLNAPHTHALENE	9/30/98	100	ug/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	95-48-7	2-METHYLPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	88-74-4	2-NITROANILINE	9/30/98	990	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	88-75-5	2-NITROPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	99-09-2	3-NITROANILINE	9/30/98	990	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	72-54-8	4,4'-DDD	9/30/98	180	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	72-55-9	4,4'-DDE	9/30/98	49	ug/Kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	50-29-3	4,4'-DDT	9/30/98	180	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	990	ug/Kg	Y	N	UJ	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	106-47-8	4-CHLOROANILINE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	108-10-1	4-METHYL-2-PENTANONE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	106-44-5	4-METHYLPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	100-01-6	4-NITROANILINE	9/30/98	990	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	100-02-7	4-NITROPHENOL	9/30/98	990	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	83-32-9	ACENAPHTHENE	9/30/98	91	ug/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	208-96-8	ACENAPHTHYLENE	9/30/98	120	ug/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	67-64-1	ACETONE	9/30/98	11	ug/Kg	Y	N	UJ	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	309-00-2	ALDRIN	9/30/98	89	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	319-84-6	ALPHA-BHC	9/30/98	89	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	5103-71-9	ALPHA-CHLORDANE	9/30/98	89	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7429-90-5	ALUMINUM	9/30/98	3340	mg/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	120-12-7	ANTHRACENE	9/30/98	280	ug/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-36-0	ANTIMONY	9/30/98	0.62	mg/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	12674-11-2	AROCLOR-1016	9/30/98	1800	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	11104-28-2	AROCLOR-1221	9/30/98	3500	ug/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	11141-16-5	AROCLOR-1232	9/30/98	1800	ug/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	53469-21-9	AROCLOR-1242	9/30/98	1800	ug/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	12672-29-6	AROCLOR-1248	9/30/98	1800	ug/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	11097-69-1	AROCLOR-1254	9/30/98	2700	ug/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	11096-82-5	AROCLOR-1260	9/30/98	1800	ug/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-38-2	ARSENIC	9/30/98	4.6	mg/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-39-3	BARIUM	9/30/98	167	mg/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	71-43-2	BENZENE	9/30/98	1	ug/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	56-55-3	BENZO(A)ANTHRACENE	9/30/98	930	ug/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	50-32-8	BENZO(A)PYRENE	9/30/98	1100	ug/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	1300	ug/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	1400	ug/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	440	ug/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-41-7	BERYLLIUM	9/30/98	0.26	mg/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	319-85-7	BETA-BHC	9/30/98	89	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	1500	ug/Kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	75-27-4	BROMODICHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	75-25-2	BROMOFORM	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	74-83-9	BROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-43-9	CADMIUM	9/30/98	0.53	mg/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-70-2	CALCIUM	9/30/98	204000	mg/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	86-74-8	CARBAZOLE	9/30/98	77	ug/Kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	75-15-0	CARBON DISULFIDE	9/30/98	11	ug/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	56-23-5	CARBON TETRACHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	108-90-7	CHLOROBENZENE	9/30/98	3	ug/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	124-48-1	CHLORODIBROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	75-00-3	CHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	67-66-3	CHLOROFORM	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	74-87-3	CHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-47-3	CHROMIUM	9/30/98	12.8	mg/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	218-01-9	CHRYSENE	9/30/98	1100	ug/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-48-4	COBALT	9/30/98	5.4	mg/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-50-8	COPPER	9/30/98	21.3	mg/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	57-12-5	CYANIDE	9/30/98	0.53	mg/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	319-86-8	DELTA-BHC	9/30/98	89	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	260	ug/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	132-64-9	DIBENZOFURAN	9/30/98	97	ug/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	60-57-1	DIELDRIN	9/30/98	180	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	84-66-2	DIETHYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	131-11-3	DIMETHYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	959-98-8	ENDOSULFAN I	9/30/98	89	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	33213-65-9	ENDOSULFAN II	9/30/98	180	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	1031-07-8	ENDOSULFAN SULFATE	9/30/98	180	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	72-20-8	ENDRIN	9/30/98	180	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7421-93-4	ENDRIN ALDEHYDE	9/30/98	180	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	53494-70-5	ENDRIN KETONE	9/30/98	180	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	100-41-4	ETHYLBENZENE	9/30/98	11	ug/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	206-44-0	FLUORANTHENE	9/30/98	1500	ug/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	86-73-7	FLUORENE	9/30/98	85	ug/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	89	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	5566-34-7	GAMMA-CHLORDANE	9/30/98	89	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	76-44-8	HEPTACHLOR	9/30/98	89	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	26	ug/Kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	118-74-1	HEXACHLOROBENZENE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	87-68-3	HEXACHLOROBUTADIENE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	400	ug/Kg	Y	N	UJ	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	67-72-1	HEXACHLOROETHANE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	710	ug/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7439-89-6	IRON	9/30/98	9860	mg/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	78-59-1	ISOPHORONE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7439-92-1	LEAD	9/30/98	57.9	mg/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7439-95-4	MAGNESIUM	9/30/98	44200	mg/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7439-96-5	MANGANESE	9/30/98	353	mg/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7439-97-6	MERCURY	9/30/98	0.89	mg/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	245.1M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	72-43-5	METHOXYCHLOR	9/30/98	890	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	75-09-2	METHYLENE CHLORIDE	9/30/98	11	ug/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	91-20-3	NAPHTHALENE	9/30/98	120	ug/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-02-0	NICKEL	9/30/98	11	mg/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	98-95-3	NITROBENZENE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	400	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	87-86-5	PENTACHLOROPHENOL	9/30/98	990	ug/Kg	Y	N	UJ	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	85-01-8	PHENANTHRENE	9/30/98	820	ug/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	108-95-2	PHENOL	9/30/98	400	ug/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-09-7	POTASSIUM	9/30/98	639	mg/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	129-00-0	PYRENE	9/30/98	1400	ug/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7782-49-2	SELENIUM	9/30/98	1	mg/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-22-4	SILVER	9/30/98	0.23	mg/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-23-5	SODIUM	9/30/98	230	mg/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	100-42-5	STYRENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	127-18-4	TETRACHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-28-0	THALLIUM	9/30/98	1.6	mg/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	108-88-3	TOLUENE	9/30/98	11	ug/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	TSO	TOTAL SOLIDS	9/30/98	94.1	%	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	2540-G
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	8001-35-2	TOXAPHENE	9/30/98	8900	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	79-01-6	TRICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-62-2	VANADIUM	9/30/98	8.4	mg/kg	Y	Y	J	1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	75-01-4	VINYL CHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	1330-20-7	XYLENES, TOTAL	9/30/98	11	ug/kg	Y	N	U	1116655.9	921043.4	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9063	7440-66-6	ZINC	9/30/98	33.5	mg/kg	Y	Y		1116655.9	921043.4	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	75-34-3	1,1-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	75-35-4	1,1-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	1500	ug/Kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	95-50-1	1,2-DICHLOROBENZENE	9/30/98	5500	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	107-06-2	1,2-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	78-87-5	1,2-DICHLOROPROPANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	541-73-1	1,3-DICHLOROBENZENE	9/30/98	390	ug/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	106-46-7	1,4-DICHLOROBENZENE	9/30/98	11000	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	980	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	120-83-2	2,4-DICHLOROPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	51-28-5	2,4-DINITROPHENOL	9/30/98	980	ug/Kg	Y	N	UJ	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	121-14-2	2,4-DINITROTOLUENE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	606-20-2	2,6-DINITROTOLUENE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	78-93-3	2-BUTANONE	9/30/98	6	ug/Kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	91-58-7	2-CHLORONAPHTHALENE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	95-57-8	2-CHLOROPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	591-78-6	2-HEXANONE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	91-57-6	2-METHYLNAPHTHALENE	9/30/98	60	ug/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	95-48-7	2-METHYLPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	88-74-4	2-NITROANILINE	9/30/98	980	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	88-75-5	2-NITROPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	99-09-2	3-NITROANILINE	9/30/98	980	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	72-54-8	4,4'-DDD	9/30/98	35	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	72-55-9	4,4'-DDE	9/30/98	14	ug/Kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	50-29-3	4,4'-DDT	9/30/98	35	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	980	ug/Kg	Y	N	UJ	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	106-47-8	4-CHLOROANILINE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	108-10-1	4-METHYL-2-PENTANONE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	106-44-5	4-METHYLPHENOL	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	100-01-6	4-NITROANILINE	9/30/98	980	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	100-02-7	4-NITROPHENOL	9/30/98	980	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	83-32-9	ACENAPHTHENE	9/30/98	95	ug/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	208-96-8	ACENAPHTHYLENE	9/30/98	49	ug/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	67-64-1	ACETONE	9/30/98	120	ug/Kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	309-00-2	ALDRIN	9/30/98	18	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	319-84-6	ALPHA-BHC	9/30/98	18	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	5103-71-9	ALPHA-CHLORDANE	9/30/98	18	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7429-90-5	ALUMINUM	9/30/98	3380	mg/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	120-12-7	ANTHRACENE	9/30/98	240	ug/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-36-0	ANTIMONY	9/30/98	0.61	mg/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	12674-11-2	AROCLOR-1016	9/30/98	350	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	11104-28-2	AROCLOR-1221	9/30/98	700	ug/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	11141-16-5	AROCLOR-1232	9/30/98	350	ug/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	53469-21-9	AROCLOR-1242	9/30/98	350	ug/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	12672-29-6	AROCLOR-1248	9/30/98	350	ug/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	11097-69-1	AROCLOR-1254	9/30/98	670	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	11096-82-5	AROCLOR-1260	9/30/98	350	ug/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-38-2	ARSENIC	9/30/98	3.5	mg/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-39-3	BARIUM	9/30/98	137	mg/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	71-43-2	BENZENE	9/30/98	61	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	56-55-3	BENZO(A)ANTHRACENE	9/30/98	730	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	50-32-8	BENZO(A)PYRENE	9/30/98	750	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	1100	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	810	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	310	ug/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-41-7	BERYLLIUM	9/30/98	0.28	mg/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	319-85-7	BETA-BHC	9/30/98	18	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	7600	ug/Kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	75-27-4	BROMODICHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	75-25-2	BROMOFORM	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	74-83-9	BROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-43-9	CADMIUM	9/30/98	0.53	mg/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-70-2	CALCIUM	9/30/98	222000	mg/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	86-74-8	CARBAZOLE	9/30/98	94	ug/Kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	75-15-0	CARBON DISULFIDE	9/30/98	2	ug/Kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	56-23-5	CARBON TETRACHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	108-90-7	CHLOROBENZENE	9/30/98	4600	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	124-48-1	CHLORODIBROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	75-00-3	CHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	67-66-3	CHLOROFORM	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	74-87-3	CHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-47-3	CHROMIUM	9/30/98	31.3	mg/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	218-01-9	CHRYSENE	9/30/98	890	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-48-4	COBALT	9/30/98	4.6	mg/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-50-8	COPPER	9/30/98	16.3	mg/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	57-12-5	CYANIDE	9/30/98	0.53	mg/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	319-86-8	DELTA-BHC	9/30/98	18	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	160	ug/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	132-64-9	DIBENZOFURAN	9/30/98	82	ug/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	60-57-1	DIELDRIN	9/30/98	35	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	84-66-2	DIETHYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	131-11-3	DIMETHYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	60	ug/Kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	959-98-8	ENDOSULFAN I	9/30/98	18	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	33213-65-9	ENDOSULFAN II	9/30/98	35	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	1031-07-8	ENDOSULFAN SULFATE	9/30/98	35	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	72-20-8	ENDRIN	9/30/98	35	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7421-93-4	ENDRIN ALDEHYDE	9/30/98	35	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	53494-70-5	ENDRIN KETONE	9/30/98	35	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	100-41-4	ETHYLBENZENE	9/30/98	11	ug/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	206-44-0	FLUORANTHENE	9/30/98	1500	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	86-73-7	FLUORENE	9/30/98	110	ug/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	18	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	5566-34-7	GAMMA-CHLORDANE	9/30/98	18	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	76-44-8	HEPTACHLOR	9/30/98	18	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	12	ug/Kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	118-74-1	HEXACHLOROBENZENE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	87-68-3	HEXACHLOROBUTADIENE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	390	ug/Kg	Y	N	UJ	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	67-72-1	HEXACHLOROETHANE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	440	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7439-89-6	IRON	9/30/98	8050	mg/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	78-59-1	ISOPHORONE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7439-92-1	LEAD	9/30/98	22.8	mg/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7439-95-4	MAGNESIUM	9/30/98	31600	mg/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7439-96-5	MANGANESE	9/30/98	463	mg/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7439-97-6	MERCURY	9/30/98	2.5	mg/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	245.1M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	72-43-5	METHOXYCHLOR	9/30/98	23	ug/Kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	75-09-2	METHYLENE CHLORIDE	9/30/98	11	ug/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	91-20-3	NAPHTHALENE	9/30/98	89	ug/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-02-0	NICKEL	9/30/98	10.8	mg/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	98-95-3	NITROBENZENE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	390	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	87-86-5	PENTACHLOROPHENOL	9/30/98	980	ug/Kg	Y	N	UJ	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	85-01-8	PHENANTHRENE	9/30/98	980	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	108-95-2	PHENOL	9/30/98	390	ug/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-09-7	POTASSIUM	9/30/98	747	mg/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	129-00-0	PYRENE	9/30/98	1200	ug/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7782-49-2	SELENIUM	9/30/98	1.6	mg/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-22-4	SILVER	9/30/98	0.23	mg/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-23-5	SODIUM	9/30/98	288	mg/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	100-42-5	STYRENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	127-18-4	TETRACHLOROETHENE	9/30/98	2	ug/Kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-28-0	THALLIUM	9/30/98	1.6	mg/kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	108-88-3	TOLUENE	9/30/98	2	ug/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	TSO	TOTAL SOLIDS	9/30/98	95.2	%	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	2540-G
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	8001-35-2	TOXAPHENE	9/30/98	1800	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	79-01-6	TRICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-62-2	VANADIUM	9/30/98	8	mg/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	75-01-4	VINYL CHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	1330-20-7	XYLENES, TOTAL	9/30/98	4	ug/kg	Y	Y	J	1116655.9	921043.4	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-5	WA9064	7440-66-6	ZINC	9/30/98	32.1	mg/kg	Y	Y		1116655.9	921043.4	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	75-34-3	1,1-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	75-35-4	1,1-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	95-50-1	1,2-DICHLOROBENZENE	9/30/98	400	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	107-06-2	1,2-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	78-87-5	1,2-DICHLOROPROPANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	541-73-1	1,3-DICHLOROBENZENE	9/30/98	400	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	106-46-7	1,4-DICHLOROBENZENE	9/30/98	400	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	990	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	120-83-2	2,4-DICHLOROPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	51-28-5	2,4-DINITROPHENOL	9/30/98	990	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	121-14-2	2,4-DINITROTOLUENE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	606-20-2	2,6-DINITROTOLUENE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	78-93-3	2-BUTANONE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	91-58-7	2-CHLORONAPHTHALENE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	95-57-8	2-CHLOROPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	591-78-6	2-HEXANONE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	91-57-6	2-METHYLNAPHTHALENE	9/30/98	210	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	95-48-7	2-METHYLPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	88-74-4	2-NITROANILINE	9/30/98	990	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	88-75-5	2-NITROPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	400	ug/Kg	Y	N	R	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	99-09-2	3-NITROANILINE	9/30/98	990	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	72-54-8	4,4'-DDD	9/30/98	35	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	72-55-9	4,4'-DDE	9/30/98	74	ug/Kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	50-29-3	4,4'-DDT	9/30/98	35	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	990	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	106-47-8	4-CHLOROANILINE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	108-10-1	4-METHYL-2-PENTANONE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	106-44-5	4-METHYLPHENOL	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	100-01-6	4-NITROANILINE	9/30/98	990	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	100-02-7	4-NITROPHENOL	9/30/98	990	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	83-32-9	ACENAPHTHENE	9/30/98	640	ug/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	208-96-8	ACENAPHTHYLENE	9/30/98	310	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	67-64-1	ACETONE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	309-00-2	ALDRIN	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	319-84-6	ALPHA-BHC	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	5103-71-9	ALPHA-CHLORDANE	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7429-90-5	ALUMINUM	9/30/98	2100	mg/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	120-12-7	ANTHRACENE	9/30/98	1300	ug/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-36-0	ANTIMONY	9/30/98	0.62	mg/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	12674-11-2	AROCLOR-1016	9/30/98	350	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	11104-28-2	AROCLOR-1221	9/30/98	710	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	11141-16-5	AROCLOR-1232	9/30/98	350	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	53469-21-9	AROCLOR-1242	9/30/98	350	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	12672-29-6	AROCLOR-1248	9/30/98	350	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	11097-69-1	AROCLOR-1254	9/30/98	4000	ug/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	11096-82-5	AROCLOR-1260	9/30/98	350	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-38-2	ARSENIC	9/30/98	3.5	mg/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-39-3	BARIUM	9/30/98	54.8	mg/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	71-43-2	BENZENE	9/30/98	11	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	56-55-3	BENZO(A)ANTHRACENE	9/30/98	4900	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	50-32-8	BENZO(A)PYRENE	9/30/98	5700	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	7800	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	5000	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	1700	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-41-7	BERYLLIUM	9/30/98	0.27	mg/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	319-85-7	BETA-BHC	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	730	ug/Kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	75-27-4	BROMODICHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	75-25-2	BROMOFORM	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	74-83-9	BROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	350	ug/Kg	Y	N	R	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-43-9	CADMIUM	9/30/98	0.83	mg/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-70-2	CALCIUM	9/30/98	262000	mg/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	86-74-8	CARBAZOLE	9/30/98	630	ug/Kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	75-15-0	CARBON DISULFIDE	9/30/98	11	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	56-23-5	CARBON TETRACHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	108-90-7	CHLOROBENZENE	9/30/98	1	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	124-48-1	CHLORODIBROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	75-00-3	CHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	67-66-3	CHLOROFORM	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	74-87-3	CHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-47-3	CHROMIUM	9/30/98	15.9	mg/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	218-01-9	CHRYSENE	9/30/98	6500	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-48-4	COBALT	9/30/98	5.9	mg/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-50-8	COPPER	9/30/98	26.9	mg/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	57-12-5	CYANIDE	9/30/98	0.53	mg/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	319-86-8	DELTA-BHC	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	1400	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	132-64-9	DIBENZOFURAN	9/30/98	470	ug/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	60-57-1	DIELDRIN	9/30/98	35	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	84-66-2	DIETHYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	131-11-3	DIMETHYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	UJ	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	959-98-8	ENDOSULFAN I	9/30/98	13	ug/Kg	Y	Y	JN	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	33213-65-9	ENDOSULFAN II	9/30/98	64	ug/Kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	1031-07-8	ENDOSULFAN SULFATE	9/30/98	35	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	72-20-8	ENDRIN	9/30/98	35	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7421-93-4	ENDRIN ALDEHYDE	9/30/98	58	ug/Kg	Y	N	R	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	53494-70-5	ENDRIN KETONE	9/30/98	58	ug/Kg	Y	N	R	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	100-41-4	ETHYLBENZENE	9/30/98	11	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	206-44-0	FLUORANTHENE	9/30/98	10000	ug/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	86-73-7	FLUORENE	9/30/98	460	ug/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	5566-34-7	GAMMA-CHLORDANE	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	76-44-8	HEPTACHLOR	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	44	ug/Kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	118-74-1	HEXACHLOROBENZENE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	87-68-3	HEXACHLOROBUTADIENE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	400	ug/Kg	Y	N	UJ	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	67-72-1	HEXACHLOROETHANE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	2800	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7439-89-6	IRON	9/30/98	14500	mg/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	78-59-1	ISOPHORONE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7439-92-1	LEAD	9/30/98	34.3	mg/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7439-95-4	MAGNESIUM	9/30/98	9600	mg/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7439-96-5	MANGANESE	9/30/98	353	mg/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7439-97-6	MERCURY	9/30/98	2.8	mg/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	245.1M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	72-43-5	METHOXYCHLOR	9/30/98	180	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	75-09-2	METHYLENE CHLORIDE	9/30/98	11	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	91-20-3	NAPHTHALENE	9/30/98	320	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-02-0	NICKEL	9/30/98	11.5	mg/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	98-95-3	NITROBENZENE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	400	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	87-86-5	PENTACHLOROPHENOL	9/30/98	990	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	85-01-8	PHENANTHRENE	9/30/98	6500	ug/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	108-95-2	PHENOL	9/30/98	400	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-09-7	POTASSIUM	9/30/98	559	mg/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	129-00-0	PYRENE	9/30/98	9200	ug/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7782-49-2	SELENIUM	9/30/98	1	mg/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-22-4	SILVER	9/30/98	0.23	mg/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-23-5	SODIUM	9/30/98	370	mg/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	100-42-5	STYRENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	127-18-4	TETRACHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-28-0	THALLIUM	9/30/98	1.6	mg/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	108-88-3	TOLUENE	9/30/98	11	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	TSO	TOTAL SOLIDS	9/30/98	93.9	%	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	2540-G
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	8001-35-2	TOXAPHENE	9/30/98	1800	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	79-01-6	TRICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-62-2	VANADIUM	9/30/98	9.2	mg/kg	Y	Y	J	1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	75-01-4	VINYL CHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	1330-20-7	XYLENES, TOTAL	9/30/98	11	ug/kg	Y	N	U	1116639.5	921180	0	2	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9065	7440-66-6	ZINC	9/30/98	56.8	mg/kg	Y	Y		1116639.5	921180	0	2	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	11	ug/Kg	Y	N	UJ	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	75-34-3	1,1-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	75-35-4	1,1-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	95-50-1	1,2-DICHLOROBENZENE	9/30/98	110	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	107-06-2	1,2-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	78-87-5	1,2-DICHLOROPROPANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	541-73-1	1,3-DICHLOROBENZENE	9/30/98	370	ug/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	106-46-7	1,4-DICHLOROBENZENE	9/30/98	87	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	930	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	120-83-2	2,4-DICHLOROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	51-28-5	2,4-DINITROPHENOL	9/30/98	930	ug/Kg	Y	N	UJ	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	121-14-2	2,4-DINITROTOLUENE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	606-20-2	2,6-DINITROTOLUENE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	78-93-3	2-BUTANONE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	91-58-7	2-CHLORONAPHTHALENE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	95-57-8	2-CHLOROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	591-78-6	2-HEXANONE	9/30/98	11	ug/Kg	Y	N	UJ	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	91-57-6	2-METHYLNAPHTHALENE	9/30/98	44	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	95-48-7	2-METHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	88-74-4	2-NITROANILINE	9/30/98	930	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	88-75-5	2-NITROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	99-09-2	3-NITROANILINE	9/30/98	930	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	72-54-8	4,4'-DDD	9/30/98	37	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	72-55-9	4,4'-DDE	9/30/98	9.6	ug/Kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	50-29-3	4,4'-DDT	9/30/98	37	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	930	ug/Kg	Y	N	UJ	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	106-47-8	4-CHLOROANILINE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	108-10-1	4-METHYL-2-PENTANONE	9/30/98	11	ug/Kg	Y	N	UJ	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	106-44-5	4-METHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	100-01-6	4-NITROANILINE	9/30/98	930	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	100-02-7	4-NITROPHENOL	9/30/98	930	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	83-32-9	ACENAPHTHENE	9/30/98	90	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	208-96-8	ACENAPHTHYLENE	9/30/98	60	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	67-64-1	ACETONE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	309-00-2	ALDRIN	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	319-84-6	ALPHA-BHC	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	5103-71-9	ALPHA-CHLORDANE	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7429-90-5	ALUMINUM	9/30/98	2620	mg/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	120-12-7	ANTHRACENE	9/30/98	180	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-36-0	ANTIMONY	9/30/98	0.64	mg/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	12674-11-2	AROCLOR-1016	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	11104-28-2	AROCLOR-1221	9/30/98	740	ug/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	11141-16-5	AROCLOR-1232	9/30/98	370	ug/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	53469-21-9	AROCLOR-1242	9/30/98	370	ug/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	12672-29-6	AROCLOR-1248	9/30/98	370	ug/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	11097-69-1	AROCLOR-1254	9/30/98	600	ug/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	11096-82-5	AROCLOR-1260	9/30/98	370	ug/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-38-2	ARSENIC	9/30/98	3	mg/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-39-3	BARIUM	9/30/98	48.6	mg/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	71-43-2	BENZENE	9/30/98	2	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	56-55-3	BENZO(A)ANTHRACENE	9/30/98	650	ug/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	50-32-8	BENZO(A)PYRENE	9/30/98	760	ug/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	1100	ug/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	730	ug/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	300	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-41-7	BERYLLIUM	9/30/98	0.32	mg/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	319-85-7	BETA-BHC	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	4200	ug/Kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	75-27-4	BROMODICHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	75-25-2	BROMOFORM	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	74-83-9	BROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-43-9	CADMIUM	9/30/98	0.75	mg/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-70-2	CALCIUM	9/30/98	278000	mg/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	86-74-8	CARBAZOLE	9/30/98	74	ug/Kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	75-15-0	CARBON DISULFIDE	9/30/98	11	ug/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	56-23-5	CARBON TETRACHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	108-90-7	CHLOROBENZENE	9/30/98	4	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	124-48-1	CHLORODIBROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	75-00-3	CHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	67-66-3	CHLOROFORM	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	74-87-3	CHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-47-3	CHROMIUM	9/30/98	10.2	mg/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	218-01-9	CHRYSENE	9/30/98	930	ug/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-48-4	COBALT	9/30/98	3.9	mg/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-50-8	COPPER	9/30/98	15.1	mg/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	57-12-5	CYANIDE	9/30/98	0.55	mg/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	319-86-8	DELTA-BHC	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	150	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	132-64-9	DIBENZOFURAN	9/30/98	81	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	60-57-1	DIELDRIN	9/30/98	37	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	84-66-2	DIETHYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	131-11-3	DIMETHYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	959-98-8	ENDOSULFAN I	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	33213-65-9	ENDOSULFAN II	9/30/98	14	ug/Kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	1031-07-8	ENDOSULFAN SULFATE	9/30/98	37	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	72-20-8	ENDRIN	9/30/98	37	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7421-93-4	ENDRIN ALDEHYDE	9/30/98	37	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	53494-70-5	ENDRIN KETONE	9/30/98	37	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	100-41-4	ETHYLBENZENE	9/30/98	11	ug/kg	Y	N	UJ	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	206-44-0	FLUORANTHENE	9/30/98	1300	ug/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	86-73-7	FLUORENE	9/30/98	64	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	5566-34-7	GAMMA-CHLORDANE	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	76-44-8	HEPTACHLOR	9/30/98	18	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	13	ug/Kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	118-74-1	HEXACHLOROBENZENE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	87-68-3	HEXACHLOROBUTADIENE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	370	ug/Kg	Y	N	UJ	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	67-72-1	HEXACHLOROETHANE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	440	ug/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7439-89-6	IRON	9/30/98	6030	mg/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	78-59-1	ISOPHORONE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7439-92-1	LEAD	9/30/98	29.2	mg/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7439-95-4	MAGNESIUM	9/30/98	11500	mg/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7439-96-5	MANGANESE	9/30/98	302	mg/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7439-97-6	MERCURY	9/30/98	0.53	mg/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	245.1M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	72-43-5	METHOXYCHLOR	9/30/98	180	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	75-09-2	METHYLENE CHLORIDE	9/30/98	11	ug/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	91-20-3	NAPHTHALENE	9/30/98	100	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-02-0	NICKEL	9/30/98	9.5	mg/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	98-95-3	NITROBENZENE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	370	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	87-86-5	PENTACHLOROPHENOL	9/30/98	930	ug/Kg	Y	N	UJ	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	85-01-8	PHENANTHRENE	9/30/98	690	ug/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	108-95-2	PHENOL	9/30/98	370	ug/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-09-7	POTASSIUM	9/30/98	942	mg/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	129-00-0	PYRENE	9/30/98	1300	ug/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7782-49-2	SELENIUM	9/30/98	1.1	mg/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-22-4	SILVER	9/30/98	0.24	mg/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-23-5	SODIUM	9/30/98	366	mg/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	100-42-5	STYRENE	9/30/98	11	ug/Kg	Y	N	UJ	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	127-18-4	TETRACHLOROETHENE	9/30/98	11	ug/Kg	Y	N	UJ	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-28-0	THALLIUM	9/30/98	1.6	mg/kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	108-88-3	TOLUENE	9/30/98	2	ug/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	TSO	TOTAL SOLIDS	9/30/98	90.2	%	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	2540-G
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	8001-35-2	TOXAPHENE	9/30/98	1800	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	PCB
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	79-01-6	TRICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-62-2	VANADIUM	9/30/98	8.7	mg/kg	Y	Y	J	1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	75-01-4	VINYL CHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	1330-20-7	XYLENES, TOTAL	9/30/98	11	ug/kg	Y	N	UJ	1116639.5	921180	2	10	SB	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-6	WA9066	7440-66-6	ZINC	9/30/98	27.8	mg/kg	Y	Y		1116639.5	921180	2	10	SB	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	71-55-6	1,1,1-TRICHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	79-00-5	1,1,2-TRICHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	75-34-3	1,1-DICHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	75-35-4	1,1-DICHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	120-82-1	1,2,4-TRICHLOROBENZENE	10/26/99	1200	ug/Kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	95-50-1	1,2-DICHLOROBENZENE	10/26/99	380	ug/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	107-06-2	1,2-DICHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	78-87-5	1,2-DICHLOROPROPANE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	541-73-1	1,3-DICHLOROBENZENE	10/26/99	380	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	106-46-7	1,4-DICHLOROBENZENE	10/26/99	440	ug/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	95-95-4	2,4,5-TRICHLOROPHENOL	10/26/99	940	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	88-06-2	2,4,6-TRICHLOROPHENOL	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	120-83-2	2,4-DICHLOROPHENOL	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	105-67-9	2,4-DIMETHYLPHENOL	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	51-28-5	2,4-DINITROPHENOL	10/26/99	940	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	121-14-2	2,4-DINITROTOLUENE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	606-20-2	2,6-DINITROTOLUENE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	78-93-3	2-BUTANONE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	91-58-7	2-CHLORONAPHTHALENE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	95-57-8	2-CHLOROPHENOL	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	591-78-6	2-HEXANONE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	91-57-6	2-METHYLNAPHTHALENE	10/26/99	250	ug/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	95-48-7	2-METHYLPHENOL	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	88-74-4	2-NITROANILINE	10/26/99	940	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	88-75-5	2-NITROPHENOL	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	91-94-1	3,3'-DICHLOROBENZIDINE	10/26/99	380	ug/Kg	Y	N	R	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	99-09-2	3-NITROANILINE	10/26/99	940	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	72-54-8	4,4'-DDD	10/26/99	75	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	72-55-9	4,4'-DDE	10/26/99	75	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	50-29-3	4,4'-DDT	10/26/99	75	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/26/99	940	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	59-50-7	4-CHLORO-3-METHYLPHENOL	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	106-47-8	4-CHLOROANILINE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	108-10-1	4-METHYL-2-PENTANONE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	106-44-5	4-METHYLPHENOL	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	100-01-6	4-NITROANILINE	10/26/99	940	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	100-02-7	4-NITROPHENOL	10/26/99	940	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	83-32-9	ACENAPHTHENE	10/26/99	110	ug/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	208-96-8	ACENAPHTHYLENE	10/26/99	340	ug/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	67-64-1	ACETONE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	309-00-2	ALDRIN	10/26/99	38	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	319-84-6	ALPHA-BHC	10/26/99	38	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	5103-71-9	ALPHA-CHLORDANE	10/26/99	38	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7429-90-5	ALUMINUM	10/26/99	4410	mg/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	120-12-7	ANTHRACENE	10/26/99	460	ug/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-36-0	ANTIMONY	10/26/99	0.56	mg/kg	Y	N	UJ	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	12674-11-2	AROCLOR-1016	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	11104-28-2	AROCLOR-1221	10/26/99	750	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	11141-16-5	AROCLOR-1232	10/26/99	380	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	53469-21-9	AROCLOR-1242	10/26/99	380	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	12672-29-6	AROCLOR-1248	10/26/99	380	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	11097-69-1	AROCLOR-1254	10/26/99	4900	ug/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	11096-82-5	AROCLOR-1260	10/26/99	380	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	11100-14-4	AROCLOR-1268	10/26/99	750	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-38-2	ARSENIC	10/26/99	14.2	mg/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-39-3	BARIUM	10/26/99	77	mg/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	71-43-2	BENZENE	10/26/99	11	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	56-55-3	BENZO(A)ANTHRACENE	10/26/99	4700	ug/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	50-32-8	BENZO(A)PYRENE	10/26/99	4900	ug/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	205-99-2	BENZO(B)FLUORANTHENE	10/26/99	7300	ug/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	191-24-2	BENZO(G,H,I)PERYLENE	10/26/99	2700	ug/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	207-08-9	BENZO(K)FLUORANTHENE	10/26/99	2400	ug/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-41-7	BERYLLIUM	10/26/99	0.7	mg/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	319-85-7	BETA-BHC	10/26/99	38	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/26/99	680	ug/Kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	75-27-4	BROMODICHLOROMETHANE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	75-25-2	BROMOFORM	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	74-83-9	BROMOMETHANE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	85-68-7	BUTYLBENZYL PHTHALATE	10/26/99	380	ug/Kg	Y	N	R	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-43-9	CADMIUM	10/26/99	0.26	mg/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-70-2	CALCIUM	10/26/99	134000	mg/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	86-74-8	CARBAZOLE	10/26/99	120	ug/Kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	75-15-0	CARBON DISULFIDE	10/26/99	11	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	56-23-5	CARBON TETRACHLORIDE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	108-90-7	CHLOROBENZENE	10/26/99	11	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	124-48-1	CHLORODIBROMOMETHANE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	75-00-3	CHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	67-66-3	CHLOROFORM	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	74-87-3	CHLOROMETHANE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-47-3	CHROMIUM	10/26/99	29.9	mg/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	218-01-9	CHRYSENE	10/26/99	5000	ug/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	156-59-2	CIS-1,2-DICHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-48-4	COBALT	10/26/99	7	mg/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-50-8	COPPER	10/26/99	74.5	mg/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	57-12-5	CYANIDE	10/26/99	0.56	mg/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	EPA 335.2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	319-86-8	DELTA-BHC	10/26/99	38	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	53-70-3	DIBENZO(A,H)ANTHRACENE	10/26/99	1100	ug/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	132-64-9	DIBENZOFURAN	10/26/99	250	ug/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	60-57-1	DIELDRIN	10/26/99	230	ug/Kg	Y	Y	JN	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	84-66-2	DIETHYL PHTHALATE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	131-11-3	DIMETHYL PHTHALATE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	84-74-2	DI-N-BUTYL PHTHALATE	10/26/99	43	ug/Kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	117-84-0	DI-N-OCTYL PHTHALATE	10/26/99	530	ug/Kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	959-98-8	ENDOSULFAN I	10/26/99	38	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	33213-65-9	ENDOSULFAN II	10/26/99	180	ug/Kg	Y	Y	JN	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	1031-07-8	ENDOSULFAN SULFATE	10/26/99	75	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	72-20-8	ENDRIN	10/26/99	75	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7421-93-4	ENDRIN ALDEHYDE	10/26/99	290	ug/Kg	Y	Y	JN	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	53494-70-5	ENDRIN KETONE	10/26/99	75	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	100-41-4	ETHYLBENZENE	10/26/99	11	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	206-44-0	FLUORANTHENE	10/26/99	4200	ug/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	86-73-7	FLUORENE	10/26/99	91	ug/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	58-89-9	GAMMA-BHC (LINDANE)	10/26/99	38	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	5566-34-7	GAMMA-CHLORDANE	10/26/99	38	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	76-44-8	HEPTACHLOR	10/26/99	38	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	1024-57-3	HEPTACHLOR EPOXIDE	10/26/99	38	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	118-74-1	HEXACHLOROBENZENE	10/26/99	270	ug/Kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	87-68-3	HEXACHLOROBUTADIENE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	67-72-1	HEXACHLOROETHANE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	193-39-5	INDENO(1,2,3-CD)PYRENE	10/26/99	2500	ug/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7439-89-6	IRON	10/26/99	27700	mg/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	78-59-1	ISOPHORONE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7439-92-1	LEAD	10/26/99	74.2	mg/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7439-95-4	MAGNESIUM	10/26/99	9550	mg/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7439-96-5	MANGANESE	10/26/99	305	mg/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7439-97-6	MERCURY	10/26/99	1.1	mg/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	245.5M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	72-43-5	METHOXYCHLOR	10/26/99	380	ug/Kg	Y	N	UJ	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	22967-92-6	METHYL MERCURY	10/26/99	3.67	ng/g	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	1630/NONE
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	75-09-2	METHYLENE CHLORIDE	10/26/99	11	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	91-20-3	NAPHTHALENE	10/26/99	500	ug/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-02-0	NICKEL	10/26/99	36.3	mg/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	98-95-3	NITROBENZENE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	86-30-6	N-NITROSODIPHENYLAMINE	10/26/99	380	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	87-86-5	PENTACHLOROPHENOL	10/26/99	940	ug/Kg	Y	N	UJ	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	85-01-8	PHENANTHRENE	10/26/99	1200	ug/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	108-95-2	PHENOL	10/26/99	380	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-09-7	POTASSIUM	10/26/99	983	mg/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	129-00-0	PYRENE	10/26/99	8200	ug/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7782-49-2	SELENIUM	10/26/99	1.4	mg/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-22-4	SILVER	10/26/99	0.18	mg/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-23-5	SODIUM	10/26/99	754	mg/kg	Y	Y	J	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	100-42-5	STYRENE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	127-18-4	TETRACHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-28-0	THALLIUM	10/26/99	1.2	mg/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	108-88-3	TOLUENE	10/26/99	11	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	TOC	TOTAL ORGANIC CARBON	10/26/99	90200	mg/Kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	SW9060
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	TSO	TOTAL SOLIDS	10/26/99	88.5	%	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	2540-G
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	8001-35-2	TOXAPHENE	10/26/99	3800	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	156-60-5	TRANS-1,2-DICHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	79-01-6	TRICHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-62-2	VANADIUM	10/26/99	16.4	mg/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	75-01-4	VINYL CHLORIDE	10/26/99	11	ug/Kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	1330-20-7	XYLENES, TOTAL	10/26/99	11	ug/kg	Y	N	U	1116690.8	920079.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Chlorobenzene Hot Spot Area	Soil	WA-CHSA-SS	WA9067	7440-66-6	ZINC	10/26/99	176	mg/kg	Y	Y		1116690.8	920079.7	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB1	WA9068	35822-46-9	1,2,3,4,6,7,8-HPCDD	11/19/97	70	ng/kg	Y	N	U	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	67562-39-4	1,2,3,4,6,7,8-HPCDF	11/19/97	360	ng/kg	Y	Y	J*	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	55673-89-7	1,2,3,4,7,8,9-HPCDF	11/19/97	310	ng/kg	Y	Y	J	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	39227-28-6	1,2,3,4,7,8-HXCDD	11/19/97	80	ng/kg	Y	N	U	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	70648-26-9	1,2,3,4,7,8-HXCDF	11/19/97	510	ng/kg	Y	Y	J	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	57653-85-7	1,2,3,6,7,8-HXCDD	11/19/97	50	ng/kg	Y	N	U	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	57117-44-9	1,2,3,6,7,8-HXCDF	11/19/97	80	ng/kg	Y	Y	J	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	19408-74-3	1,2,3,7,8,9-HXCDD	11/19/97	60	ng/kg	Y	N	U	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	72918-21-9	1,2,3,7,8,9-HXCDF	11/19/97	50	ng/kg	Y	N	U	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	40321-76-4	1,2,3,7,8-PECDD	11/19/97	50	ng/kg	Y	N	U	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	57117-41-6	1,2,3,7,8-PECDF	11/19/97	190	ng/kg	Y	Y	J	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	60851-34-5	2,3,4,6,7,8-HXCDF	11/19/97	110	ng/kg	Y	Y	J	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	57117-31-4	2,3,4,7,8-PECDF	11/19/97	940	ng/kg	Y	Y	J	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	1746-01-6	2,3,7,8-TCDD	11/19/97	30	ng/kg	Y	N	U	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	51207-31-9	2,3,7,8-TCDF	11/19/97	85	ng/kg	Y	Y		1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	51207-31-9	2,3,7,8-TCDF	11/19/97	850	ng/kg	Y	Y	J	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	3268-87-9	OCDD	11/19/97	80	ng/kg	Y	Y	J	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	39001-02-0	OCDF	11/19/97	0.12	ng/kg	Y	Y		1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	37871-00-4	TOTAL HPCDD	11/19/97	70	ng/kg	Y	N	U	1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	38998-75-3	TOTAL HPCDF	11/19/97	850	ng/kg	Y	Y		1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	34465-46-8	TOTAL HXCDD	11/19/97	70	ng/kg	Y	Y		1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	55684-94-1	TOTAL HXCDF	11/19/97	1100	ng/kg	Y	Y		1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	TOC	TOTAL ORGANIC CARBON	11/19/97	89000	mg/Kg	Y	Y		1117570.7	922606.5	0.7	1	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB1	WA9068	36088-22-9	TOTAL PECDD	11/19/97	300	ng/kg	Y	Y		1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	30402-15-4	TOTAL PECDF	11/19/97	3500	ng/kg	Y	Y		1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	TSO	TOTAL SOLIDS	11/19/97	84.4	%	Y	Y		1117570.7	922606.5	0.7	1	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB1	WA9068	41903-57-5	TOTAL TCDD	11/19/97	7200	ng/kg	Y	Y		1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB1	WA9068	55722-27-5	Total TCDF	11/19/97	5100	ng/kg	Y	Y		1117570.7	922606.5	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	35822-46-9	1,2,3,4,6,7,8-HPCDD	11/19/97	11	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	35822-46-9	1,2,3,4,6,7,8-HPCDD	11/19/97	1100	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	67562-39-4	1,2,3,4,6,7,8-HPCDF	11/19/97	51	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	67562-39-4	1,2,3,4,6,7,8-HPCDF	11/19/97	5100	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	55673-89-7	1,2,3,4,7,8,9-HPCDF	11/19/97	4500	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	55673-89-7	1,2,3,4,7,8,9-HPCDF	11/19/97	45	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	39227-28-6	1,2,3,4,7,8-HXCDD	11/19/97	30	ng/kg	Y	N	UJ	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	39227-28-6	1,2,3,4,7,8-HXCDD	11/19/97	0	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	70648-26-9	1,2,3,4,7,8-HXCDF	11/19/97	8500	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	70648-26-9	1,2,3,4,7,8-HXCDF	11/19/97	850	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	57653-85-7	1,2,3,6,7,8-HXCDD	11/19/97	330	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	57653-85-7	1,2,3,6,7,8-HXCDD	11/19/97	3300	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	57117-44-9	1,2,3,6,7,8-HXCDF	11/19/97	1200	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB2	WA9069	57117-44-9	1,2,3,6,7,8-HXCDF	11/19/97	120	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	19408-74-3	1,2,3,7,8,9-HXCDD	11/19/97	0	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	19408-74-3	1,2,3,7,8,9-HXCDD	11/19/97	630	ng/kg	Y	Y	J*	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	72918-21-9	1,2,3,7,8,9-HXCDF	11/19/97	0	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	72918-21-9	1,2,3,7,8,9-HXCDF	11/19/97	3800	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	40321-76-4	1,2,3,7,8-PECDD	11/19/97	0	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	40321-76-4	1,2,3,7,8-PECDD	11/19/97	4000	ng/kg	Y	Y	J*	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	57117-41-6	1,2,3,7,8-PECDF	11/19/97	190	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	57117-41-6	1,2,3,7,8-PECDF	11/19/97	3800	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	60851-34-5	2,3,4,6,7,8-HXCDF	11/19/97	2000	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	60851-34-5	2,3,4,6,7,8-HXCDF	11/19/97	200	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	57117-31-4	2,3,4,7,8-PECDF	11/19/97	20000	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	57117-31-4	2,3,4,7,8-PECDF	11/19/97	10000	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	1746-01-6	2,3,7,8-TCDD	11/19/97	420	ng/kg	Y	Y	J*	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	1746-01-6	2,3,7,8-TCDD	11/19/97	0	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	51207-31-9	2,3,7,8-TCDF	11/19/97	1240	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	51207-31-9	2,3,7,8-TCDF	11/19/97	12400	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	3268-87-9	OCDD	11/19/97	0	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	3268-87-9	OCDD	11/19/97	1300	ng/kg	Y	Y	J*	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	39001-02-0	OCDF	11/19/97	2.5	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	39001-02-0	OCDF	11/19/97	25300	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	37871-00-4	TOTAL HPCDD	11/19/97	1100	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	38998-75-3	TOTAL HPCDF	11/19/97	19800	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	34465-46-8	TOTAL HXCDD	11/19/97	22500	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	55684-94-1	TOTAL HXCDF	11/19/97	29700	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	TOC	TOTAL ORGANIC CARBON	11/19/97	48800	mg/Kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB2	WA9069	36088-22-9	TOTAL PECDD	11/19/97	1800	ng/kg	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	30402-15-4	TOTAL PECDF	11/19/97	74900	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	TSO	TOTAL SOLIDS	11/19/97	80	%	Y	Y		1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB2	WA9069	41903-57-5	TOTAL TCDD	11/19/97	1600	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9069	55722-27-5	Total TCDF	11/19/97	81600	ng/kg	Y	Y	J	1117535.3	922599.7	0.6	0.75	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	152	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	732	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	571	ng/kg	Y	Y	J	1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	25.5	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	1540	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	72.5	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	277	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	62.1	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	39.3	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	40321-76-4	1,2,3,7,8-PECDD	9/29/98	81.8	ng/kg	Y	Y	J	1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	57117-41-6	1,2,3,7,8-PECDF	9/29/98	445	ng/kg	Y	Y	J	1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	94.1	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	57117-31-4	2,3,4,7,8-PECDF	9/29/98	2160	ng/kg	Y	Y	J	1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	1746-01-6	2,3,7,8-TCDD	9/29/98	54	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	51207-31-9	2,3,7,8-TCDF	9/29/98	2570	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	3268-87-9	OCDD	9/29/98	428	ng/kg	Y	Y	J	1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	39001-02-0	OCDF	9/29/98	6500	ng/kg	Y	Y	J	1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	37871-00-4	TOTAL HPCDD	9/29/98	246	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	38998-75-3	TOTAL HPCDF	9/29/98	2040	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	34465-46-8	TOTAL HXCDD	9/29/98	401	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	55684-94-1	TOTAL HXCDF	9/29/98	3500	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	TOC	TOTAL ORGANIC CARBON	9/29/98	50400	mg/Kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB2	WA9070	36088-22-9	TOTAL PECDD	9/29/98	463	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	30402-15-4	TOTAL PECDF	9/29/98	6800	ng/kg	Y	Y	J	1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	TSO	TOTAL SOLIDS	9/29/98	76.9	%	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB2	WA9070	41903-57-5	TOTAL TCDD	9/29/98	453	ng/kg	Y	Y	J	1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070	55722-27-5	Total TCDF	9/29/98	16600	ng/kg	Y	Y		1117535.3	922599.7	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9070N	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	108	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	518	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	544	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	27.9	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	1130	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	51.3	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	177	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	52.1	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	41.1	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB2	WA9070N	40321-76-4	1,2,3,7,8-PECDD	9/29/98	71.3	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	57117-41-6	1,2,3,7,8-PECDF	9/29/98	327	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	78.7	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	57117-31-4	2,3,4,7,8-PECDF	9/29/98	2010	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	1746-01-6	2,3,7,8-TCDD	9/29/98	105	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	51207-31-9	2,3,7,8-TCDF	9/29/98	1580	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	3268-87-9	OCDD	9/29/98	305	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	39001-02-0	OCDF	9/29/98	4600	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	37871-00-4	TOTAL HPCDD	9/29/98	185	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	38998-75-3	TOTAL HPCDF	9/29/98	1630	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	34465-46-8	TOTAL HXCDD	9/29/98	319	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	55684-94-1	TOTAL HXCDF	9/29/98	2490	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	36088-22-9	TOTAL PECDD	9/29/98	309	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	30402-15-4	TOTAL PECDF	9/29/98	5620	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	41903-57-5	TOTAL TCDD	9/29/98	540	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9070N	55722-27-5	Total TCDF	9/29/98	15700	ng/kg	Y	Y		1117535.3	922599.7	1	2	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB2	WA9071	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	8.44	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	18.6	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	8.43	ng/kg	Y	Y	J*	1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	1.06	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	26.2	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	2.85	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	5.2	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	2.27	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	1.18	ng/kg	Y	N	U	1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	40321-76-4	1,2,3,7,8-PECDD	9/29/98	1.79	ng/kg	Y	Y	J	1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	57117-41-6	1,2,3,7,8-PECDF	9/29/98	11.8	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	1.92	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	57117-31-4	2,3,4,7,8-PECDF	9/29/98	55.1	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	1746-01-6	2,3,7,8-TCDD	9/29/98	1.06	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	51207-31-9	2,3,7,8-TCDF	9/29/98	50.4	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	3268-87-9	OCDD	9/29/98	19.9	ng/kg	Y	Y	J	1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	39001-02-0	OCDF	9/29/98	135	ng/kg	Y	Y	J	1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	37871-00-4	TOTAL HPCDD	9/29/98	17.3	ng/kg	Y	N	U	1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	38998-75-3	TOTAL HPCDF	9/29/98	29	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	34465-46-8	TOTAL HXCDD	9/29/98	24.9	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	55684-94-1	TOTAL HXCDF	9/29/98	55.6	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	TOC	TOTAL ORGANIC CARBON	9/29/98	85200	mg/Kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB2	WA9071	36088-22-9	TOTAL PECDD	9/29/98	22.5	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	30402-15-4	TOTAL PECDF	9/29/98	182	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	TSO	TOTAL SOLIDS	9/29/98	59.8	%	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB2	WA9071	41903-57-5	TOTAL TCDD	9/29/98	5.68	ng/kg	Y	Y	J	1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9071	55722-27-5	Total TCDF	9/29/98	365	ng/kg	Y	Y		1117535.3	922599.7	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	7.24	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	18.7	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	11.5	ng/kg	Y	Y	J	1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	0.69	ng/kg	Y	Y	*	1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	34.8	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	2.34	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	7.27	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	2.08	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	0.69	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	40321-76-4	1,2,3,7,8-PECDD	9/29/98	2.02	ng/kg	Y	Y	J	1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	57117-41-6	1,2,3,7,8-PECDF	9/29/98	15.7	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	3.15	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	57117-31-4	2,3,4,7,8-PECDF	9/29/98	65.3	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	1746-01-6	2,3,7,8-TCDD	9/29/98	1.03	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	51207-31-9	2,3,7,8-TCDF	9/29/98	80.7	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	3268-87-9	OCDD	9/29/98	28.7	ng/kg	Y	Y	J	1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	39001-02-0	OCDF	9/29/98	132	ng/kg	Y	Y	J	1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	37871-00-4	TOTAL HPCDD	9/29/98	11.6	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	38998-75-3	TOTAL HPCDF	9/29/98	46	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	34465-46-8	TOTAL HXCDD	9/29/98	13	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	55684-94-1	TOTAL HXCDF	9/29/98	78.9	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	TOC	TOTAL ORGANIC CARBON	9/29/98	68500	mg/Kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB2	WA9072	36088-22-9	TOTAL PECDD	9/29/98	14.1	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	30402-15-4	TOTAL PECDF	9/29/98	217	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB2	WA9072	TSO	TOTAL SOLIDS	9/29/98	75.2	%	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB2	WA9072	41903-57-5	TOTAL TCDD	9/29/98	6.98	ng/kg	Y	Y	J	1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9072	55722-27-5	Total TCDF	9/29/98	582	ng/kg	Y	Y		1117535.3	922599.7	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	5.34	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	5.61	ng/kg	Y	Y	*	1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	2.85	ng/kg	Y	Y	J	1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	1.12	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	5.26	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	1.25	ng/kg	Y	Y	*	1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	2.45	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	2.15	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	0.78	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	40321-76-4	1,2,3,7,8-PECDD	9/29/98	0.74	ng/kg	Y	Y	J*	1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	57117-41-6	1,2,3,7,8-PECDF	9/29/98	4.27	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	1.51	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	57117-31-4	2,3,4,7,8-PECDF	9/29/98	16.6	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	1746-01-6	2,3,7,8-TCDD	9/29/98	0.42	ng/kg	Y	N	U	1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	51207-31-9	2,3,7,8-TCDF	9/29/98	20	ng/kg	Y	Y	*	1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	3268-87-9	OCDD	9/29/98	13.7	ng/kg	Y	Y	J*	1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	39001-02-0	OCDF	9/29/98	20.1	ng/kg	Y	Y	J	1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	37871-00-4	TOTAL HPCDD	9/29/98	8.52	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	38998-75-3	TOTAL HPCDF	9/29/98	2.85	ng/kg	Y	Y	*	1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	34465-46-8	TOTAL HXCDD	9/29/98	9.7	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	55684-94-1	TOTAL HXCDF	9/29/98	15.6	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	TOC	TOTAL ORGANIC CARBON	9/29/98	88000	mg/Kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB2	WA9073	36088-22-9	TOTAL PECDD	9/29/98	5.74	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	30402-15-4	TOTAL PECDF	9/29/98	76.3	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	TSO	TOTAL SOLIDS	9/29/98	71.6	%	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB2	WA9073	41903-57-5	TOTAL TCDD	9/29/98	5.02	ng/kg	Y	Y	J	1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB2	WA9073	55722-27-5	Total TCDF	9/29/98	201	ng/kg	Y	Y		1117535.3	922599.7	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB3	WA9074	35822-46-9	1,2,3,4,6,7,8-HPCDD	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	35822-46-9	1,2,3,4,6,7,8-HPCDD	11/19/97	50	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	67562-39-4	1,2,3,4,6,7,8-HPCDF	11/19/97	150	ng/kg	Y	Y	J*	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	67562-39-4	1,2,3,4,6,7,8-HPCDF	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	55673-89-7	1,2,3,4,7,8,9-HPCDF	11/19/97	40	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	55673-89-7	1,2,3,4,7,8,9-HPCDF	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	39227-28-6	1,2,3,4,7,8-HXCDD	11/19/97	40	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	39227-28-6	1,2,3,4,7,8-HXCDD	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	70648-26-9	1,2,3,4,7,8-HXCDF	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	70648-26-9	1,2,3,4,7,8-HXCDF	11/19/97	100	ng/kg	Y	Y	J*	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	57653-85-7	1,2,3,6,7,8-HXCDD	11/19/97	30	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	57653-85-7	1,2,3,6,7,8-HXCDD	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	57117-44-9	1,2,3,6,7,8-HXCDF	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	57117-44-9	1,2,3,6,7,8-HXCDF	11/19/97	20	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	19408-74-3	1,2,3,7,8,9-HXCDD	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	19408-74-3	1,2,3,7,8,9-HXCDD	11/19/97	30	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	72918-21-9	1,2,3,7,8,9-HXCDF	11/19/97	30	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	72918-21-9	1,2,3,7,8,9-HXCDF	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	40321-76-4	1,2,3,7,8-PECDD	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	40321-76-4	1,2,3,7,8-PECDD	11/19/97	50	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	57117-41-6	1,2,3,7,8-PECDF	11/19/97	30	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	57117-41-6	1,2,3,7,8-PECDF	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	60851-34-5	2,3,4,6,7,8-HXCDF	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	60851-34-5	2,3,4,6,7,8-HXCDF	11/19/97	230	ng/kg	Y	Y	XJ*	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	57117-31-4	2,3,4,7,8-PECDF	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	57117-31-4	2,3,4,7,8-PECDF	11/19/97	220	ng/kg	Y	Y	J*	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	1746-01-6	2,3,7,8-TCDD	11/19/97	20	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	1746-01-6	2,3,7,8-TCDD	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	51207-31-9	2,3,7,8-TCDF	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	51207-31-9	2,3,7,8-TCDF	11/19/97	310	ng/kg	Y	Y	J*	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	3268-87-9	OCDD	11/19/97	0	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	3268-87-9	OCDD	11/19/97	50	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	39001-02-0	OCDF	11/19/97	0.012	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	39001-02-0	OCDF	11/19/97	120	ng/kg	Y	Y	J	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	37871-00-4	TOTAL HPCDD	11/19/97	50	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	38998-75-3	TOTAL HPCDF	11/19/97	520	ng/kg	Y	Y	J	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	34465-46-8	TOTAL HXCDD	11/19/97	750	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB3	WA9074	55684-94-1	TOTAL HXCDF	11/19/97	1300	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	TOC	TOTAL ORGANIC CARBON	11/19/97	110000	mg/Kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB3	WA9074	36088-22-9	TOTAL PECDD	11/19/97	1200	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	30402-15-4	TOTAL PECDF	11/19/97	560	ng/kg	Y	Y	J	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	TSO	TOTAL SOLIDS	11/19/97	96.3	%	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB3	WA9074	41903-57-5	TOTAL TCDD	11/19/97	12900	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074	55722-27-5	Total TCDF	11/19/97	970	ng/kg	Y	Y	J	1117566.9	922637.3	0.6	0.8	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	35822-46-9	1,2,3,4,6,7,8-HPCDD	11/19/97	25.4	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	67562-39-4	1,2,3,4,6,7,8-HPCDF	11/19/97	20.5	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	55673-89-7	1,2,3,4,7,8,9-HPCDF	11/19/97	16	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	39227-28-6	1,2,3,4,7,8-HXCDD	11/19/97	2.5	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	70648-26-9	1,2,3,4,7,8-HXCDF	11/19/97	31.1	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	57653-85-7	1,2,3,6,7,8-HXCDD	11/19/97	5.7	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	57117-44-9	1,2,3,6,7,8-HXCDF	11/19/97	6.69	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	19408-74-3	1,2,3,7,8,9-HXCDD	11/19/97	3.23	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	72918-21-9	1,2,3,7,8,9-HXCDF	11/19/97	3	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	40321-76-4	1,2,3,7,8-PECDD	11/19/97	3.21	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	57117-41-6	1,2,3,7,8-PECDF	11/19/97	15.7	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	60851-34-5	2,3,4,6,7,8-HXCDF	11/19/97	2.5	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	57117-31-4	2,3,4,7,8-PECDF	11/19/97	106	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	1746-01-6	2,3,7,8-TCDD	11/19/97	1	ng/kg	Y	N	U	1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	51207-31-9	2,3,7,8-TCDF	11/19/97	301	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	3268-87-9	OCDD	11/19/97	158	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	39001-02-0	OCDF	11/19/97	152	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	37871-00-4	TOTAL HPCDD	11/19/97	42.8	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	38998-75-3	TOTAL HPCDF	11/19/97	55.2	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	34465-46-8	TOTAL HXCDD	11/19/97	30.3	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	55684-94-1	TOTAL HXCDF	11/19/97	70.5	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	36088-22-9	TOTAL PECDD	11/19/97	18.6	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	30402-15-4	TOTAL PECDF	11/19/97	292	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	41903-57-5	TOTAL TCDD	11/19/97	16.5	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB3	WA9074N	55722-27-5	Total TCDF	11/19/97	740	ng/kg	Y	Y		1117566.9	922637.3	0.6	0.8	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	35822-46-9	1,2,3,4,6,7,8-HPCDD	11/19/97	20	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	35822-46-9	1,2,3,4,6,7,8-HPCDD	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	67562-39-4	1,2,3,4,6,7,8-HPCDF	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	67562-39-4	1,2,3,4,6,7,8-HPCDF	11/19/97	100	ng/kg	Y	Y	J*	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	55673-89-7	1,2,3,4,7,8,9-HPCDF	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	55673-89-7	1,2,3,4,7,8,9-HPCDF	11/19/97	20	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	39227-28-6	1,2,3,4,7,8-HXCDD	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	39227-28-6	1,2,3,4,7,8-HXCDD	11/19/97	20	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	70648-26-9	1,2,3,4,7,8-HXCDF	11/19/97	80	ng/kg	Y	Y	J	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	70648-26-9	1,2,3,4,7,8-HXCDF	11/19/97	8	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	57653-85-7	1,2,3,6,7,8-HXCDD	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	57653-85-7	1,2,3,6,7,8-HXCDD	11/19/97	20	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	57117-44-9	1,2,3,6,7,8-HXCDF	11/19/97	10	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	57117-44-9	1,2,3,6,7,8-HXCDF	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	19408-74-3	1,2,3,7,8,9-HXCDD	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	19408-74-3	1,2,3,7,8,9-HXCDD	11/19/97	20	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	72918-21-9	1,2,3,7,8,9-HXCDF	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	72918-21-9	1,2,3,7,8,9-HXCDF	11/19/97	10	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	40321-76-4	1,2,3,7,8-PECDD	11/19/97	30	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	40321-76-4	1,2,3,7,8-PECDD	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	57117-41-6	1,2,3,7,8-PECDF	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	57117-41-6	1,2,3,7,8-PECDF	11/19/97	60	ng/kg	Y	Y	J*	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	60851-34-5	2,3,4,6,7,8-HXCDF	11/19/97	10	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	60851-34-5	2,3,4,6,7,8-HXCDF	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	57117-31-4	2,3,4,7,8-PECDF	11/19/97	160	ng/kg	Y	Y	J	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	57117-31-4	2,3,4,7,8-PECDF	11/19/97	80	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	1746-01-6	2,3,7,8-TCDD	11/19/97	10	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	1746-01-6	2,3,7,8-TCDD	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	51207-31-9	2,3,7,8-TCDF	11/19/97	360	ng/kg	Y	Y	J	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	51207-31-9	2,3,7,8-TCDF	11/19/97	36	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	3268-87-9	OCDD	11/19/97	70	ng/kg	Y	Y	J*	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	3268-87-9	OCDD	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	39001-02-0	OCDF	11/19/97	180	ng/kg	Y	Y	J*	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	39001-02-0	OCDF	11/19/97	0	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	37871-00-4	TOTAL HPCDD	11/19/97	20	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB4	WA9075	38998-75-3	TOTAL HPCDF	11/19/97	100	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	34465-46-8	TOTAL HXCDD	11/19/97	20	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	55684-94-1	TOTAL HXCDF	11/19/97	130	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	TOC	TOTAL ORGANIC CARBON	11/19/97	85900	mg/Kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB4	WA9075	36088-22-9	TOTAL PECDD	11/19/97	300	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	30402-15-4	TOTAL PECDF	11/19/97	670	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	TSO	TOTAL SOLIDS	11/19/97	94.4	%	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB4	WA9075	41903-57-5	TOTAL TCDD	11/19/97	9800	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075	55722-27-5	Total TCDF	11/19/97	710	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	35822-46-9	1,2,3,4,6,7,8-HPCDD	11/19/97	19.9	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	67562-39-4	1,2,3,4,6,7,8-HPCDF	11/19/97	43.7	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	55673-89-7	1,2,3,4,7,8,9-HPCDF	11/19/97	27.1	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	39227-28-6	1,2,3,4,7,8-HXCDD	11/19/97	2.5	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	70648-26-9	1,2,3,4,7,8-HXCDF	11/19/97	55	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	57653-85-7	1,2,3,6,7,8-HXCDD	11/19/97	5.24	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	57117-44-9	1,2,3,6,7,8-HXCDF	11/19/97	13	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	19408-74-3	1,2,3,7,8,9-HXCDD	11/19/97	2.64	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	72918-21-9	1,2,3,7,8,9-HXCDF	11/19/97	5.43	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	40321-76-4	1,2,3,7,8-PECDD	11/19/97	2.98	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	57117-41-6	1,2,3,7,8-PECDF	11/19/97	30.4	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	60851-34-5	2,3,4,6,7,8-HXCDF	11/19/97	2.5	ng/kg	Y	N	U	1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	57117-31-4	2,3,4,7,8-PECDF	11/19/97	98	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	1746-01-6	2,3,7,8-TCDD	11/19/97	1.14	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	51207-31-9	2,3,7,8-TCDF	11/19/97	340	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	3268-87-9	OCDD	11/19/97	85.1	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	39001-02-0	OCDF	11/19/97	253	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	37871-00-4	TOTAL HPCDD	11/19/97	34.9	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	38998-75-3	TOTAL HPCDF	11/19/97	107	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	34465-46-8	TOTAL HXCDD	11/19/97	27.3	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	55684-94-1	TOTAL HXCDF	11/19/97	138	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	36088-22-9	TOTAL PECDD	11/19/97	19.5	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	30402-15-4	TOTAL PECDF	11/19/97	350	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	41903-57-5	TOTAL TCDD	11/19/97	26.3	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB4	WA9075N	55722-27-5	Total TCDF	11/19/97	877	ng/kg	Y	Y		1117583.3	922589.1	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	35822-46-9	1,2,3,4,6,7,8-HPCDD	11/19/97	26	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	35822-46-9	1,2,3,4,6,7,8-HPCDD	11/19/97	2600	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	67562-39-4	1,2,3,4,6,7,8-HPCDF	11/19/97	50	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	67562-39-4	1,2,3,4,6,7,8-HPCDF	11/19/97	0.5	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	55673-89-7	1,2,3,4,7,8,9-HPCDF	11/19/97	30400	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	55673-89-7	1,2,3,4,7,8,9-HPCDF	11/19/97	304	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	39227-28-6	1,2,3,4,7,8-HXCDD	11/19/97	1000	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	39227-28-6	1,2,3,4,7,8-HXCDD	11/19/97	100	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	70648-26-9	1,2,3,4,7,8-HXCDF	11/19/97	2710	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	70648-26-9	1,2,3,4,7,8-HXCDF	11/19/97	27100	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	57653-85-7	1,2,3,6,7,8-HXCDD	11/19/97	8700	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	57653-85-7	1,2,3,6,7,8-HXCDD	11/19/97	870	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	57117-44-9	1,2,3,6,7,8-HXCDF	11/19/97	330	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	57117-44-9	1,2,3,6,7,8-HXCDF	11/19/97	3300	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	19408-74-3	1,2,3,7,8,9-HXCDD	11/19/97	0	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	19408-74-3	1,2,3,7,8,9-HXCDD	11/19/97	2100	ng/kg	Y	Y	J*	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	72918-21-9	1,2,3,7,8,9-HXCDF	11/19/97	15900	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	72918-21-9	1,2,3,7,8,9-HXCDF	11/19/97	0	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	40321-76-4	1,2,3,7,8-PECDD	11/19/97	0	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	40321-76-4	1,2,3,7,8-PECDD	11/19/97	2000	ng/kg	Y	N	UJ*	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	57117-41-6	1,2,3,7,8-PECDF	11/19/97	5500	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	57117-41-6	1,2,3,7,8-PECDF	11/19/97	275	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	60851-34-5	2,3,4,6,7,8-HXCDF	11/19/97	0	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	60851-34-5	2,3,4,6,7,8-HXCDF	11/19/97	7400	ng/kg	Y	Y	J*	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	57117-31-4	2,3,4,7,8-PECDF	11/19/97	9950	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	57117-31-4	2,3,4,7,8-PECDF	11/19/97	19900	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	1746-01-6	2,3,7,8-TCDD	11/19/97	510	ng/kg	Y	Y	J*	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	1746-01-6	2,3,7,8-TCDD	11/19/97	0	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	51207-31-9	2,3,7,8-TCDF	11/19/97	12900	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	51207-31-9	2,3,7,8-TCDF	11/19/97	129000	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	3268-87-9	OCDD	11/19/97	0.37	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	3268-87-9	OCDD	11/19/97	3700	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	39001-02-0	OCDF	11/19/97	5.81	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB5	WA9076	39001-02-0	OCDF	11/19/97	58100	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	37871-00-4	TOTAL HPCDD	11/19/97	3400	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	38998-75-3	TOTAL HPCDF	11/19/97	44500	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	34465-46-8	TOTAL HXCDD	11/19/97	9700	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	55684-94-1	TOTAL HXCDF	11/19/97	88600	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	TOC	TOTAL ORGANIC CARBON	11/19/97	80600	mg/Kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB5	WA9076	36088-22-9	TOTAL PECDD	11/19/97	50	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	30402-15-4	TOTAL PECDF	11/19/97	19900	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	TSO	TOTAL SOLIDS	11/19/97	93.3	%	Y	Y		1117516.1	922612.2	0.7	1	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB5	WA9076	41903-57-5	TOTAL TCDD	11/19/97	19900	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076	55722-27-5	Total TCDF	11/19/97	19900	ng/kg	Y	Y	J	1117516.1	922612.2	0.7	1	SB	SOIL	Soil	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	35822-46-9	1,2,3,4,6,7,8-HPCDD	11/19/97	1660	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	67562-39-4	1,2,3,4,6,7,8-HPCDF	11/19/97	10700	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	55673-89-7	1,2,3,4,7,8,9-HPCDF	11/19/97	7940	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	39227-28-6	1,2,3,4,7,8-HXCDD	11/19/97	340	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	70648-26-9	1,2,3,4,7,8-HXCDF	11/19/97	28800	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	57653-85-7	1,2,3,6,7,8-HXCDD	11/19/97	947	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	57117-44-9	1,2,3,6,7,8-HXCDF	11/19/97	4930	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	19408-74-3	1,2,3,7,8,9-HXCDD	11/19/97	818	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	72918-21-9	1,2,3,7,8,9-HXCDF	11/19/97	1780	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	40321-76-4	1,2,3,7,8-PECDD	11/19/97	1250	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	57117-41-6	1,2,3,7,8-PECDF	11/19/97	24620	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	60851-34-5	2,3,4,6,7,8-HXCDF	11/19/97	979	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	57117-31-4	2,3,4,7,8-PECDF	11/19/97	188000	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	1746-01-6	2,3,7,8-TCDD	11/19/97	308	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	51207-31-9	2,3,7,8-TCDF	11/19/97	569000	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	3268-87-9	OCDD	11/19/97	5170	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	39001-02-0	OCDF	11/19/97	95000	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	37871-00-4	TOTAL HPCDD	11/19/97	2650	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	38998-75-3	TOTAL HPCDF	11/19/97	28200	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	34465-46-8	TOTAL HXCDD	11/19/97	5550	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	55684-94-1	TOTAL HXCDF	11/19/97	59900	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	36088-22-9	TOTAL PECDD	11/19/97	5390	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	30402-15-4	TOTAL PECDF	11/19/97	492000	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	41903-57-5	TOTAL TCDD	11/19/97	4360	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9076N	55722-27-5	Total TCDF	11/19/97	1370000	ng/kg	Y	Y		1117516.1	922612.2	0.7	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB5	WA9077	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	2850	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	22400	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	20000	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	560	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	61900	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	1950	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	11600	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	1840	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	2010	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	40321-76-4	1,2,3,7,8-PECDD	9/29/98	2680	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	57117-41-6	1,2,3,7,8-PECDF	9/29/98	69400	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	3810	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	57117-31-4	2,3,4,7,8-PECDF	9/29/98	506000	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	1746-01-6	2,3,7,8-TCDD	9/29/98	527	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	51207-31-9	2,3,7,8-TCDF	9/29/98	570000	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	3268-87-9	OCDD	9/29/98	5370	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	39001-02-0	OCDF	9/29/98	189000	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	37871-00-4	TOTAL HPCDD	9/29/98	4480	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	38998-75-3	TOTAL HPCDF	9/29/98	62300	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	34465-46-8	TOTAL HXCDD	9/29/98	11300	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	55684-94-1	TOTAL HXCDF	9/29/98	130000	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	TOC	TOTAL ORGANIC CARBON	9/29/98	81200	mg/Kg	Y	Y		1117516.1	922612.2	1	2	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB5	WA9077	36088-22-9	TOTAL PECDD	9/29/98	7610	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	30402-15-4	TOTAL PECDF	9/29/98	1270000	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	TSO	TOTAL SOLIDS	9/29/98	75	%	Y	Y		1117516.1	922612.2	1	2	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB5	WA9077	41903-57-5	TOTAL TCDD	9/29/98	1760	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9077	55722-27-5	Total TCDF	9/29/98	3680000	ng/kg	Y	Y	J	1117516.1	922612.2	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	1150	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	7300	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	6310	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	221	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB5	WA9078	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	22100	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	597	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	4060	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	521	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	719	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	40321-76-4	1,2,3,7,8-PECDD	9/29/98	1000	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	57117-41-6	1,2,3,7,8-PECDF	9/29/98	25900	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	1500	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	57117-31-4	2,3,4,7,8-PECDF	9/29/98	187000	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	1746-01-6	2,3,7,8-TCDD	9/29/98	313	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	51207-31-9	2,3,7,8-TCDF	9/29/98	195000	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	3268-87-9	OCDD	9/29/98	4270	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	39001-02-0	OCDF	9/29/98	55800	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	37871-00-4	TOTAL HPCDD	9/29/98	1860	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	38998-75-3	TOTAL HPCDF	9/29/98	20300	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	34465-46-8	TOTAL HXCDD	9/29/98	4080	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	55684-94-1	TOTAL HXCDF	9/29/98	41500	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	TOC	TOTAL ORGANIC CARBON	9/29/98	87600	mg/Kg	Y	Y		1117516.1	922612.2	2	3	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB5	WA9078	36088-22-9	TOTAL PECDD	9/29/98	3580	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	30402-15-4	TOTAL PECDF	9/29/98	457000	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	TSO	TOTAL SOLIDS	9/29/98	88.8	%	Y	Y		1117516.1	922612.2	2	3	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB5	WA9078	41903-57-5	TOTAL TCDD	9/29/98	3080	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9078	55722-27-5	Total TCDF	9/29/98	1110000	ng/kg	Y	Y	J	1117516.1	922612.2	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	946	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	6050	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	5020	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	153	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	14500	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	387	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	2760	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	322	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	504	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	40321-76-4	1,2,3,7,8-PECDD	9/29/98	605	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	57117-41-6	1,2,3,7,8-PECDF	9/29/98	17800	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	1060	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	57117-31-4	2,3,4,7,8-PECDF	9/29/98	132000	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	1746-01-6	2,3,7,8-TCDD	9/29/98	130	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	51207-31-9	2,3,7,8-TCDF	9/29/98	151000	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	3268-87-9	OCDD	9/29/98	4800	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	39001-02-0	OCDF	9/29/98	52100	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	37871-00-4	TOTAL HPCDD	9/29/98	1530	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	38998-75-3	TOTAL HPCDF	9/29/98	16000	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	34465-46-8	TOTAL HXCDD	9/29/98	1700	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	55684-94-1	TOTAL HXCDF	9/29/98	30700	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	TOC	TOTAL ORGANIC CARBON	9/29/98	46600	mg/Kg	Y	Y		1117516.1	922612.2	3	4	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB5	WA9079	36088-22-9	TOTAL PECDD	9/29/98	1130	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	30402-15-4	TOTAL PECDF	9/29/98	328000	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	TSO	TOTAL SOLIDS	9/29/98	81.8	%	Y	Y		1117516.1	922612.2	3	4	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB5	WA9079	41903-57-5	TOTAL TCDD	9/29/98	570	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9079	55722-27-5	Total TCDF	9/29/98	955000	ng/kg	Y	Y	J	1117516.1	922612.2	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	4170	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	30400	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	29300	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	878	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	77000	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	2550	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	13800	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	2160	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	2370	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	40321-76-4	1,2,3,7,8-PECDD	9/29/98	3450	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	57117-41-6	1,2,3,7,8-PECDF	9/29/98	78400	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	4740	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	57117-31-4	2,3,4,7,8-PECDF	9/29/98	572000	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	1746-01-6	2,3,7,8-TCDD	9/29/98	833	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	51207-31-9	2,3,7,8-TCDF	9/29/98	630000	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	3268-87-9	OCDD	9/29/98	7480	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	39001-02-0	OCDF	9/29/98	267000	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB5	WA9080	37871-00-4	TOTAL HPCDD	9/29/98	5610	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	38998-75-3	TOTAL HPCDF	9/29/98	88200	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	34465-46-8	TOTAL HXCDD	9/29/98	11300	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	55684-94-1	TOTAL HXCDF	9/29/98	155000	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	TOC	TOTAL ORGANIC CARBON	9/29/98	78000	mg/Kg	Y	Y		1117516.1	922612.2	4	5	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB5	WA9080	36088-22-9	TOTAL PECDD	9/29/98	9580	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	30402-15-4	TOTAL PECDF	9/29/98	1410000	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	TSO	TOTAL SOLIDS	9/29/98	71.1	%	Y	Y		1117516.1	922612.2	4	5	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB5	WA9080	41903-57-5	TOTAL TCDD	9/29/98	2970	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB5	WA9080	55722-27-5	Total TCDF	9/29/98	4200000	ng/kg	Y	Y	J	1117516.1	922612.2	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	703	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	2500	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	2500	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	125	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	5930	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	343	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	874	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	238	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	170	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	40321-76-4	1,2,3,7,8-PECDD	9/28/98	285	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	57117-41-6	1,2,3,7,8-PECDF	9/28/98	1140	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	275	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	57117-31-4	2,3,4,7,8-PECDF	9/28/98	5160	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	1746-01-6	2,3,7,8-TCDD	9/28/98	78.7	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	51207-31-9	2,3,7,8-TCDF	9/28/98	7330	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	3268-87-9	OCDD	9/28/98	1090	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	39001-02-0	OCDF	9/28/98	18300	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	37871-00-4	TOTAL HPCDD	9/28/98	963	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	38998-75-3	TOTAL HPCDF	9/28/98	7330	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	34465-46-8	TOTAL HXCDD	9/28/98	1650	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	55684-94-1	TOTAL HXCDF	9/28/98	11600	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	TOC	TOTAL ORGANIC CARBON	9/28/98	47800	mg/Kg	Y	Y		1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	36088-22-9	TOTAL PECDD	9/28/98	1290	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	30402-15-4	TOTAL PECDF	9/28/98	16800	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	TSO	TOTAL SOLIDS	9/28/98	87.2	%	Y	Y		1117520.4	922659.9	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	41903-57-5	TOTAL TCDD	9/28/98	258	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081	55722-27-5	Total TCDF	9/28/98	49300	ng/kg	Y	Y	J	1117520.4	922659.9	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	2720	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	2840	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	131	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	4990	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	387	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	986	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	369	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	154	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	40321-76-4	1,2,3,7,8-PECDD	9/28/98	328	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	57117-41-6	1,2,3,7,8-PECDF	9/28/98	1250	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	353	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	57117-31-4	2,3,4,7,8-PECDF	9/28/98	4440	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	1746-01-6	2,3,7,8-TCDD	9/28/98	108	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	51207-31-9	2,3,7,8-TCDF	9/28/98	4580	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	3268-87-9	OCDD	9/28/98	1200	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	39001-02-0	OCDF	9/28/98	15600	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	37871-00-4	TOTAL HPCDD	9/28/98	1160	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	38998-75-3	TOTAL HPCDF	9/28/98	8220	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	34465-46-8	TOTAL HXCDD	9/28/98	1960	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	55684-94-1	TOTAL HXCDF	9/28/98	4990	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	36088-22-9	TOTAL PECDD	9/28/98	1510	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	30402-15-4	TOTAL PECDF	9/28/98	4440	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	41903-57-5	TOTAL TCDD	9/28/98	439	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9081N	55722-27-5	Total TCDF	9/28/98	38400	ng/kg	Y	Y		1117520.4	922659.9	0.5	1	SS	SOIL	SOIL	DFLM/NONE
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	487	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	2540	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	1680	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	75.4	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	3840	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	223	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	752	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	132	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	103	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	40321-76-4	1,2,3,7,8-PECDD	9/28/98	157	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	57117-41-6	1,2,3,7,8-PECDF	9/28/98	1290	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	260	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	57117-31-4	2,3,4,7,8-PECDF	9/28/98	7290	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	1746-01-6	2,3,7,8-TCDD	9/28/98	48.9	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	51207-31-9	2,3,7,8-TCDF	9/28/98	7270	ng/kg	Y	Y		1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	3268-87-9	OCDD	9/28/98	833	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	39001-02-0	OCDF	9/28/98	18200	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	37871-00-4	TOTAL HPCDD	9/28/98	772	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	38998-75-3	TOTAL HPCDF	9/28/98	3700	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	34465-46-8	TOTAL HXCDD	9/28/98	1350	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	55684-94-1	TOTAL HXCDF	9/28/98	8520	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	TOC	TOTAL ORGANIC CARBON	9/28/98	48800	mg/Kg	Y	Y		1117520.4	922659.9	1	2	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	36088-22-9	TOTAL PECDD	9/28/98	1030	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	30402-15-4	TOTAL PECDF	9/28/98	21900	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	TSO	TOTAL SOLIDS	9/28/98	88.6	%	Y	Y		1117520.4	922659.9	1	2	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	41903-57-5	TOTAL TCDD	9/28/98	294	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9082	55722-27-5	Total TCDF	9/28/98	51100	ng/kg	Y	Y	J	1117520.4	922659.9	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	511	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	3550	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	2660	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	78	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	5800	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	178	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	1010	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	215	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	163	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	40321-76-4	1,2,3,7,8-PECDD	9/28/98	214	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	57117-41-6	1,2,3,7,8-PECDF	9/28/98	2000	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	358	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	57117-31-4	2,3,4,7,8-PECDF	9/28/98	11300	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	1746-01-6	2,3,7,8-TCDD	9/28/98	79	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	51207-31-9	2,3,7,8-TCDF	9/28/98	12500	ng/kg	Y	Y		1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	3268-87-9	OCDD	9/28/98	874	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	39001-02-0	OCDF	9/28/98	27300	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	37871-00-4	TOTAL HPCDD	9/28/98	751	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	38998-75-3	TOTAL HPCDF	9/28/98	9170	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	34465-46-8	TOTAL HXCDD	9/28/98	1490	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	55684-94-1	TOTAL HXCDF	9/28/98	12100	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	TOC	TOTAL ORGANIC CARBON	9/28/98	79000	mg/Kg	Y	Y		1117520.4	922659.9	2	3	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	36088-22-9	TOTAL PECDD	9/28/98	1170	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	30402-15-4	TOTAL PECDF	9/28/98	28500	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	TSO	TOTAL SOLIDS	9/28/98	85.9	%	Y	Y		1117520.4	922659.9	2	3	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	41903-57-5	TOTAL TCDD	9/28/98	68	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9083	55722-27-5	Total TCDF	9/28/98	98900	ng/kg	Y	Y	J	1117520.4	922659.9	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	617	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	3300	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	2880	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	106	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	6170	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	299	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	1050	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	187	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	205	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	40321-76-4	1,2,3,7,8-PECDD	9/28/98	248	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	57117-41-6	1,2,3,7,8-PECDF	9/28/98	2000	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	364	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	57117-31-4	2,3,4,7,8-PECDF	9/28/98	11600	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	1746-01-6	2,3,7,8-TCDD	9/28/98	90.5	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	51207-31-9	2,3,7,8-TCDF	9/28/98	12200	ng/kg	Y	Y		1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	3268-87-9	OCDD	9/28/98	1020	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	39001-02-0	OCDF	9/28/98	23800	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	37871-00-4	TOTAL HPCDD	9/28/98	918	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	38998-75-3	TOTAL HPCDF	9/28/98	8520	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	34465-46-8	TOTAL HXCDD	9/28/98	1770	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	55684-94-1	TOTAL HXCDF	9/28/98	12800	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	TOC	TOTAL ORGANIC CARBON	9/28/98	46000	mg/Kg	Y	Y		1117520.4	922659.9	3	4	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	36088-22-9	TOTAL PECDD	9/28/98	1500	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	30402-15-4	TOTAL PECDF	9/28/98	33700	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	TSO	TOTAL SOLIDS	9/28/98	89.1	%	Y	Y		1117520.4	922659.9	3	4	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	41903-57-5	TOTAL TCDD	9/28/98	230	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9084	55722-27-5	Total TCDF	9/28/98	87100	ng/kg	Y	Y	J	1117520.4	922659.9	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	709	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	5270	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	4830	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	158	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	10100	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	429	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	1720	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	306	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	354	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	40321-76-4	1,2,3,7,8-PECDD	9/28/98	451	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	57117-41-6	1,2,3,7,8-PECDF	9/28/98	3300	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	563	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	57117-31-4	2,3,4,7,8-PECDF	9/28/98	23200	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	1746-01-6	2,3,7,8-TCDD	9/28/98	336	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	51207-31-9	2,3,7,8-TCDF	9/28/98	25600	ng/kg	Y	Y		1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	3268-87-9	OCDD	9/28/98	996	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	39001-02-0	OCDF	9/28/98	33970	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	37871-00-4	TOTAL HPCDD	9/28/98	995	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	38998-75-3	TOTAL HPCDF	9/28/98	15000	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	34465-46-8	TOTAL HXCDD	9/28/98	2780	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	55684-94-1	TOTAL HXCDF	9/28/98	21300	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	TOC	TOTAL ORGANIC CARBON	9/28/98	107000	mg/Kg	Y	Y		1117520.4	922659.9	4	5	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	36088-22-9	TOTAL PECDD	9/28/98	2400	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	30402-15-4	TOTAL PECDF	9/28/98	408700	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	TSO	TOTAL SOLIDS	9/28/98	83.2	%	Y	Y		1117520.4	922659.9	4	5	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	41903-57-5	TOTAL TCDD	9/28/98	1300	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5A	WA9085	55722-27-5	Total TCDF	9/28/98	185000	ng/kg	Y	Y	J	1117520.4	922659.9	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	9.24	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	11.8	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	7.12	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	0.95	ng/kg	Y	Y	*	1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	18.7	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	1.92	ng/kg	Y	Y	*	1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	4.25	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	2.38	ng/kg	Y	Y	*	1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	0.96	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	40321-76-4	1,2,3,7,8-PECDD	9/28/98	1.28	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	57117-41-6	1,2,3,7,8-PECDF	9/28/98	7.68	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	2	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	57117-31-4	2,3,4,7,8-PECDF	9/28/98	34.8	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	1746-01-6	2,3,7,8-TCDD	9/28/98	2.29	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	51207-31-9	2,3,7,8-TCDF	9/28/98	32.3	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	3268-87-9	OCDD	9/28/98	49.3	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	39001-02-0	OCDF	9/28/98	65.1	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	37871-00-4	TOTAL HPCDD	9/28/98	9.24	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	38998-75-3	TOTAL HPCDF	9/28/98	27.8	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	34465-46-8	TOTAL HXCDD	9/28/98	13.6	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	55684-94-1	TOTAL HXCDF	9/28/98	45	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	TOC	TOTAL ORGANIC CARBON	9/28/98	33400	mg/Kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	36088-22-9	TOTAL PECDD	9/28/98	4.38	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	30402-15-4	TOTAL PECDF	9/28/98	120	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	TSO	TOTAL SOLIDS	9/28/98	71.9	%	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	41903-57-5	TOTAL TCDD	9/28/98	18.2	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9086	55722-27-5	Total TCDF	9/28/98	242	ng/kg	Y	Y		1117481.5	922637.4	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	51.7	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	524	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	386	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	3.83	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	840	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	13.8	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	149	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	17.4	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	21.2	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	40321-76-4	1,2,3,7,8-PECDD	9/28/98	9.85	ng/kg	Y	Y	*	1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	57117-41-6	1,2,3,7,8-PECDF	9/28/98	160	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	40.3	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	57117-31-4	2,3,4,7,8-PECDF	9/28/98	663	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	1746-01-6	2,3,7,8-TCDD	9/28/98	6.14	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	51207-31-9	2,3,7,8-TCDF	9/28/98	705	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	3268-87-9	OCDD	9/28/98	126	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	39001-02-0	OCDF	9/28/98	4670	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	37871-00-4	TOTAL HPCDD	9/28/98	96.2	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	38998-75-3	TOTAL HPCDF	9/28/98	1330	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	34465-46-8	TOTAL HXCDD	9/28/98	253	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	55684-94-1	TOTAL HXCDF	9/28/98	1750	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	TOC	TOTAL ORGANIC CARBON	9/28/98	86600	mg/Kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	36088-22-9	TOTAL PECDD	9/28/98	314	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	30402-15-4	TOTAL PECDF	9/28/98	2390	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	TSO	TOTAL SOLIDS	9/28/98	82	%	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	41903-57-5	TOTAL TCDD	9/28/98	493	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9087	55722-27-5	Total TCDF	9/28/98	4580	ng/kg	Y	Y		1117481.5	922637.4	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	9.22	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	16	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	9.35	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	0.41	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	23.3	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	1.79	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	5.4	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	0.61	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	0.82	ng/kg	Y	N	U	1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	40321-76-4	1,2,3,7,8-PECDD	9/28/98	0.76	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	57117-41-6	1,2,3,7,8-PECDF	9/28/98	6.99	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	1.39	ng/kg	Y	Y	*	1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	57117-31-4	2,3,4,7,8-PECDF	9/28/98	12.9	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	1746-01-6	2,3,7,8-TCDD	9/28/98	0.51	ng/kg	Y	N	U	1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	51207-31-9	2,3,7,8-TCDF	9/28/98	19	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	3268-87-9	OCDD	9/28/98	75.8	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	39001-02-0	OCDF	9/28/98	105	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	37871-00-4	TOTAL HPCDD	9/28/98	17.4	ng/kg	Y	N	U	1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	38998-75-3	TOTAL HPCDF	9/28/98	37.7	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	34465-46-8	TOTAL HXCDD	9/28/98	35	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	55684-94-1	TOTAL HXCDF	9/28/98	46.1	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	TOC	TOTAL ORGANIC CARBON	9/28/98	53700	mg/Kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	36088-22-9	TOTAL PECDD	9/28/98	44.1	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	30402-15-4	TOTAL PECDF	9/28/98	64.9	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	TSO	TOTAL SOLIDS	9/28/98	79.5	%	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	41903-57-5	TOTAL TCDD	9/28/98	35.2	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9088	55722-27-5	Total TCDF	9/28/98	115	ng/kg	Y	Y		1117481.5	922637.4	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	10.3	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	28	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	22.5	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	1.71	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	52.3	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	4.62	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	8.98	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	2.6	ng/kg	Y	Y	*	1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	0.88	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	40321-76-4	1,2,3,7,8-PECDD	9/28/98	4.21	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	57117-41-6	1,2,3,7,8-PECDF	9/28/98	12.4	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	2.9	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	57117-31-4	2,3,4,7,8-PECDF	9/28/98	47.1	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	1746-01-6	2,3,7,8-TCDD	9/28/98	5	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	51207-31-9	2,3,7,8-TCDF	9/28/98	38	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	3268-87-9	OCDD	9/28/98	32.1	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	39001-02-0	OCDF	9/28/98	287	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	37871-00-4	TOTAL HPCDD	9/28/98	32.4	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	38998-75-3	TOTAL HPCDF	9/28/98	72	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	34465-46-8	TOTAL HXCDD	9/28/98	63.2	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	55684-94-1	TOTAL HXCDF	9/28/98	106	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	TOC	TOTAL ORGANIC CARBON	9/28/98	68200	mg/Kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	36088-22-9	TOTAL PECDD	9/28/98	428	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	30402-15-4	TOTAL PECDF	9/28/98	193	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	TSO	TOTAL SOLIDS	9/28/98	75.4	%	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	41903-57-5	TOTAL TCDD	9/28/98	1070	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9089	55722-27-5	Total TCDF	9/28/98	455	ng/kg	Y	Y		1117481.5	922637.4	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	12	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	46.2	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	40.6	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	1.1	ng/kg	Y	Y	*	1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	75.4	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	7.33	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	14	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	5.81	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	1.38	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	40321-76-4	1,2,3,7,8-PECDD	9/28/98	5.51	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	57117-41-6	1,2,3,7,8-PECDF	9/28/98	16.7	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	3.93	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	57117-31-4	2,3,4,7,8-PECDF	9/28/98	53.6	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	1746-01-6	2,3,7,8-TCDD	9/28/98	1.84	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	51207-31-9	2,3,7,8-TCDF	9/28/98	51.9	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	3268-87-9	OCDD	9/28/98	36.9	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	39001-02-0	OCDF	9/28/98	505	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	37871-00-4	TOTAL HPCDD	9/28/98	38.8	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	38998-75-3	TOTAL HPCDF	9/28/98	128	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	34465-46-8	TOTAL HXCDD	9/28/98	115	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	55684-94-1	TOTAL HXCDF	9/28/98	150	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	TOC	TOTAL ORGANIC CARBON	9/28/98	56600	mg/Kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	36088-22-9	TOTAL PECDD	9/28/98	602	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	30402-15-4	TOTAL PECDF	9/28/98	217	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	TSO	TOTAL SOLIDS	9/28/98	74.5	%	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	41903-57-5	TOTAL TCDD	9/28/98	1040	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5B	WA9090	55722-27-5	Total TCDF	9/28/98	546	ng/kg	Y	Y		1117481.5	922637.4	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	201	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	2140	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	1900	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	55.4	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	6000	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	112	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	1040	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	93.8	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	210	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	40321-76-4	1,2,3,7,8-PECDD	9/29/98	262	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	57117-41-6	1,2,3,7,8-PECDF	9/29/98	6080	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	345	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	57117-31-4	2,3,4,7,8-PECDF	9/29/98	47300	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	1746-01-6	2,3,7,8-TCDD	9/29/98	116	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	51207-31-9	2,3,7,8-TCDF	9/29/98	51200	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	3268-87-9	OCDD	9/29/98	671	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	39001-02-0	OCDF	9/29/98	23855	ng/kg	Y	Y	J	1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	37871-00-4	TOTAL HPCDD	9/29/98	326	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	38998-75-3	TOTAL HPCDF	9/29/98	6220	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	34465-46-8	TOTAL HXCDD	9/29/98	735	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	55684-94-1	TOTAL HXCDF	9/29/98	13110	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	TOC	TOTAL ORGANIC CARBON	9/29/98	57200	mg/Kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	36088-22-9	TOTAL PECDD	9/29/98	879	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	30402-15-4	TOTAL PECDF	9/29/98	122000	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	TSO	TOTAL SOLIDS	9/29/98	91.7	%	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	41903-57-5	TOTAL TCDD	9/29/98	613	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9091	55722-27-5	Total TCDF	9/29/98	404000	ng/kg	Y	Y		1117484.2	922572.1	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	18	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	82.9	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	54.1	ng/kg	Y	Y	J	1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	4.09	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	157	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	8.51	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	30.8	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	8.28	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	3.26	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	40321-76-4	1,2,3,7,8-PECDD	9/29/98	15.2	ng/kg	Y	Y	J	1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	57117-41-6	1,2,3,7,8-PECDF	9/29/98	97	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	9.37	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	57117-31-4	2,3,4,7,8-PECDF	9/29/98	675	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	1746-01-6	2,3,7,8-TCDD	9/29/98	26.6	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	51207-31-9	2,3,7,8-TCDF	9/29/98	767	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	3268-87-9	OCDD	9/29/98	44.4	ng/kg	Y	Y	J	1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	39001-02-0	OCDF	9/29/98	661	ng/kg	Y	Y	J	1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	37871-00-4	TOTAL HPCDD	9/29/98	31.1	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	38998-75-3	TOTAL HPCDF	9/29/98	203	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	34465-46-8	TOTAL HXCDD	9/29/98	67.3	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	55684-94-1	TOTAL HXCDF	9/29/98	352	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	TOC	TOTAL ORGANIC CARBON	9/29/98	57200	mg/Kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	36088-22-9	TOTAL PECDD	9/29/98	166	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	30402-15-4	TOTAL PECDF	9/29/98	1870	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	TSO	TOTAL SOLIDS	9/29/98	81.3	%	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	41903-57-5	TOTAL TCDD	9/29/98	446	ng/kg	Y	Y	J	1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9092	55722-27-5	Total TCDF	9/29/98	6580	ng/kg	Y	Y		1117484.2	922572.1	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	1780	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	11100	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	10200	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	239	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	23400	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	1030	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	4390	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	841	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	691	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	40321-76-4	1,2,3,7,8-PECDD	9/29/98	1410	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	57117-41-6	1,2,3,7,8-PECDF	9/29/98	22400	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	1580	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	57117-31-4	2,3,4,7,8-PECDF	9/29/98	184000	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	1746-01-6	2,3,7,8-TCDD	9/29/98	651	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	51207-31-9	2,3,7,8-TCDF	9/29/98	221000	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	3268-87-9	OCDD	9/29/98	3120	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	39001-02-0	OCDF	9/29/98	92000	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	37871-00-4	TOTAL HPCDD	9/29/98	2290	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	38998-75-3	TOTAL HPCDF	9/29/98	36700	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	34465-46-8	TOTAL HXCDD	9/29/98	4740	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	55684-94-1	TOTAL HXCDF	9/29/98	59300	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	36088-22-9	TOTAL PECDD	9/29/98	4890	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	30402-15-4	TOTAL PECDF	9/29/98	472000	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	41903-57-5	TOTAL TCDD	9/29/98	2430	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9093	55722-27-5	Total TCDF	9/29/98	1400000	ng/kg	Y	Y	J	1117484.2	922572.1	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	470	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	1860	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	1390	ng/kg	Y	Y	J	1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	42.9	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	3820	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	197	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	584	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	154	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	64.5	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	40321-76-4	1,2,3,7,8-PECDD	9/29/98	176	ng/kg	Y	Y	J	1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	57117-41-6	1,2,3,7,8-PECDF	9/29/98	1400	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	205	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	57117-31-4	2,3,4,7,8-PECDF	9/29/98	9100	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	1746-01-6	2,3,7,8-TCDD	9/29/98	61.8	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	51207-31-9	2,3,7,8-TCDF	9/29/98	11100	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	3268-87-9	OCDD	9/29/98	1640	ng/kg	Y	Y	J	1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	39001-02-0	OCDF	9/29/98	15900	ng/kg	Y	Y	J	1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	37871-00-4	TOTAL HPCDD	9/29/98	635	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	38998-75-3	TOTAL HPCDF	9/29/98	5080	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	34465-46-8	TOTAL HXCDD	9/29/98	779	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	55684-94-1	TOTAL HXCDF	9/29/98	7780	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	TOC	TOTAL ORGANIC CARBON	9/29/98	63100	mg/Kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	36088-22-9	TOTAL PECDD	9/29/98	713	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	30402-15-4	TOTAL PECDF	9/29/98	24900	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	TSO	TOTAL SOLIDS	9/29/98	88.5	%	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	41903-57-5	TOTAL TCDD	9/29/98	369	ng/kg	Y	Y	J	1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9094	55722-27-5	Total TCDF	9/29/98	72400	ng/kg	Y	Y		1117484.2	922572.1	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	7.93	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	18.9	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	8.86	ng/kg	Y	Y	J	1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	2.33	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	35.5	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	5.66	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	8.24	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	5.19	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	0.92	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	40321-76-4	1,2,3,7,8-PECDD	9/29/98	23	ng/kg	Y	Y	J	1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	57117-41-6	1,2,3,7,8-PECDF	9/29/98	31.7	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	3.45	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	57117-31-4	2,3,4,7,8-PECDF	9/29/98	237	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	1746-01-6	2,3,7,8-TCDD	9/29/98	56.3	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	51207-31-9	2,3,7,8-TCDF	9/29/98	288	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	3268-87-9	OCDD	9/29/98	44.5	ng/kg	Y	Y	J	1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	39001-02-0	OCDF	9/29/98	133	ng/kg	Y	Y	J	1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	37871-00-4	TOTAL HPCDD	9/29/98	18	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	38998-75-3	TOTAL HPCDF	9/29/98	39.4	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	34465-46-8	TOTAL HXCDD	9/29/98	32.3	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	55684-94-1	TOTAL HXCDF	9/29/98	85.7	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	TOC	TOTAL ORGANIC CARBON	9/29/98	52200	mg/Kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	36088-22-9	TOTAL PECDD	9/29/98	98.8	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	30402-15-4	TOTAL PECDF	9/29/98	647	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	TSO	TOTAL SOLIDS	9/29/98	78	%	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	41903-57-5	TOTAL TCDD	9/29/98	310	ng/kg	Y	Y	J	1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-5C	WA9095	55722-27-5	Total TCDF	9/29/98	2600	ng/kg	Y	Y		1117484.2	922572.1	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	71-55-6	1,1,1-TRICHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	79-00-5	1,1,2-TRICHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	75-34-3	1,1-DICHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	75-35-4	1,1-DICHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/26/99	134	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/26/99	348	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/26/99	320	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	39227-28-6	1,2,3,4,7,8-HXCDD	10/26/99	11.6	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	70648-26-9	1,2,3,4,7,8-HXCDF	10/26/99	679	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	57653-85-7	1,2,3,6,7,8-HXCDD	10/26/99	32.8	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	57117-44-9	1,2,3,6,7,8-HXCDF	10/26/99	103	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	19408-74-3	1,2,3,7,8,9-HXCDD	10/26/99	21.8	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	72918-21-9	1,2,3,7,8,9-HXCDF	10/26/99	8.44	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	40321-76-4	1,2,3,7,8-PECDD	10/26/99	28.5	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	57117-41-6	1,2,3,7,8-PECDF	10/26/99	311	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	120-82-1	1,2,4-TRICHLOROBENZENE	10/26/99	830	ug/Kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	95-50-1	1,2-DICHLOROBENZENE	10/26/99	1300	ug/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	107-06-2	1,2-DICHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	78-87-5	1,2-DICHLOROPROPANE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	541-73-1	1,3-DICHLOROBENZENE	10/26/99	350	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	106-46-7	1,4-DICHLOROBENZENE	10/26/99	450	ug/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	60851-34-5	2,3,4,6,7,8-HXCDF	10/26/99	120	ng/kg	Y	Y	M	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	57117-31-4	2,3,4,7,8-PECDF	10/26/99	1060	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	1746-01-6	2,3,7,8-TCDD	10/26/99	10.3	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	51207-31-9	2,3,7,8-TCDF	10/26/99	1200	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	95-95-4	2,4,5-TRICHLOROPHENOL	10/26/99	880	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	88-06-2	2,4,6-TRICHLOROPHENOL	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	120-83-2	2,4-DICHLOROPHENOL	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	105-67-9	2,4-DIMETHYLPHENOL	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	51-28-5	2,4-DINITROPHENOL	10/26/99	880	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	121-14-2	2,4-DINITROTOLUENE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	606-20-2	2,6-DINITROTOLUENE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	78-93-3	2-BUTANONE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	91-58-7	2-CHLORONAPHTHALENE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	95-57-8	2-CHLOROPHENOL	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	591-78-6	2-HEXANONE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	91-57-6	2-METHYLNAPHTHALENE	10/26/99	40	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	95-48-7	2-METHYLPHENOL	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	88-74-4	2-NITROANILINE	10/26/99	880	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	88-75-5	2-NITROPHENOL	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	91-94-1	3,3'-DICHLOROBENZIDINE	10/26/99	350	ug/Kg	Y	N	UJ	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	99-09-2	3-NITROANILINE	10/26/99	880	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	72-54-8	4,4'-DDD	10/26/99	35	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	72-55-9	4,4'-DDE	10/26/99	15	ug/Kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	50-29-3	4,4'-DDT	10/26/99	42	ug/Kg	Y	N	R	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/26/99	880	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	59-50-7	4-CHLORO-3-METHYLPHENOL	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	106-47-8	4-CHLOROANILINE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	108-10-1	4-METHYL-2-PENTANONE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	106-44-5	4-METHYLPHENOL	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	100-01-6	4-NITROANILINE	10/26/99	880	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	100-02-7	4-NITROPHENOL	10/26/99	880	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	83-32-9	ACENAPHTHENE	10/26/99	62	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	208-96-8	ACENAPHTHYLENE	10/26/99	40	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	67-64-1	ACETONE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	309-00-2	ALDRIN	10/26/99	25	ug/Kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	319-84-6	ALPHA-BHC	10/26/99	18	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	5103-71-9	ALPHA-CHLORDANE	10/26/99	18	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7429-90-5	ALUMINUM	10/26/99	1170	mg/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	120-12-7	ANTHRACENE	10/26/99	150	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-36-0	ANTIMONY	10/26/99	0.53	mg/kg	Y	N	UJ	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	12674-11-2	AROCLOR-1016	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	11104-28-2	AROCLOR-1221	10/26/99	700	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	11141-16-5	AROCLOR-1232	10/26/99	350	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	53469-21-9	AROCLOR-1242	10/26/99	350	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	12672-29-6	AROCLOR-1248	10/26/99	790	ug/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	11097-69-1	AROCLOR-1254	10/26/99	350	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	11096-82-5	AROCLOR-1260	10/26/99	450	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	11100-14-4	AROCLOR-1268	10/26/99	700	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-38-2	ARSENIC	10/26/99	3.1	mg/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-39-3	BARIUM	10/26/99	19.2	mg/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	71-43-2	BENZENE	10/26/99	11	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	56-55-3	BENZO(A)ANTHRACENE	10/26/99	880	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	50-32-8	BENZO(A)PYRENE	10/26/99	960	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	205-99-2	BENZO(B)FLUORANTHENE	10/26/99	1600	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	191-24-2	BENZO(G,H,I)PERYLENE	10/26/99	1100	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	207-08-9	BENZO(K)FLUORANTHENE	10/26/99	530	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-41-7	BERYLLIUM	10/26/99	0.26	mg/kg	Y	N	UJ	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	319-85-7	BETA-BHC	10/26/99	18	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/26/99	350	ug/Kg	Y	N	UJ	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	75-27-4	BROMODICHLOROMETHANE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	75-25-2	BROMOFORM	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	74-83-9	BROMOMETHANE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	85-68-7	BUTYLBENZYL PHTHALATE	10/26/99	350	ug/Kg	Y	N	UJ	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-43-9	CADMIUM	10/26/99	0.06	mg/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-70-2	CALCIUM	10/26/99	307000	mg/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	86-74-8	CARBAZOLE	10/26/99	56	ug/Kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	75-15-0	CARBON DISULFIDE	10/26/99	11	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	56-23-5	CARBON TETRACHLORIDE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	108-90-7	CHLOROBENZENE	10/26/99	11	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	124-48-1	CHLORODIBROMOMETHANE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	75-00-3	CHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	67-66-3	CHLOROFORM	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	74-87-3	CHLOROMETHANE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-47-3	CHROMIUM	10/26/99	10.7	mg/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	218-01-9	CHRYSENE	10/26/99	1100	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	156-59-2	CIS-1,2-DICHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-48-4	COBALT	10/26/99	2.8	mg/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-50-8	COPPER	10/26/99	10	mg/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	57-12-5	CYANIDE	10/26/99	0.53	mg/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	EPA 335.2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	319-86-8	DELTA-BHC	10/26/99	18	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	53-70-3	DIBENZO(A,H)ANTHRACENE	10/26/99	310	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	132-64-9	DIBENZOFURAN	10/26/99	50	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	60-57-1	DIELDRIN	10/26/99	27	ug/Kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	84-66-2	DIETHYL PHTHALATE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	131-11-3	DIMETHYL PHTHALATE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	84-74-2	DI-N-BUTYL PHTHALATE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	117-84-0	DI-N-OCTYL PHTHALATE	10/26/99	350	ug/Kg	Y	N	UJ	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	959-98-8	ENDOSULFAN I	10/26/99	18	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	33213-65-9	ENDOSULFAN II	10/26/99	35	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	1031-07-8	ENDOSULFAN SULFATE	10/26/99	35	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	72-20-8	ENDRIN	10/26/99	44	ug/Kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7421-93-4	ENDRIN ALDEHYDE	10/26/99	35	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	53494-70-5	ENDRIN KETONE	10/26/99	35	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	100-41-4	ETHYLBENZENE	10/26/99	11	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	206-44-0	FLUORANTHENE	10/26/99	990	ug/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	86-73-7	FLUORENE	10/26/99	37	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	58-89-9	GAMMA-BHC (LINDANE)	10/26/99	18	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	5566-34-7	GAMMA-CHLORDANE	10/26/99	33	ug/Kg	Y	N	R	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	76-44-8	HEPTACHLOR	10/26/99	93	ug/Kg	Y	N	R	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	1024-57-3	HEPTACHLOR EPOXIDE	10/26/99	18	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	118-74-1	HEXACHLOROBENZENE	10/26/99	300	ug/Kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	87-68-3	HEXACHLOROBUTADIENE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	67-72-1	HEXACHLOROETHANE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	193-39-5	INDENO(1,2,3-CD)PYRENE	10/26/99	880	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7439-89-6	IRON	10/26/99	3850	mg/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	78-59-1	ISOPHORONE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7439-92-1	LEAD	10/26/99	20.7	mg/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7439-95-4	MAGNESIUM	10/26/99	9360	mg/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7439-96-5	MANGANESE	10/26/99	177	mg/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7439-97-6	MERCURY	10/26/99	1.2	mg/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	245.5M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	72-43-5	METHOXYCHLOR	10/26/99	180	ug/Kg	Y	N	UJ	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	22967-92-6	METHYL MERCURY	10/26/99	3.3	ng/g	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	1630/NONE
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	75-09-2	METHYLENE CHLORIDE	10/26/99	11	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	91-20-3	NAPHTHALENE	10/26/99	100	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-02-0	NICKEL	10/26/99	9.3	mg/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	98-95-3	NITROBENZENE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	86-30-6	N-NITROSODIPHENYLAMINE	10/26/99	350	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	3268-87-9	OCDD	10/26/99	605	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	39001-02-0	OCDF	10/26/99	1300	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	87-86-5	PENTACHLOROPHENOL	10/26/99	880	ug/Kg	Y	N	UJ	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	85-01-8	PHENANTHRENE	10/26/99	710	ug/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	108-95-2	PHENOL	10/26/99	350	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-09-7	POTASSIUM	10/26/99	360	mg/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	129-00-0	PYRENE	10/26/99	1800	ug/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7782-49-2	SELENIUM	10/26/99	0.63	mg/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-22-4	SILVER	10/26/99	0.16	mg/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-23-5	SODIUM	10/26/99	238	mg/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	100-42-5	STYRENE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	127-18-4	TETRACHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-28-0	THALLIUM	10/26/99	1.1	mg/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	108-88-3	TOLUENE	10/26/99	11	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	37871-00-4	TOTAL HPCDD	10/26/99	222	ng/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	38998-75-3	TOTAL HPCDF	10/26/99	998	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	34465-46-8	TOTAL HXCDD	10/26/99	197	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	55684-94-1	TOTAL HXCDF	10/26/99	1140	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	TOC	TOTAL ORGANIC CARBON	10/26/99	51800	mg/Kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	36088-22-9	TOTAL PECDD	10/26/99	159	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	30402-15-4	TOTAL PECDF	10/26/99	2440	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	TSO	TOTAL SOLIDS	10/26/99	95.2	%	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	2540-G
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	41903-57-5	TOTAL TCDD	10/26/99	193	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	55722-27-5	Total TCDF	10/26/99	8080	ng/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	8001-35-2	TOXAPHENE	10/26/99	1800	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-3
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	156-60-5	TRANS-1,2-DICHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	79-01-6	TRICHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-62-2	VANADIUM	10/26/99	7.7	mg/kg	Y	Y	J	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	75-01-4	VINYL CHLORIDE	10/26/99	11	ug/Kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	1330-20-7	XYLENES, TOTAL	10/26/99	11	ug/kg	Y	N	U	1117523.4	922583.9	0	0.5	SS	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-FCB-SS	WA9096	7440-66-6	ZINC	10/26/99	43.5	mg/kg	Y	Y		1117523.4	922583.9	0	0.5	SS	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9218	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	128	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	85.6	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	39.1	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	9.15	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	102	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	18.9	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	21.3	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	13.7	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	4	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	40321-76-4	1,2,3,7,8-PECDD	9/28/98	9.76	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	57117-41-6	1,2,3,7,8-PECDF	9/28/98	67.1	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	9.35	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	57117-31-4	2,3,4,7,8-PECDF	9/28/98	128	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	1746-01-6	2,3,7,8-TCDD	9/28/98	18.7	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	51207-31-9	2,3,7,8-TCDF	9/28/98	341	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	3268-87-9	OCDD	9/28/98	820	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	39001-02-0	OCDF	9/28/98	464	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	37871-00-4	TOTAL HPCDD	9/28/98	233	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	38998-75-3	TOTAL HPCDF	9/28/98	203	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	34465-46-8	TOTAL HXCDD	9/28/98	196	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	55684-94-1	TOTAL HXCDF	9/28/98	260	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	TOC	TOTAL ORGANIC CARBON	9/28/98	40400	mg/Kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-SB-8	WA9218	36088-22-9	TOTAL PECDD	9/28/98	90.8	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	30402-15-4	TOTAL PECDF	9/28/98	510	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	TSO	TOTAL SOLIDS	9/28/98	94.7	%	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-SB-8	WA9218	41903-57-5	TOTAL TCDD	9/28/98	167	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9218	55722-27-5	Total TCDF	9/28/98	1160	ng/kg	Y	Y		1117532.3	922498.6	0.5	1	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9217	71-55-6	1,1,1-TRICHLOROETHANE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	79-00-5	1,1,2-TRICHLOROETHANE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	75-34-3	1,1-DICHLOROETHANE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	75-35-4	1,1-DICHLOROETHENE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9219	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	12.6	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	44.9	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	22.7	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	0.35	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	105	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	0.94	ng/kg	Y	Y	*	1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	25.3	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	0.78	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	1.93	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	40321-76-4	1,2,3,7,8-PECDD	9/28/98	0.48	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	57117-41-6	1,2,3,7,8-PECDF	9/28/98	66.2	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9217	120-82-1	1,2,4-TRICHLOROBENZENE	9/28/98	20000	ug/Kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	95-50-1	1,2-DICHLOROBENZENE	9/28/98	78000	ug/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	107-06-2	1,2-DICHLOROETHANE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	78-87-5	1,2-DICHLOROPROPANE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	541-73-1	1,3-DICHLOROBENZENE	9/28/98	2100	ug/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	106-46-7	1,4-DICHLOROBENZENE	9/28/98	18000	ug/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9219	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	6.95	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	57117-31-4	2,3,4,7,8-PECDF	9/28/98	40.9	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-SB-8	WA9219	1746-01-6	2,3,7,8-TCDD	9/28/98	1.16	ng/kg	Y	Y	*	1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	51207-31-9	2,3,7,8-TCDF	9/28/98	85.4	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9217	95-95-4	2,4,5-TRICHLOROPHENOL	9/28/98	26000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	88-06-2	2,4,6-TRICHLOROPHENOL	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	120-83-2	2,4-DICHLOROPHENOL	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	105-67-9	2,4-DIMETHYLPHENOL	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	51-28-5	2,4-DINITROPHENOL	9/28/98	26000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	121-14-2	2,4-DINITROTOLUENE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	606-20-2	2,6-DINITROTOLUENE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	78-93-3	2-BUTANONE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	91-58-7	2-CHLORONAPHTHALENE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	95-57-8	2-CHLOROPHENOL	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	591-78-6	2-HEXANONE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	91-57-6	2-METHYLNAPHTHALENE	9/28/98	10000	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	95-48-7	2-METHYLPHENOL	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	88-74-4	2-NITROANILINE	9/28/98	26000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	88-75-5	2-NITROPHENOL	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	91-94-1	3,3'-DICHLOROBENZIDINE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	99-09-2	3-NITROANILINE	9/28/98	26000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	72-54-8	4,4'-DDD	9/28/98	370	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	72-55-9	4,4'-DDE	9/28/98	98	ug/Kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	50-29-3	4,4'-DDT	9/28/98	370	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/28/98	26000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	59-50-7	4-CHLORO-3-METHYLPHENOL	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	106-47-8	4-CHLOROANILINE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	108-10-1	4-METHYL-2-PENTANONE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	106-44-5	4-METHYLPHENOL	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	100-01-6	4-NITROANILINE	9/28/98	26000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	100-02-7	4-NITROPHENOL	9/28/98	26000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	83-32-9	ACENAPHTHENE	9/28/98	10000	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	208-96-8	ACENAPHTHYLENE	9/28/98	10000	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	67-64-1	ACETONE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	309-00-2	ALDRIN	9/28/98	190	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	319-84-6	ALPHA-BHC	9/28/98	190	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	5103-71-9	ALPHA-CHLORDANE	9/28/98	190	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	7429-90-5	ALUMINUM	9/28/98	2260	mg/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	120-12-7	ANTHRACENE	9/28/98	10000	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-36-0	ANTIMONY	9/28/98	0.65	mg/kg	Y	N	UJ	1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	12674-11-2	AROCLOR-1016	9/28/98	3700	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	11104-28-2	AROCLOR-1221	9/28/98	7400	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	11141-16-5	AROCLOR-1232	9/28/98	3700	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	53469-21-9	AROCLOR-1242	9/28/98	3700	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	12672-29-6	AROCLOR-1248	9/28/98	3700	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	11097-69-1	AROCLOR-1254	9/28/98	5500	ug/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	11096-82-5	AROCLOR-1260	9/28/98	3700	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-38-2	ARSENIC	9/28/98	10.4	mg/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-39-3	BARIUM	9/28/98	99	mg/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	71-43-2	BENZENE	9/28/98	11	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	56-55-3	BENZO(A)ANTHRACENE	9/28/98	1600	ug/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	50-32-8	BENZO(A)PYRENE	9/28/98	1500	ug/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	205-99-2	BENZO(B)FLUORANTHENE	9/28/98	2800	ug/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	191-24-2	BENZO(G,H,I)PERYLENE	9/28/98	1100	ug/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	207-08-9	BENZO(K)FLUORANTHENE	9/28/98	10000	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-41-7	BERYLLIUM	9/28/98	0.45	mg/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	319-85-7	BETA-BHC	9/28/98	190	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	75-27-4	BROMODICHLOROMETHANE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	75-25-2	BROMOFORM	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	74-83-9	BROMOMETHANE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	85-68-7	BUTYLBENZYL PHTHALATE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-43-9	CADMIUM	9/28/98	0.74	mg/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-70-2	CALCIUM	9/28/98	232000	mg/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	86-74-8	CARBAZOLE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-SB-8	WA9217	75-15-0	CARBON DISULFIDE	9/28/98	11	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	56-23-5	CARBON TETRACHLORIDE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	108-90-7	CHLOROBENZENE	9/28/98	2	ug/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	124-48-1	CHLORODIBROMOMETHANE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	75-00-3	CHLOROETHANE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	67-66-3	CHLOROFORM	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	74-87-3	CHLOROMETHANE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-47-3	CHROMIUM	9/28/98	13.5	mg/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	218-01-9	CHRYSENE	9/28/98	2200	ug/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	156-59-2	CIS-1,2-DICHLOROETHENE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-48-4	COBALT	9/28/98	4.7	mg/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-50-8	COPPER	9/28/98	36.7	mg/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	57-12-5	CYANIDE	9/28/98	0.56	mg/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	335.2
Former Chlorination Building	Soil	WA-SB-8	WA9217	319-86-8	DELTA-BHC	9/28/98	190	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	53-70-3	DIBENZO(A,H)ANTHRACENE	9/28/98	10000	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	132-64-9	DIBENZOFURAN	9/28/98	10000	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	60-57-1	DIELDRIN	9/28/98	370	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	84-66-2	DIETHYL PHTHALATE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	131-11-3	DIMETHYL PHTHALATE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	84-74-2	DI-N-BUTYL PHTHALATE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	117-84-0	DI-N-OCTYL PHTHALATE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	959-98-8	ENDOSULFAN I	9/28/98	190	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	33213-65-9	ENDOSULFAN II	9/28/98	71	ug/Kg	Y	Y	JN	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	1031-07-8	ENDOSULFAN SULFATE	9/28/98	370	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	72-20-8	ENDRIN	9/28/98	370	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	7421-93-4	ENDRIN ALDEHYDE	9/28/98	370	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	53494-70-5	ENDRIN KETONE	9/28/98	370	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	100-41-4	ETHYLBENZENE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	206-44-0	FLUORANTHENE	9/28/98	3100	ug/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	86-73-7	FLUORENE	9/28/98	10000	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	58-89-9	GAMMA-BHC (LINDANE)	9/28/98	190	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	5566-34-7	GAMMA-CHLORDANE	9/28/98	190	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	76-44-8	HEPTACHLOR	9/28/98	190	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	1024-57-3	HEPTACHLOR EPOXIDE	9/28/98	190	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	118-74-1	HEXACHLOROBENZENE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	87-68-3	HEXACHLOROBUTADIENE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	67-72-1	HEXACHLOROETHANE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	193-39-5	INDENO(1,2,3-CD)PYRENE	9/28/98	10000	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	7439-89-6	IRON	9/28/98	8570	mg/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	78-59-1	ISOPHORONE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	7439-92-1	LEAD	9/28/98	78	mg/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	7439-95-4	MAGNESIUM	9/28/98	6710	mg/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	7439-96-5	MANGANESE	9/28/98	338	mg/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	7439-97-6	MERCURY	9/28/98	8.2	mg/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	245.1M
Former Chlorination Building	Soil	WA-SB-8	WA9217	72-43-5	METHOXYCHLOR	9/28/98	1900	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	75-09-2	METHYLENE CHLORIDE	9/28/98	11	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	91-20-3	NAPHTHALENE	9/28/98	10000	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-02-0	NICKEL	9/28/98	19.2	mg/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	98-95-3	NITROBENZENE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	86-30-6	N-NITROSODIPHENYLAMINE	9/28/98	10000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9219	3268-87-9	OCDD	9/28/98	85.9	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	39001-02-0	OCDF	9/28/98	277	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9217	87-86-5	PENTACHLOROPHENOL	9/28/98	26000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	85-01-8	PHENANTHRENE	9/28/98	1900	ug/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	108-95-2	PHENOL	9/28/98	10000	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-09-7	POTASSIUM	9/28/98	452	mg/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	129-00-0	PYRENE	9/28/98	2600	ug/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-2
Former Chlorination Building	Soil	WA-SB-8	WA9217	7782-49-2	SELENIUM	9/28/98	1.1	mg/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-22-4	SILVER	9/28/98	0.24	mg/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-23-5	SODIUM	9/28/98	345	mg/kg	Y	Y	J	1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	100-42-5	STYRENE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	127-18-4	TETRACHLOROETHENE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-28-0	THALLIUM	9/28/98	1.6	mg/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	108-88-3	TOLUENE	9/28/98	11	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-SB-8	WA9219	37871-00-4	TOTAL HPCDD	9/28/98	29.5	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	38998-75-3	TOTAL HPCDF	9/28/98	96.2	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	34465-46-8	TOTAL HXCDD	9/28/98	7.71	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	55684-94-1	TOTAL HXCDF	9/28/98	187	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	TOC	TOTAL ORGANIC CARBON	9/28/98	13900	mg/Kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-SB-8	WA9219	36088-22-9	TOTAL PECDD	9/28/98	6.92	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	30402-15-4	TOTAL PECDF	9/28/98	218	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	TSO	TOTAL SOLIDS	9/28/98	95	%	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-SB-8	WA9217	TSO	TOTAL SOLIDS	9/28/98	89.9	%	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	2540-G
Former Chlorination Building	Soil	WA-SB-8	WA9219	41903-57-5	TOTAL TCDD	9/28/98	11.9	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9219	55722-27-5	Total TCDF	9/28/98	252	ng/kg	Y	Y		1117532.3	922498.6	1	2	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9217	8001-35-2	TOXAPHENE	9/28/98	19000	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	PCB
Former Chlorination Building	Soil	WA-SB-8	WA9217	156-60-5	TRANS-1,2-DICHLOROETHENE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	79-01-6	TRICHLOROETHENE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-62-2	VANADIUM	9/28/98	12.4	mg/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9217	75-01-4	VINYL CHLORIDE	9/28/98	11	ug/Kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	1330-20-7	XYLENES, TOTAL	9/28/98	11	ug/kg	Y	N	U	1117532.3	922498.6	0	2	SB	SOIL	Soil	ASP 95-1
Former Chlorination Building	Soil	WA-SB-8	WA9217	7440-66-6	ZINC	9/28/98	95.8	mg/kg	Y	Y		1117532.3	922498.6	0	2	SB	SOIL	Soil	200.7M
Former Chlorination Building	Soil	WA-SB-8	WA9220	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	10	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	45.2	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	21.2	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	0.62	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	85.2	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	1.11	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	19.3	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	1.16	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	2.63	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	40321-76-4	1,2,3,7,8-PECDD	9/28/98	0.52	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	57117-41-6	1,2,3,7,8-PECDF	9/28/98	45.2	ng/kg	Y	Y	J	1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	5.45	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	57117-31-4	2,3,4,7,8-PECDF	9/28/98	21.1	ng/kg	Y	Y	J	1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	1746-01-6	2,3,7,8-TCDD	9/28/98	0.24	ng/kg	Y	Y	*	1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	51207-31-9	2,3,7,8-TCDF	9/28/98	43.4	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	3268-87-9	OCDD	9/28/98	50.6	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	39001-02-0	OCDF	9/28/98	113	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	37871-00-4	TOTAL HPCDD	9/28/98	20.8	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	38998-75-3	TOTAL HPCDF	9/28/98	90.9	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	34465-46-8	TOTAL HXCDD	9/28/98	12.4	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	55684-94-1	TOTAL HXCDF	9/28/98	149	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	TOC	TOTAL ORGANIC CARBON	9/28/98	17900	mg/Kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-SB-8	WA9220	36088-22-9	TOTAL PECDD	9/28/98	10.8	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	30402-15-4	TOTAL PECDF	9/28/98	140	ng/kg	Y	Y	J	1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	TSO	TOTAL SOLIDS	9/28/98	87.1	%	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-SB-8	WA9220	41903-57-5	TOTAL TCDD	9/28/98	14	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9220	55722-27-5	Total TCDF	9/28/98	134	ng/kg	Y	Y		1117532.3	922498.6	2	3	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	7.5	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	14.4	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	7.72	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	0.89	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	18.5	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	1.57	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	3.74	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	1.32	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	1.02	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	40321-76-4	1,2,3,7,8-PECDD	9/28/98	1.26	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	57117-41-6	1,2,3,7,8-PECDF	9/28/98	15.3	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	2.06	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	57117-31-4	2,3,4,7,8-PECDF	9/28/98	16.7	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	1746-01-6	2,3,7,8-TCDD	9/28/98	7.74	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	51207-31-9	2,3,7,8-TCDF	9/28/98	102	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	3268-87-9	OCDD	9/28/98	35.2	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	39001-02-0	OCDF	9/28/98	64.4	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	37871-00-4	TOTAL HPCDD	9/28/98	14.1	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	38998-75-3	TOTAL HPCDF	9/28/98	32	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	34465-46-8	TOTAL HXCDD	9/28/98	14.1	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	55684-94-1	TOTAL HXCDF	9/28/98	42.2	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-SB-8	WA9221	TOC	TOTAL ORGANIC CARBON	9/28/98	102000	mg/Kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-SB-8	WA9221	36088-22-9	TOTAL PECDD	9/28/98	14.5	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	30402-15-4	TOTAL PECDF	9/28/98	80.9	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	TSO	TOTAL SOLIDS	9/28/98	78.4	%	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-SB-8	WA9221	41903-57-5	TOTAL TCDD	9/28/98	59.4	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9221	55722-27-5	Total TCDF	9/28/98	220	ng/kg	Y	Y		1117532.3	922498.6	3	4	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	3.51	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	3.72	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	0.88	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	0.36	ng/kg	Y	Y	*	1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	3.45	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	0.2	ng/kg	Y	N	U	1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	1.25	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	0.5	ng/kg	Y	Y	*	1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	0.42	ng/kg	Y	N	U	1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	40321-76-4	1,2,3,7,8-PECDD	9/28/98	0.4	ng/kg	Y	Y	*	1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	57117-41-6	1,2,3,7,8-PECDF	9/28/98	2.8	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	0.42	ng/kg	Y	N	U	1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	57117-31-4	2,3,4,7,8-PECDF	9/28/98	1.59	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	1746-01-6	2,3,7,8-TCDD	9/28/98	0.6	ng/kg	Y	Y	*	1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	51207-31-9	2,3,7,8-TCDF	9/28/98	6.55	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	3268-87-9	OCDD	9/28/98	8.95	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	39001-02-0	OCDF	9/28/98	7.06	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	37871-00-4	TOTAL HPCDD	9/28/98	7.98	ng/kg	Y	N	U	1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	38998-75-3	TOTAL HPCDF	9/28/98	5.87	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	34465-46-8	TOTAL HXCDD	9/28/98	11.8	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	55684-94-1	TOTAL HXCDF	9/28/98	8.12	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	TOC	TOTAL ORGANIC CARBON	9/28/98	43600	mg/Kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW9060
Former Chlorination Building	Soil	WA-SB-8	WA9222	36088-22-9	TOTAL PECDD	9/28/98	12.9	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	30402-15-4	TOTAL PECDF	9/28/98	18	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	TSO	TOTAL SOLIDS	9/28/98	62.2	%	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	WET CHEMISTRY
Former Chlorination Building	Soil	WA-SB-8	WA9222	41903-57-5	TOTAL TCDD	9/28/98	23.7	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SB-8	WA9222	55722-27-5	Total TCDF	9/28/98	70	ng/kg	Y	Y		1117532.3	922498.6	4	5	SB	SOIL	Soil	SW8290
Former Chlorination Building	Soil	WA-SS#1	WA9239	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	71-55-6	1,1,1-TRICHLOROETHANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	79-00-5	1,1,2-TRICHLOROETHANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	75-34-3	1,1-DICHLOROETHANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	75-35-4	1,1-DICHLOROETHENE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	563-58-6	1,1-DICHLOROPROPENE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	87-61-6	1,2,3-TRICHLOROBENZENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	96-18-4	1,2,3-TRICHLOROPROPANE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	120-82-1	1,2,4-TRICHLOROBENZENE	9/15/97	1.5	ug/Kg	Y	Y	J	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	95-63-6	1,2,4-TRIMETHYLBENZENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	106-93-4	1,2-DIBROMOETHANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	95-50-1	1,2-DICHLOROBENZENE	9/15/97	4.3	ug/kg	Y	Y	J	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	107-06-2	1,2-DICHLOROETHANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	78-87-5	1,2-DICHLOROPROPANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	108-67-8	1,3,5-TRIMETHYLBENZENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	541-73-1	1,3-DICHLOROBENZENE	9/15/97	3.4	ug/kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	142-28-9	1,3-DICHLOROPROPANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	106-46-7	1,4-DICHLOROBENZENE	9/15/97	3.9	ug/kg	Y	Y	J	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	594-20-7	2,2-DICHLOROPROPANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	95-49-8	2-CHLOROTOLUENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	72-54-8	4,4'-DDD	9/15/97	230	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	72-55-9	4,4'-DDE	9/15/97	230	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	50-29-3	4,4'-DDT	9/15/97	230	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	106-43-4	4-CHLOROTOLUENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	309-00-2	ALDRIN	9/15/97	110	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	319-84-6	ALPHA-BHC	9/15/97	110	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	12674-11-2	AROCLOR-1016	9/15/97	230	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	11104-28-2	AROCLOR-1221	9/15/97	230	ug/kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	11141-16-5	AROCLOR-1232	9/15/97	230	ug/kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	53469-21-9	AROCLOR-1242	9/15/97	1100	ug/kg	Y	Y		1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	12672-29-6	AROCLOR-1248	9/15/97	230	ug/kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	11097-69-1	AROCLOR-1254	9/15/97	230	ug/kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Former Chlorination Building	Soil	WA-SS#1	WA9239	11096-82-5	AROCLOR-1260	9/15/97	1400	ug/kg	Y	Y		1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	71-43-2	BENZENE	9/15/97	3.4	ug/kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	319-85-7	BETA-BHC	9/15/97	110	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	108-86-1	BROMOBENZENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	74-97-5	BROMOCHLOROMETHANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	75-27-4	BROMODICHLOROMETHANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	75-25-2	BROMOFORM	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	74-83-9	BROMOMETHANE	9/15/97	6.8	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	104-51-8	BUTYLBENZENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	56-23-5	CARBON TETRACHLORIDE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	57-74-9	CHLORDANE	9/15/97	1100	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	108-90-7	CHLOROBENZENE	9/15/97	3.4	ug/kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	124-48-1	CHLORODIBROMOMETHANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	75-00-3	CHLOROETHANE	9/15/97	6.8	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	67-66-3	CHLOROFORM	9/15/97	2.7	ug/Kg	Y	Y	J	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	74-87-3	CHLOROMETHANE	9/15/97	6.8	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	156-59-2	CIS-1,2-DICHLOROETHENE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	319-86-8	DELTA-BHC	9/15/97	110	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	74-95-3	DIBROMOMETHANE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	75-71-8	DICHLORODIFLUOROMETHANE	9/15/97	6.8	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	60-57-1	DIELDRIN	9/15/97	230	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	959-98-8	ENDOSULFAN I	9/15/97	230	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	33213-65-9	ENDOSULFAN II	9/15/97	230	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	1031-07-8	ENDOSULFAN SULFATE	9/15/97	230	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	72-20-8	ENDRIN	9/15/97	230	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	7421-93-4	ENDRIN ALDEHYDE	9/15/97	230	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	100-41-4	ETHYLBENZENE	9/15/97	3.4	ug/kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	58-89-9	GAMMA-BHC (LINDANE)	9/15/97	110	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	76-44-8	HEPTACHLOR	9/15/97	110	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	1024-57-3	HEPTACHLOR EPOXIDE	9/15/97	110	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	118-74-1	HEXACHLOROBENZENE	9/15/97	1200	ug/Kg	Y	Y		1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	87-68-3	HEXACHLOROBUTADIENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	98-82-8	ISOPROPYLBENZENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	7439-97-6	MERCURY	9/15/97	150	mg/kg	Y	Y		1117418.9	922557.1	6	6	TP	SOIL	Soil	7471A/NONE
Former Chlorination Building	Soil	WA-SS#1	WA9239	72-43-5	METHOXYCHLOR	9/15/97	1100	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	75-09-2	METHYLENE CHLORIDE	9/15/97	6.8	ug/kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	91-20-3	NAPHTHALENE	9/15/97	3.4	ug/kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	103-65-1	N-PROPYLBENZENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	99-87-6	P-ISOPROPYLTOLUENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	135-98-8	SEC-BUTYLBENZENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	100-42-5	STYRENE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	98-06-6	TERT-BUTYLBENZENE	9/15/97	3.4	ug/Kg	Y	N	UJ	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	127-18-4	TETRACHLOROETHENE	9/15/97	6.5	ug/Kg	Y	Y		1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	108-88-3	TOLUENE	9/15/97	3.4	ug/kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	TSO	TOTAL SOLIDS	9/15/97	73.8	%	Y	Y		1117418.9	922557.1	6	6	TP	SOIL	Soil	2540-G
Former Chlorination Building	Soil	WA-SS#1	WA9239	8001-35-2	TOXAPHENE	9/15/97	1100	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8080
Former Chlorination Building	Soil	WA-SS#1	WA9239	156-60-5	TRANS-1,2-DICHLOROETHENE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/15/97	3.4	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	79-01-6	TRICHLOROETHENE	9/15/97	5.3	ug/Kg	Y	Y		1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	75-69-4	TRICHLOROFLUOROMETHANE	9/15/97	6.8	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	75-01-4	VINYL CHLORIDE	9/15/97	6.8	ug/Kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Former Chlorination Building	Soil	WA-SS#1	WA9239	1330-20-7	XYLENES, TOTAL	9/15/97	3.4	ug/kg	Y	N	U	1117418.9	922557.1	6	6	TP	SOIL	Soil	SW8260
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	71-55-6	1,1,1-TRICHLOROETHANE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	79-00-5	1,1,2-TRICHLOROETHANE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	75-34-3	1,1-DICHLOROETHANE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	75-35-4	1,1-DICHLOROETHENE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	120-82-1	1,2,4-TRICHLOROBENZENE	4/7/92	66	ug/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	95-50-1	1,2-DICHLOROBENZENE	4/7/92	3800	ug/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	107-06-2	1,2-DICHLOROETHANE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	78-87-5	1,2-DICHLOROPROPANE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	541-73-1	1,3-DICHLOROBENZENE	4/7/92	720	ug/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	106-46-7	1,4-DICHLOROBENZENE	4/7/92	6100	ug/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	95-95-4	2,4,5-TRICHLOROPHENOL	4/7/92	50	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	88-06-2	2,4,6-TRICHLOROPHENOL	4/7/92	10	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	120-83-2	2,4-DICHLOROPHENOL	4/7/92	10	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	105-67-9	2,4-DIMETHYLPHENOL	4/7/92	10	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	51-28-5	2,4-DINITROPHENOL	4/7/92	50	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	121-14-2	2,4-DINITROTOLUENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	606-20-2	2,6-DINITROTOLUENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	78-93-3	2-BUTANONE	4/7/92	1000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	91-58-7	2-CHLORONAPHTHALENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	95-57-8	2-CHLOROPHENOL	4/7/92	10	ug/L	Y	N	UJ	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	591-78-6	2-HEXANONE	4/7/92	1000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	91-57-6	2-METHYLNAPHTHALENE	4/7/92	1	ug/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	95-48-7	2-METHYLPHENOL	4/7/92	10	ug/L	Y	N	UJ	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	88-74-4	2-NITROANILINE	4/7/92	50	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	88-75-5	2-NITROPHENOL	4/7/92	10	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	99-09-2	3-NITROANILINE	4/7/92	50	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/7/92	50	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	59-50-7	4-CHLORO-3-METHYLPHENOL	4/7/92	10	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	106-47-8	4-CHLOROANILINE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	108-10-1	4-METHYL-2-PENTANONE	4/7/92	1000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	106-44-5	4-METHYLPHENOL	4/7/92	10	ug/L	Y	N	UJ	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	100-01-6	4-NITROANILINE	4/7/92	50	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	100-02-7	4-NITROPHENOL	4/7/92	50	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	83-32-9	ACENAPHTHENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	208-96-8	ACENAPHTHYLENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	67-64-1	ACETONE	4/7/92	1000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7429-90-5	ALUMINUM	4/7/92	0.11	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7429-90-5	ALUMINUM	4/7/92	31.5	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	120-12-7	ANTHRACENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-36-0	ANTIMONY	4/7/92	0.449	mg/L	Y	N	UJ	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-36-0	ANTIMONY	4/7/92	0.237	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-38-2	ARSENIC	4/7/92	0.01	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-38-2	ARSENIC	4/7/92	0.016	mg/L	Y	N	UJ	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-39-3	BARIUM	4/7/92	0.464	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-39-3	BARIUM	4/7/92	0.402	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	71-43-2	BENZENE	4/7/92	11000	ug/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	56-55-3	BENZO(A)ANTHRACENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	50-32-8	BENZO(A)PYRENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	205-99-2	BENZO(B)FLUORANTHENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	191-24-2	BENZO(G,H,I)PERYLENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	207-08-9	BENZO(K)FLUORANTHENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	65-85-0	BENZOIC ACID	4/7/92	50	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	100-51-6	BENZYL ALCOHOL	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-41-7	BERYLLIUM	4/7/92	0.031	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-41-7	BERYLLIUM	4/7/92	0.028	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	75-27-4	BROMODICHLOROMETHANE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	75-25-2	BROMOFORM	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	74-83-9	BROMOMETHANE	4/7/92	1000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	85-68-7	BUTYLBENZYL PHTHALATE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-43-9	CADMIUM	4/7/92	0.02	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-43-9	CADMIUM	4/7/92	0.02	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-70-2	CALCIUM	4/7/92	13300	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-70-2	CALCIUM	4/7/92	14600	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	75-15-0	CARBON DISULFIDE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	56-23-5	CARBON TETRACHLORIDE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	108-90-7	CHLOROBENZENE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	124-48-1	CHLORODIBROMOMETHANE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	75-00-3	CHLOROETHANE	4/7/92	1000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	67-66-3	CHLOROFORM	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	74-87-3	CHLOROMETHANE	4/7/92	1000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-47-3	CHROMIUM	4/7/92	0.03	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-47-3	CHROMIUM	4/7/92	0.109	mg/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	218-01-9	CHRYSENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-48-4	COBALT	4/7/92	0.03	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-48-4	COBALT	4/7/92	0.03	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-50-8	COPPER	4/7/92	0.02	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-50-8	COPPER	4/7/92	0.0316	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	57-12-5	CYANIDE	4/7/92	0.126	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	53-70-3	DIBENZO(A,H)ANTHRACENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	132-64-9	DIBENZOFURAN	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	84-66-2	DIETHYL PHTHALATE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	131-11-3	DIMETHYL PHTHALATE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	84-74-2	DI-N-BUTYL PHTHALATE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	117-84-0	DI-N-OCTYL PHTHALATE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	100-41-4	ETHYLBENZENE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	206-44-0	FLUORANTHENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	86-73-7	FLUORENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	118-74-1	HEXACHLOROBENZENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	87-68-3	HEXACHLOROBUTADIENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	67-72-1	HEXACHLOROETHANE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	193-39-5	INDENO(1,2,3-CD)PYRENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7439-89-6	IRON	4/7/92	101	mg/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7439-89-6	IRON	4/7/92	64.3	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	78-59-1	ISOPHORONE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7439-92-1	LEAD	4/7/92	0.01	mg/L	Y	N	UJ	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7439-92-1	LEAD	4/7/92	0.01	mg/L	Y	N	UJ	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7439-95-4	MAGNESIUM	4/7/92	148	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7439-95-4	MAGNESIUM	4/7/92	206	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7439-96-5	MANGANESE	4/7/92	5.87	mg/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7439-96-5	MANGANESE	4/7/92	5.58	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7439-97-6	MERCURY	4/7/92	0.0002	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7439-97-6	MERCURY	4/7/92	0.0002	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	75-09-2	METHYLENE CHLORIDE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	91-20-3	NAPHTHALENE	4/7/92	12	ug/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-02-0	NICKEL	4/7/92	0.1	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-02-0	NICKEL	4/7/92	0.1	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	98-95-3	NITROBENZENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	86-30-6	N-NITROSODIPHENYLAMINE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	87-86-5	PENTACHLOROPHENOL	4/7/92	50	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	85-01-8	PHENANTHRENE	4/7/92	3	ug/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	108-95-2	PHENOL	4/7/92	10	ug/L	Y	N	UJ	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-09-7	POTASSIUM	4/7/92	130	mg/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-09-7	POTASSIUM	4/7/92	145	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	129-00-0	PYRENE	4/7/92	10	ug/L	Y	N	R	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7782-49-2	SELENIUM	4/7/92	0.02	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7782-49-2	SELENIUM	4/7/92	0.02	mg/L	Y	N	UJ	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-22-4	SILVER	4/7/92	0.03	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-22-4	SILVER	4/7/92	0.03	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-23-5	SODIUM	4/7/92	13000	mg/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-23-5	SODIUM	4/7/92	10900	mg/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	100-42-5	STYRENE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	127-18-4	TETRACHLOROETHENE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-28-0	THALLIUM	4/7/92	0.02	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-28-0	THALLIUM	4/7/92	0.02	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	108-88-3	TOLUENE	4/7/92	15000	ug/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	79-01-6	TRICHLOROETHENE	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-62-2	VANADIUM	4/7/92	0.564	mg/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-62-2	VANADIUM	4/7/92	0.431	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	75-01-4	VINYL CHLORIDE	4/7/92	1000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	1330-20-7	XYLENES, TOTAL	4/7/92	500	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9243F	7440-66-6	ZINC	4/7/92	0.03	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9243	7440-66-6	ZINC	4/7/92	0.155	mg/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	71-55-6	1,1,1-TRICHLOROETHANE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	79-00-5	1,1,2-TRICHLOROETHANE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	75-34-3	1,1-DICHLOROETHANE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	75-35-4	1,1-DICHLOROETHENE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	107-06-2	1,2-DICHLOROETHANE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	78-87-5	1,2-DICHLOROPROPANE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	541-73-1	1,3-DICHLOROBENZENE	10/15/92	1000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	106-46-7	1,4-DICHLOROBENZENE	10/15/92	9500	ug/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	110-75-8	2-CHLOROETHYL VINYL ETHER	10/15/92	2000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	71-43-2	BENZENE	10/15/92	11000	ug/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	75-27-4	BROMODICHLOROMETHANE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	75-25-2	BROMOFORM	10/15/92	2000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	74-83-9	BROMOMETHANE	10/15/92	2000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	56-23-5	CARBON TETRACHLORIDE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	108-90-7	CHLOROBENZENE	10/15/92	13000	ug/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	124-48-1	CHLORODIBROMOMETHANE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	75-00-3	CHLOROETHANE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	67-66-3	CHLOROFORM	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	74-87-3	CHLOROMETHANE	10/15/92	2000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	75-71-8	DICHLORODIFLUOROMETHANE	10/15/92	2000	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	100-41-4	ETHYLBENZENE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	75-09-2	METHYLENE CHLORIDE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	127-18-4	TETRACHLOROETHENE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	108-88-3	TOLUENE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	79-01-6	TRICHLOROETHENE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	75-69-4	TRICHLOROFLUOROMETHANE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	75-01-4	VINYL CHLORIDE	10/15/92	200	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA9244	1330-20-7	XYLENES, TOTAL	10/15/92	600	ug/L	Y	N	U	1118138.5	922746.5	96.6	106.6	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01D	WA-0000-06	7664-41-7	AMMONIA	2/27/07	21	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	E350.1
Lakeshore Area	Ground Water	WA-WA-01D	WA-0000-06	CBOD	NACEOUS BIOCHEMICAL OXYGEN D	2/27/07	18	mg/L	Y	Y		1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	SM5210B
Lakeshore Area	Ground Water	WA-WA-01D	WA-0000-06	7727-37-9	NITROGEN	2/27/07	21	mg/L	Y	Y	J	1118138.5	922746.5	96.6	106.6	MW	WATER	WATER	E351.2
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	71-55-6	1,1,1-TRICHLOROETHANE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	79-00-5	1,1,2-TRICHLOROETHANE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	75-34-3	1,1-DICHLOROETHANE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	75-35-4	1,1-DICHLOROETHENE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	120-82-1	1,2,4-TRICHLOROBENZENE	4/7/92	1000	ug/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	95-50-1	1,2-DICHLOROBENZENE	4/7/92	29000	ug/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	107-06-2	1,2-DICHLOROETHANE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	78-87-5	1,2-DICHLOROPROPANE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	541-73-1	1,3-DICHLOROBENZENE	4/7/92	9500	ug/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	106-46-7	1,4-DICHLOROBENZENE	4/7/92	72000	ug/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	95-95-4	2,4,5-TRICHLOROPHENOL	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	88-06-2	2,4,6-TRICHLOROPHENOL	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	120-83-2	2,4-DICHLOROPHENOL	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	105-67-9	2,4-DIMETHYLPHENOL	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	51-28-5	2,4-DINITROPHENOL	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	121-14-2	2,4-DINITROTOLUENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	606-20-2	2,6-DINITROTOLUENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	78-93-3	2-BUTANONE	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	91-58-7	2-CHLORONAPHTHALENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	95-57-8	2-CHLOROPHENOL	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	591-78-6	2-HEXANONE	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	91-57-6	2-METHYLNAPHTHALENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	95-48-7	2-METHYLPHENOL	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	88-74-4	2-NITROANILINE	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	88-75-5	2-NITROPHENOL	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	99-09-2	3-NITROANILINE	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	59-50-7	4-CHLORO-3-METHYLPHENOL	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	106-47-8	4-CHLOROANILINE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	108-10-1	4-METHYL-2-PENTANONE	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	106-44-5	4-METHYLPHENOL	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	100-01-6	4-NITROANILINE	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	100-02-7	4-NITROPHENOL	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	83-32-9	ACENAPHTHENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	208-96-8	ACENAPHTHYLENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	67-64-1	ACETONE	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7429-90-5	ALUMINUM	4/7/92	0.33	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7429-90-5	ALUMINUM	4/7/92	1.01	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	120-12-7	ANTHRACENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-36-0	ANTIMONY	4/7/92	0.28	mg/L	Y	N	UJ	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-36-0	ANTIMONY	4/7/92	0.42	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-38-2	ARSENIC	4/7/92	0.0042	mg/L	Y	Y	J	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-38-2	ARSENIC	4/7/92	0.008	mg/L	Y	Y	J	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-39-3	BARIUM	4/7/92	0.201	mg/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-39-3	BARIUM	4/7/92	0.201	mg/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	71-43-2	BENZENE	4/7/92	62000	ug/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	56-55-3	BENZO(A)ANTHRACENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	50-32-8	BENZO(A)PYRENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	205-99-2	BENZO(B)FLUORANTHENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	191-24-2	BENZO(G,H,I)PERYLENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	207-08-9	BENZO(K)FLUORANTHENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	65-85-0	BENZOIC ACID	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	100-51-6	BENZYL ALCOHOL	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-41-7	BERYLLIUM	4/7/92	0.03	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-41-7	BERYLLIUM	4/7/92	0.02	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	75-27-4	BROMODICHLOROMETHANE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	75-25-2	BROMOFORM	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	74-83-9	BROMOMETHANE	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	85-68-7	BUTYLBENZYL PHTHALATE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-43-9	CADMIUM	4/7/92	0.04	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-43-9	CADMIUM	4/7/92	0.06	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-70-2	CALCIUM	4/7/92	1660	mg/L	Y	Y	J	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-70-2	CALCIUM	4/7/92	1970	mg/L	Y	Y	J	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	75-15-0	CARBON DISULFIDE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	56-23-5	CARBON TETRACHLORIDE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	108-90-7	CHLOROBENZENE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	124-48-1	CHLORODIBROMOMETHANE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	75-00-3	CHLOROETHANE	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	67-66-3	CHLOROFORM	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	74-87-3	CHLOROMETHANE	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-47-3	CHROMIUM	4/7/92	0.09	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-47-3	CHROMIUM	4/7/92	0.06	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	218-01-9	CHRYSENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-48-4	COBALT	4/7/92	0.06	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-48-4	COBALT	4/7/92	0.09	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-50-8	COPPER	4/7/92	0.06	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-50-8	COPPER	4/7/92	0.04	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	57-12-5	CYANIDE	4/7/92	0.01	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	53-70-3	DIBENZO(A,H)ANTHRACENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	132-64-9	DIBENZOFURAN	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	84-66-2	DIETHYL PHTHALATE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	131-11-3	DIMETHYL PHTHALATE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	84-74-2	DI-N-BUTYL PHTHALATE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	117-84-0	DI-N-OCTYL PHTHALATE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	100-41-4	ETHYLBENZENE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	206-44-0	FLUORANTHENE	4/7/92	50	ug/L	Y	Y	J	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	86-73-7	FLUORENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	118-74-1	HEXACHLOROBENZENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	87-68-3	HEXACHLOROBUTADIENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	67-72-1	HEXACHLOROETHANE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	193-39-5	INDENO(1,2,3-CD)PYRENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7439-89-6	IRON	4/7/92	0.174	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7439-89-6	IRON	4/7/92	0.23	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	78-59-1	ISOPHORONE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7439-92-1	LEAD	4/7/92	0.1	mg/L	Y	N	UJ	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7439-92-1	LEAD	4/7/92	0.0191	mg/L	Y	Y	J	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7439-95-4	MAGNESIUM	4/7/92	178	mg/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7439-95-4	MAGNESIUM	4/7/92	195	mg/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7439-96-5	MANGANESE	4/7/92	0.115	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7439-96-5	MANGANESE	4/7/92	0.0934	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7439-97-6	MERCURY	4/7/92	0.0002	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7439-97-6	MERCURY	4/7/92	0.0002	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	75-09-2	METHYLENE CHLORIDE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	91-20-3	NAPHTHALENE	4/7/92	120	ug/L	Y	Y	J	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-02-0	NICKEL	4/7/92	0.3	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-02-0	NICKEL	4/7/92	0.2	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	98-95-3	NITROBENZENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	86-30-6	N-NITROSODIPHENYLAMINE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	87-86-5	PENTACHLOROPHENOL	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	85-01-8	PHENANTHRENE	4/7/92	75	ug/L	Y	Y	J	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	108-95-2	PHENOL	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-09-7	POTASSIUM	4/7/92	209	mg/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-09-7	POTASSIUM	4/7/92	209	mg/L	Y	Y	J	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	129-00-0	PYRENE	4/7/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7782-49-2	SELENIUM	4/7/92	0.02	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7782-49-2	SELENIUM	4/7/92	0.02	mg/L	Y	N	R	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-22-4	SILVER	4/7/92	0.09	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-22-4	SILVER	4/7/92	0.06	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-23-5	SODIUM	4/7/92	34400	mg/L	Y	Y	J	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-23-5	SODIUM	4/7/92	39000	mg/L	Y	Y	J	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	100-42-5	STYRENE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	127-18-4	TETRACHLOROETHENE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-28-0	THALLIUM	4/7/92	0.2	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-28-0	THALLIUM	4/7/92	0.02	mg/L	Y	N	R	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	108-88-3	TOLUENE	4/7/92	66000	ug/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	79-01-6	TRICHLOROETHENE	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-62-2	VANADIUM	4/7/92	0.163	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-62-2	VANADIUM	4/7/92	0.09	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	75-01-4	VINYL CHLORIDE	4/7/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	1330-20-7	XYLENES, TOTAL	4/7/92	2500	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9245F	7440-66-6	ZINC	4/7/92	0.887	mg/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9245	7440-66-6	ZINC	4/7/92	0.06	mg/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	71-55-6	1,1,1-TRICHLOROETHANE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	79-00-5	1,1,2-TRICHLOROETHANE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	75-34-3	1,1-DICHLOROETHANE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	75-35-4	1,1-DICHLOROETHENE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	107-06-2	1,2-DICHLOROETHANE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	78-87-5	1,2-DICHLOROPROPANE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	541-73-1	1,3-DICHLOROBENZENE	10/15/92	5000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	106-46-7	1,4-DICHLOROBENZENE	10/15/92	26000	ug/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	110-75-8	2-CHLOROETHYL VINYL ETHER	10/15/92	10000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	71-43-2	BENZENE	10/15/92	57000	ug/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	75-27-4	BROMODICHLOROMETHANE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	75-25-2	BROMOFORM	10/15/92	10000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	74-83-9	BROMOMETHANE	10/15/92	10000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	56-23-5	CARBON TETRACHLORIDE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	108-90-7	CHLOROBENZENE	10/15/92	79000	ug/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	124-48-1	CHLORODIBROMOMETHANE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	75-00-3	CHLOROETHANE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	67-66-3	CHLOROFORM	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	74-87-3	CHLOROMETHANE	10/15/92	10000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	75-71-8	DICHLORODIFLUOROMETHANE	10/15/92	10000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	100-41-4	ETHYLBENZENE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	75-09-2	METHYLENE CHLORIDE	10/15/92	1300	ug/L	Y	Y		1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	127-18-4	TETRACHLOROETHENE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	108-88-3	TOLUENE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	79-01-6	TRICHLOROETHENE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	75-69-4	TRICHLOROFLUOROMETHANE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	75-01-4	VINYL CHLORIDE	10/15/92	1000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01I	WA9246	1330-20-7	XYLENES, TOTAL	10/15/92	3000	ug/L	Y	N	U	1118135.6	922757.7	28.5	38.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	71-55-6	1,1,1-TRICHLOROETHANE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	79-00-5	1,1,2-TRICHLOROETHANE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	75-34-3	1,1-DICHLOROETHANE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	75-35-4	1,1-DICHLOROETHENE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	120-82-1	1,2,4-TRICHLOROBENZENE	4/7/92	21	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	95-50-1	1,2-DICHLOROBENZENE	4/7/92	2900	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	107-06-2	1,2-DICHLOROETHANE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	78-87-5	1,2-DICHLOROPROPANE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	541-73-1	1,3-DICHLOROBENZENE	4/7/92	290	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	106-46-7	1,4-DICHLOROBENZENE	4/7/92	4200	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	95-95-4	2,4,5-TRICHLOROPHENOL	4/7/92	51	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	88-06-2	2,4,6-TRICHLOROPHENOL	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	120-83-2	2,4-DICHLOROPHENOL	4/7/92	15	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	105-67-9	2,4-DIMETHYLPHENOL	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	51-28-5	2,4-DINITROPHENOL	4/7/92	51	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	121-14-2	2,4-DINITROTOLUENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	606-20-2	2,6-DINITROTOLUENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	78-93-3	2-BUTANONE	4/7/92	2000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	91-58-7	2-CHLORONAPHTHALENE	4/7/92	15	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	95-57-8	2-CHLOROPHENOL	4/7/92	26	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	591-78-6	2-HEXANONE	4/7/92	2000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	91-57-6	2-METHYLNAPHTHALENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	95-48-7	2-METHYLPHENOL	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	88-74-4	2-NITROANILINE	4/7/92	51	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	88-75-5	2-NITROPHENOL	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	99-09-2	3-NITROANILINE	4/7/92	51	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/7/92	51	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	59-50-7	4-CHLORO-3-METHYLPHENOL	4/7/92	3	ug/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	106-47-8	4-CHLOROANILINE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	108-10-1	4-METHYL-2-PENTANONE	4/7/92	2000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	106-44-5	4-METHYLPHENOL	4/7/92	13	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	100-01-6	4-NITROANILINE	4/7/92	51	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	100-02-7	4-NITROPHENOL	4/7/92	51	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	83-32-9	ACENAPHTHENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	208-96-8	ACENAPHTHYLENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	67-64-1	ACETONE	4/7/92	2000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7429-90-5	ALUMINUM	4/7/92	0.557	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7429-90-5	ALUMINUM	4/7/92	2.81	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	120-12-7	ANTHRACENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-36-0	ANTIMONY	4/7/92	0.0292	mg/L	Y	N	UJ	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-36-0	ANTIMONY	4/7/92	0.0457	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-38-2	ARSENIC	4/7/92	0.0036	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-38-2	ARSENIC	4/7/92	0.0163	mg/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-39-3	BARIUM	4/7/92	0.0792	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-39-3	BARIUM	4/7/92	0.0682	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	71-43-2	BENZENE	4/7/92	8500	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	56-55-3	BENZO(A)ANTHRACENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	50-32-8	BENZO(A)PYRENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	205-99-2	BENZO(B)FLUORANTHENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	191-24-2	BENZO(G,H,I)PERYLENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	207-08-9	BENZO(K)FLUORANTHENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	65-85-0	BENZOIC ACID	4/7/92	51	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	100-51-6	BENZYL ALCOHOL	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-41-7	BERYLLIUM	4/7/92	0.001	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-41-7	BERYLLIUM	4/7/92	0.001	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	75-27-4	BROMODICHLOROMETHANE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	75-25-2	BROMOFORM	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	74-83-9	BROMOMETHANE	4/7/92	2000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	85-68-7	BUTYLBENZYL PHTHALATE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-43-9	CADMIUM	4/7/92	0.002	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-43-9	CADMIUM	4/7/92	0.002	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-70-2	CALCIUM	4/7/92	220	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-70-2	CALCIUM	4/7/92	200	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	75-15-0	CARBON DISULFIDE	4/7/92	250	ug/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	56-23-5	CARBON TETRACHLORIDE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	108-90-7	CHLOROBENZENE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	124-48-1	CHLORODIBROMOMETHANE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	75-00-3	CHLOROETHANE	4/7/92	2000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	67-66-3	CHLOROFORM	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	74-87-3	CHLOROMETHANE	4/7/92	2000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-47-3	CHROMIUM	4/7/92	0.003	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-47-3	CHROMIUM	4/7/92	0.0079	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	218-01-9	CHRYSENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-48-4	COBALT	4/7/92	0.003	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-48-4	COBALT	4/7/92	0.003	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-50-8	COPPER	4/7/92	0.002	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-50-8	COPPER	4/7/92	0.0117	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	57-12-5	CYANIDE	4/7/92	0.01	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	53-70-3	DIBENZO(A,H)ANTHRACENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	132-64-9	DIBENZOFURAN	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	84-66-2	DIETHYL PHTHALATE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	131-11-3	DIMETHYL PHTHALATE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	84-74-2	DI-N-BUTYL PHTHALATE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	117-84-0	DI-N-OCTYL PHTHALATE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	100-41-4	ETHYLBENZENE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	206-44-0	FLUORANTHENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	86-73-7	FLUORENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	118-74-1	HEXACHLOROBENZENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	87-68-3	HEXACHLOROBUTADIENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	67-72-1	HEXACHLOROETHANE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	193-39-5	INDENO(1,2,3-CD)PYRENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7439-89-6	IRON	4/7/92	0.0346	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7439-89-6	IRON	4/7/92	2.95	mg/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	78-59-1	ISOPHORONE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7439-92-1	LEAD	4/7/92	0.0075	mg/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7439-92-1	LEAD	4/7/92	0.01	mg/L	Y	N	UJ	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7439-95-4	MAGNESIUM	4/7/92	0.238	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7439-95-4	MAGNESIUM	4/7/92	11.3	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7439-96-5	MANGANESE	4/7/92	0.0949	mg/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7439-96-5	MANGANESE	4/7/92	0.006	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7439-97-6	MERCURY	4/7/92	0.0064	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7439-97-6	MERCURY	4/7/92	0.00079	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	75-09-2	METHYLENE CHLORIDE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	91-20-3	NAPHTHALENE	4/7/92	49	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-02-0	NICKEL	4/7/92	0.0105	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-02-0	NICKEL	4/7/92	0.01	mg/L	Y	N	UJ	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	98-95-3	NITROBENZENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	86-30-6	N-NITROSODIPHENYLAMINE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	87-86-5	PENTACHLOROPHENOL	4/7/92	51	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	85-01-8	PHENANTHRENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	108-95-2	PHENOL	4/7/92	44	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-09-7	POTASSIUM	4/7/92	185	mg/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-09-7	POTASSIUM	4/7/92	151	mg/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	129-00-0	PYRENE	4/7/92	10	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7782-49-2	SELENIUM	4/7/92	0.002	mg/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7782-49-2	SELENIUM	4/7/92	0.002	mg/L	Y	N	UJ	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-22-4	SILVER	4/7/92	0.0067	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-22-4	SILVER	4/7/92	0.0108	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-23-5	SODIUM	4/7/92	1340	mg/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-23-5	SODIUM	4/7/92	1110	mg/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	100-42-5	STYRENE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	127-18-4	TETRACHLOROETHENE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-28-0	THALLIUM	4/7/92	0.02	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-28-0	THALLIUM	4/7/92	0.002	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	108-88-3	TOLUENE	4/7/92	19000	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	79-01-6	TRICHLOROETHENE	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-62-2	VANADIUM	4/7/92	0.0742	mg/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-62-2	VANADIUM	4/7/92	0.0788	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	75-01-4	VINYL CHLORIDE	4/7/92	2000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	1330-20-7	XYLENES, TOTAL	4/7/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9247F	7440-66-6	ZINC	4/7/92	0.003	mg/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9247	7440-66-6	ZINC	4/7/92	0.0386	mg/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	71-55-6	1,1,1-TRICHLOROETHANE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	79-00-5	1,1,2-TRICHLOROETHANE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	75-34-3	1,1-DICHLOROETHANE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	75-35-4	1,1-DICHLOROETHENE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	107-06-2	1,2-DICHLOROETHANE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	78-87-5	1,2-DICHLOROPROPANE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	541-73-1	1,3-DICHLOROBENZENE	10/15/92	5000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	106-46-7	1,4-DICHLOROBENZENE	10/15/92	7400	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	110-75-8	2-CHLOROETHYL VINYL ETHER	10/15/92	10000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	71-43-2	BENZENE	10/15/92	7100	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	75-27-4	BROMODICHLOROMETHANE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	75-25-2	BROMOFORM	10/15/92	10000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	74-83-9	BROMOMETHANE	10/15/92	10000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	56-23-5	CARBON TETRACHLORIDE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	108-90-7	CHLOROBENZENE	10/15/92	14000	ug/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	124-48-1	CHLORODIBROMOMETHANE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	75-00-3	CHLOROETHANE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	67-66-3	CHLOROFORM	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	74-87-3	CHLOROMETHANE	10/15/92	10000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	75-71-8	DICHLORODIFLUOROMETHANE	10/15/92	10000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	100-41-4	ETHYLBENZENE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	75-09-2	METHYLENE CHLORIDE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	127-18-4	TETRACHLOROETHENE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	108-88-3	TOLUENE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	79-01-6	TRICHLOROETHENE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	75-69-4	TRICHLOROFLUOROMETHANE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	75-01-4	VINYL CHLORIDE	10/15/92	1000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9248	1330-20-7	XYLENES, TOTAL	10/15/92	3000	ug/L	Y	N	U	1118122.9	922761.9	6.5	16.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-01S	WA9249	7439-97-6	MERCURY	10/28/97	0.0089	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	Water	245.1
Lakeshore Area	Ground Water	WA-WA-01S	WA-0000-05	7664-41-7	AMMONIA	2/27/07	35	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	E350.1
Lakeshore Area	Ground Water	WA-WA-01S	WA-0000-05	CBOD	NACEOUS BIOCHEMICAL OXYGEN D	2/27/07	210	mg/L	Y	Y		1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	SM5210B
Lakeshore Area	Ground Water	WA-WA-01S	WA-0000-05	7727-37-9	NITROGEN	2/27/07	53	mg/L	Y	Y	J	1118122.9	922761.9	6.5	16.5	MW	WATER	WATER	E351.2
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	71-55-6	1,1,1-TRICHLOROETHANE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	79-00-5	1,1,2-TRICHLOROETHANE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	75-34-3	1,1-DICHLOROETHANE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	75-35-4	1,1-DICHLOROETHENE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	120-82-1	1,2,4-TRICHLOROBENZENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	95-50-1	1,2-DICHLOROBENZENE	4/6/92	6	ug/L	Y	Y	J	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	107-06-2	1,2-DICHLOROETHANE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	78-87-5	1,2-DICHLOROPROPANE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	541-73-1	1,3-DICHLOROBENZENE	4/6/92	8	ug/L	Y	Y	J	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	106-46-7	1,4-DICHLOROBENZENE	4/6/92	8	ug/L	Y	Y	J	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	95-95-4	2,4,5-TRICHLOROPHENOL	4/6/92	51	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	88-06-2	2,4,6-TRICHLOROPHENOL	4/6/92	10	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	120-83-2	2,4-DICHLOROPHENOL	4/6/92	10	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	105-67-9	2,4-DIMETHYLPHENOL	4/6/92	10	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	51-28-5	2,4-DINITROPHENOL	4/6/92	51	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	121-14-2	2,4-DINITROTOLUENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	606-20-2	2,6-DINITROTOLUENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	78-93-3	2-BUTANONE	4/6/92	200	ug/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	91-58-7	2-CHLORONAPHTHALENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	95-57-8	2-CHLOROPHENOL	4/6/92	10	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	591-78-6	2-HEXANONE	4/6/92	200	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	91-57-6	2-METHYLNAPHTHALENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	95-48-7	2-METHYLPHENOL	4/6/92	10	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	88-74-4	2-NITROANILINE	4/6/92	51	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	88-75-5	2-NITROPHENOL	4/6/92	10	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	99-09-2	3-NITROANILINE	4/6/92	51	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/6/92	51	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	59-50-7	4-CHLORO-3-METHYLPHENOL	4/6/92	10	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	106-47-8	4-CHLOROANILINE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	108-10-1	4-METHYL-2-PENTANONE	4/6/92	200	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	106-44-5	4-METHYLPHENOL	4/6/92	10	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	100-01-6	4-NITROANILINE	4/6/92	51	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	100-02-7	4-NITROPHENOL	4/6/92	51	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	83-32-9	ACENAPHTHENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	208-96-8	ACENAPHTHYLENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	67-64-1	ACETONE	4/6/92	220	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7429-90-5	ALUMINUM	4/6/92	0.117	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7429-90-5	ALUMINUM	4/6/92	20	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	120-12-7	ANTHRACENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-36-0	ANTIMONY	4/6/92	0.24	mg/L	Y	N	UJ	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-36-0	ANTIMONY	4/6/92	0.0481	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-38-2	ARSENIC	4/6/92	0.0172	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-38-2	ARSENIC	4/6/92	0.0274	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-39-3	BARIUM	4/6/92	0.17	mg/L	Y	Y	J	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-39-3	BARIUM	4/6/92	0.253	mg/L	Y	Y	J	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	71-43-2	BENZENE	4/6/92	1700	ug/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	56-55-3	BENZO(A)ANTHRACENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	50-32-8	BENZO(A)PYRENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	205-99-2	BENZO(B)FLUORANTHENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	191-24-2	BENZO(G,H,I)PERYLENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	207-08-9	BENZO(K)FLUORANTHENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	65-85-0	BENZOIC ACID	4/6/92	51	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	100-51-6	BENZYL ALCOHOL	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-41-7	BERYLLIUM	4/6/92	0.0018	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-41-7	BERYLLIUM	4/6/92	0.01	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	75-27-4	BROMODICHLOROMETHANE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	75-25-2	BROMOFORM	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	74-83-9	BROMOMETHANE	4/6/92	200	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	85-68-7	BUTYLBENZYL PHTHALATE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-43-9	CADMIUM	4/6/92	0.002	mg/L	Y	N	UJ	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-43-9	CADMIUM	4/6/92	0.002	mg/L	Y	N	UJ	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-70-2	CALCIUM	4/6/92	4880	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-70-2	CALCIUM	4/6/92	202	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	75-15-0	CARBON DISULFIDE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	56-23-5	CARBON TETRACHLORIDE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	108-90-7	CHLOROBENZENE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	124-48-1	CHLORODIBROMOMETHANE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	75-00-3	CHLOROETHANE	4/6/92	200	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	67-66-3	CHLOROFORM	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	74-87-3	CHLOROMETHANE	4/6/92	200	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-47-3	CHROMIUM	4/6/92	0.0058	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-47-3	CHROMIUM	4/6/92	0.0682	mg/L	Y	Y	J	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	218-01-9	CHRYSENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-48-4	COBALT	4/6/92	0.03	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-48-4	COBALT	4/6/92	0.003	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-50-8	COPPER	4/6/92	0.0021	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-50-8	COPPER	4/6/92	0.0342	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	57-12-5	CYANIDE	4/6/92	0.0355	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	53-70-3	DIBENZO(A,H)ANTHRACENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	132-64-9	DIBENZOFURAN	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	84-66-2	DIETHYL PHTHALATE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	131-11-3	DIMETHYL PHTHALATE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	84-74-2	DI-N-BUTYL PHTHALATE	4/6/92	0.5	ug/L	Y	Y	J	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	117-84-0	DI-N-OCTYL PHTHALATE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	100-41-4	ETHYLBENZENE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	206-44-0	FLUORANTHENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	86-73-7	FLUORENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	118-74-1	HEXACHLOROBENZENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	87-68-3	HEXACHLOROBUTADIENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	67-72-1	HEXACHLOROETHANE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	193-39-5	INDENO(1,2,3-CD)PYRENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7439-89-6	IRON	4/6/92	55.1	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7439-89-6	IRON	4/6/92	0.0572	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	78-59-1	ISOPHORONE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7439-92-1	LEAD	4/6/92	0.001	mg/L	Y	N	UJ	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7439-92-1	LEAD	4/6/92	0.011	mg/L	Y	Y	J	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7439-95-4	MAGNESIUM	4/6/92	172	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7439-95-4	MAGNESIUM	4/6/92	9.08	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7439-96-5	MANGANESE	4/6/92	0.006	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7439-96-5	MANGANESE	4/6/92	2.67	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7439-97-6	MERCURY	4/6/92	0.0002	mg/L	Y	N	UJ	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7439-97-6	MERCURY	4/6/92	0.00035	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	75-09-2	METHYLENE CHLORIDE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	91-20-3	NAPHTHALENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-02-0	NICKEL	4/6/92	0.01	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-02-0	NICKEL	4/6/92	0.138	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	98-95-3	NITROBENZENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	86-30-6	N-NITROSODIPHENYLAMINE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	87-86-5	PENTACHLOROPHENOL	4/6/92	51	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	85-01-8	PHENANTHRENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	108-95-2	PHENOL	4/6/92	10	ug/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-09-7	POTASSIUM	4/6/92	100	mg/L	Y	Y	J	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-09-7	POTASSIUM	4/6/92	163	mg/L	Y	Y	J	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	129-00-0	PYRENE	4/6/92	10	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7782-49-2	SELENIUM	4/6/92	0.002	mg/L	Y	N	UJ	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7782-49-2	SELENIUM	4/6/92	0.02	mg/L	Y	N	R	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-22-4	SILVER	4/6/92	0.0095	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-22-4	SILVER	4/6/92	0.03	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-23-5	SODIUM	4/6/92	10400	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-23-5	SODIUM	4/6/92	1220	mg/L	Y	Y	J	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	100-42-5	STYRENE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	127-18-4	TETRACHLOROETHENE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-28-0	THALLIUM	4/6/92	0.02	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-28-0	THALLIUM	4/6/92	0.02	mg/L	Y	N	UJ	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	108-88-3	TOLUENE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	79-01-6	TRICHLOROETHENE	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-62-2	VANADIUM	4/6/92	0.112	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-62-2	VANADIUM	4/6/92	0.0186	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	75-01-4	VINYL CHLORIDE	4/6/92	200	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	1330-20-7	XYLENES, TOTAL	4/6/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9251F	7440-66-6	ZINC	4/6/92	0.0094	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9251	7440-66-6	ZINC	4/6/92	0.175	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	71-55-6	1,1,1-TRICHLOROETHANE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	79-00-5	1,1,2-TRICHLOROETHANE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	75-34-3	1,1-DICHLOROETHANE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	75-35-4	1,1-DICHLOROETHENE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	95-50-1	1,2-DICHLOROBENZENE	10/14/92	500	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	107-06-2	1,2-DICHLOROETHANE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	78-87-5	1,2-DICHLOROPROPANE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	541-73-1	1,3-DICHLOROBENZENE	10/14/92	500	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	106-46-7	1,4-DICHLOROBENZENE	10/14/92	500	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	110-75-8	2-CHLOROETHYL VINYL ETHER	10/14/92	1000	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	71-43-2	BENZENE	10/14/92	2300	ug/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	75-27-4	BROMODICHLOROMETHANE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	75-25-2	BROMOFORM	10/14/92	1000	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	74-83-9	BROMOMETHANE	10/14/92	1000	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	56-23-5	CARBON TETRACHLORIDE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	108-90-7	CHLOROBENZENE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	124-48-1	CHLORODIBROMOMETHANE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	75-00-3	CHLOROETHANE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	67-66-3	CHLOROFORM	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	74-87-3	CHLOROMETHANE	10/14/92	1000	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	75-71-8	DICHLORODIFLUOROMETHANE	10/14/92	1000	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	100-41-4	ETHYLBENZENE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	75-09-2	METHYLENE CHLORIDE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	127-18-4	TETRACHLOROETHENE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	108-88-3	TOLUENE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	79-01-6	TRICHLOROETHENE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	75-69-4	TRICHLOROFLUOROMETHANE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	75-01-4	VINYL CHLORIDE	10/14/92	100	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA9252	1330-20-7	XYLENES, TOTAL	10/14/92	300	ug/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02D	WA-0000-04	7664-41-7	AMMONIA	2/27/07	8.4	mg/L	Y	Y		1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	E350.1
Lakeshore Area	Ground Water	WA-WA-02D	WA-0000-04	CBOD	NACEOUS BIOCHEMICAL OXYGEN D	2/27/07	5	mg/L	Y	N	U	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	SM5210B
Lakeshore Area	Ground Water	WA-WA-02D	WA-0000-04	7727-37-9	NITROGEN	2/27/07	7.9	mg/L	Y	Y	J	1117869.2	923053.7	73.5	83.5	MW	WATER	WATER	E351.2
Lakeshore Area	Soil	WA-WA-02D	WA9250	TSO	TOTAL SOLIDS	2/7/92	75	%	Y	Y		1117869.2	923053.7	8	10	SB	SOIL	Soil	OTHER
Lakeshore Area	Soil	WA-WA-02D	WA9250	TPH	TPH	2/7/92	2000	mg/Kg	Y	Y		1117869.2	923053.7	8	10	SB	SOIL	Soil	OTHER
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	71-55-6	1,1,1-TRICHLOROETHANE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	79-00-5	1,1,2-TRICHLOROETHANE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	75-34-3	1,1-DICHLOROETHANE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	75-35-4	1,1-DICHLOROETHENE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	120-82-1	1,2,4-TRICHLOROBENZENE	4/6/92	150	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	95-50-1	1,2-DICHLOROBENZENE	4/6/92	7300	ug/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	107-06-2	1,2-DICHLOROETHANE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	78-87-5	1,2-DICHLOROPROPANE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	541-73-1	1,3-DICHLOROBENZENE	4/6/92	530	ug/L	Y	Y	J	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	106-46-7	1,4-DICHLOROBENZENE	4/6/92	8900	ug/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/6/92	11	ug/L	Y	N	UJ	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	95-95-4	2,4,5-TRICHLOROPHENOL	4/6/92	56	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	88-06-2	2,4,6-TRICHLOROPHENOL	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	120-83-2	2,4-DICHLOROPHENOL	4/6/92	11	ug/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	105-67-9	2,4-DIMETHYLPHENOL	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	51-28-5	2,4-DINITROPHENOL	4/6/92	56	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	121-14-2	2,4-DINITROTOLUENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	606-20-2	2,6-DINITROTOLUENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	78-93-3	2-BUTANONE	4/6/92	10000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	91-58-7	2-CHLORONAPHTHALENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	95-57-8	2-CHLOROPHENOL	4/6/92	180	ug/L	Y	Y	J	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	591-78-6	2-HEXANONE	4/6/92	10000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	91-57-6	2-METHYLNAPHTHALENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	95-48-7	2-METHYLPHENOL	4/6/92	11	ug/L	Y	N	UJ	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	88-74-4	2-NITROANILINE	4/6/92	56	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	88-75-5	2-NITROPHENOL	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	99-09-2	3-NITROANILINE	4/6/92	56	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/6/92	56	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	59-50-7	4-CHLORO-3-METHYLPHENOL	4/6/92	4	ug/L	Y	Y	J	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	106-47-8	4-CHLOROANILINE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	108-10-1	4-METHYL-2-PENTANONE	4/6/92	10000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	106-44-5	4-METHYLPHENOL	4/6/92	42	ug/L	Y	Y	J	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	100-01-6	4-NITROANILINE	4/6/92	56	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	100-02-7	4-NITROPHENOL	4/6/92	56	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	83-32-9	ACENAPHTHENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	208-96-8	ACENAPHTHYLENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	67-64-1	ACETONE	4/6/92	10000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7429-90-5	ALUMINUM	4/6/92	0.812	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	120-12-7	ANTHRACENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-36-0	ANTIMONY	4/6/92	0.28	mg/L	Y	N	UJ	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-38-2	ARSENIC	4/6/92	0.0343	mg/L	Y	Y	J	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-39-3	BARIUM	4/6/92	0.262	mg/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	71-43-2	BENZENE	4/6/92	54000	ug/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	56-55-3	BENZO(A)ANTHRACENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	50-32-8	BENZO(A)PYRENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	205-99-2	BENZO(B)FLUORANTHENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	191-24-2	BENZO(G,H,I)PERYLENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	207-08-9	BENZO(K)FLUORANTHENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	65-85-0	BENZOIC ACID	4/6/92	80	ug/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	100-51-6	BENZYL ALCOHOL	4/6/92	11	ug/L	Y	N	UJ	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-41-7	BERYLLIUM	4/6/92	0.02	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/6/92	11	ug/L	Y	N	UJ	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	75-27-4	BROMODICHLOROMETHANE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	75-25-2	BROMOFORM	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	74-83-9	BROMOMETHANE	4/6/92	10000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	85-68-7	BUTYLBENZYL PHTHALATE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-43-9	CADMIUM	4/6/92	0.04	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-70-2	CALCIUM	4/6/92	1490	mg/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	75-15-0	CARBON DISULFIDE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	56-23-5	CARBON TETRACHLORIDE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	108-90-7	CHLOROBENZENE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	124-48-1	CHLORODIBROMOMETHANE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	75-00-3	CHLOROETHANE	4/6/92	10000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	67-66-3	CHLOROFORM	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	74-87-3	CHLOROMETHANE	4/6/92	10000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-47-3	CHROMIUM	4/6/92	0.06	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	218-01-9	CHRYSENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-48-4	COBALT	4/6/92	0.06	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-50-8	COPPER	4/6/92	0.04	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	57-12-5	CYANIDE	4/6/92	0.01	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	53-70-3	DIBENZO(A,H)ANTHRACENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	132-64-9	DIBENZOFURAN	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	84-66-2	DIETHYL PHTHALATE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	131-11-3	DIMETHYL PHTHALATE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	84-74-2	DI-N-BUTYL PHTHALATE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	117-84-0	DI-N-OCTYL PHTHALATE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	100-41-4	ETHYLBENZENE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	206-44-0	FLUORANTHENE	4/6/92	2	ug/L	Y	Y	J	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	86-73-7	FLUORENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	118-74-1	HEXACHLOROBENZENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	87-68-3	HEXACHLOROBUTADIENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	67-72-1	HEXACHLOROETHANE	4/6/92	11	ug/L	Y	N	UJ	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	193-39-5	INDENO(1,2,3-CD)PYRENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7439-89-6	IRON	4/6/92	0.0882	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	78-59-1	ISOPHORONE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7439-92-1	LEAD	4/6/92	0.0117	mg/L	Y	Y	J	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7439-95-4	MAGNESIUM	4/6/92	230	mg/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7439-96-5	MANGANESE	4/6/92	0.372	mg/L	Y	Y	J	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7439-97-6	MERCURY	4/6/92	0.0002	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	75-09-2	METHYLENE CHLORIDE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	91-20-3	NAPHTHALENE	4/6/92	10	ug/L	Y	Y	J	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-02-0	NICKEL	4/6/92	0.2	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	98-95-3	NITROBENZENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/6/92	11	ug/L	Y	N	UJ	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	86-30-6	N-NITROSODIPHENYLAMINE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	87-86-5	PENTACHLOROPHENOL	4/6/92	56	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	85-01-8	PHENANTHRENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	108-95-2	PHENOL	4/6/92	310	ug/L	Y	Y	J	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-09-7	POTASSIUM	4/6/92	116	mg/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	129-00-0	PYRENE	4/6/92	11	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7782-49-2	SELENIUM	4/6/92	0.02	mg/L	Y	N	R	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-22-4	SILVER	4/6/92	0.06	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-23-5	SODIUM	4/6/92	22200	mg/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	100-42-5	STYRENE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	127-18-4	TETRACHLOROETHENE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-28-0	THALLIUM	4/6/92	0.02	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	108-88-3	TOLUENE	4/6/92	80000	ug/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	79-01-6	TRICHLOROETHENE	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-62-2	VANADIUM	4/6/92	0.16	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	75-01-4	VINYL CHLORIDE	4/6/92	10000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	1330-20-7	XYLENES, TOTAL	4/6/92	5000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9253	7440-66-6	ZINC	4/6/92	0.06	mg/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	71-55-6	1,1,1-TRICHLOROETHANE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/14/92	25000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	79-00-5	1,1,2-TRICHLOROETHANE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	75-34-3	1,1-DICHLOROETHANE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	75-35-4	1,1-DICHLOROETHENE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	107-06-2	1,2-DICHLOROETHANE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	78-87-5	1,2-DICHLOROPROPANE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	541-73-1	1,3-DICHLOROBENZENE	10/14/92	13000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	106-46-7	1,4-DICHLOROBENZENE	10/14/92	28000	ug/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	110-75-8	2-CHLOROETHYL VINYL ETHER	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	71-43-2	BENZENE	10/14/92	55000	ug/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	75-27-4	BROMODICHLOROMETHANE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	75-25-2	BROMOFORM	10/14/92	25000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	74-83-9	BROMOMETHANE	10/14/92	25000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	56-23-5	CARBON TETRACHLORIDE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	108-90-7	CHLOROBENZENE	10/14/92	87000	ug/L	Y	Y		1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	124-48-1	CHLORODIBROMOMETHANE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	75-00-3	CHLOROETHANE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	67-66-3	CHLOROFORM	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	74-87-3	CHLOROMETHANE	10/14/92	25000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	75-71-8	DICHLORODIFLUOROMETHANE	10/14/92	25000	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	100-41-4	ETHYLBENZENE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	75-09-2	METHYLENE CHLORIDE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	127-18-4	TETRACHLOROETHENE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	108-88-3	TOLUENE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	79-01-6	TRICHLOROETHENE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	75-69-4	TRICHLOROFLUOROMETHANE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	75-01-4	VINYL CHLORIDE	10/14/92	2500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02I	WA9254	1330-20-7	XYLENES, TOTAL	10/14/92	7500	ug/L	Y	N	U	1117876.4	923056.8	30	40	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	71-55-6	1,1,1-TRICHLOROETHANE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	79-00-5	1,1,2-TRICHLOROETHANE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	75-34-3	1,1-DICHLOROETHANE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	75-35-4	1,1-DICHLOROETHENE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	120-82-1	1,2,4-TRICHLOROBENZENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	95-50-1	1,2-DICHLOROBENZENE	4/6/92	6600	ug/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	107-06-2	1,2-DICHLOROETHANE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	78-87-5	1,2-DICHLOROPROPANE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	541-73-1	1,3-DICHLOROBENZENE	4/6/92	480	ug/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	106-46-7	1,4-DICHLOROBENZENE	4/6/92	6700	ug/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/6/92	10	ug/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	95-95-4	2,4,5-TRICHLOROPHENOL	4/6/92	51	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	88-06-2	2,4,6-TRICHLOROPHENOL	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	120-83-2	2,4-DICHLOROPHENOL	4/6/92	23	ug/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	105-67-9	2,4-DIMETHYLPHENOL	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	51-28-5	2,4-DINITROPHENOL	4/6/92	51	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	121-14-2	2,4-DINITROTOLUENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	606-20-2	2,6-DINITROTOLUENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	78-93-3	2-BUTANONE	4/6/92	5000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	91-58-7	2-CHLORONAPHTHALENE	4/6/92	8	ug/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	95-57-8	2-CHLOROPHENOL	4/6/92	41	ug/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	591-78-6	2-HEXANONE	4/6/92	5000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	91-57-6	2-METHYLNAPHTHALENE	4/6/92	6	ug/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	95-48-7	2-METHYLPHENOL	4/6/92	10	ug/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	88-74-4	2-NITROANILINE	4/6/92	51	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	88-75-5	2-NITROPHENOL	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	99-09-2	3-NITROANILINE	4/6/92	51	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/6/92	51	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	59-50-7	4-CHLORO-3-METHYLPHENOL	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	106-47-8	4-CHLOROANILINE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	108-10-1	4-METHYL-2-PENTANONE	4/6/92	5000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	106-44-5	4-METHYLPHENOL	4/6/92	62	ug/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	100-01-6	4-NITROANILINE	4/6/92	51	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	100-02-7	4-NITROPHENOL	4/6/92	51	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	83-32-9	ACENAPHTHENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	208-96-8	ACENAPHTHYLENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	67-64-1	ACETONE	4/6/92	5000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7429-90-5	ALUMINUM	4/6/92	0.826	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7429-90-5	ALUMINUM	4/6/92	0.692	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	120-12-7	ANTHRACENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-36-0	ANTIMONY	4/6/92	0.0232	mg/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-36-0	ANTIMONY	4/6/92	0.278	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-38-2	ARSENIC	4/6/92	0.01	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-38-2	ARSENIC	4/6/92	0.0178	mg/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-39-3	BARIUM	4/6/92	0.325	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-39-3	BARIUM	4/6/92	0.11	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	71-43-2	BENZENE	4/6/92	30000	ug/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	56-55-3	BENZO(A)ANTHRACENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	50-32-8	BENZO(A)PYRENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	205-99-2	BENZO(B)FLUORANTHENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	191-24-2	BENZO(G,H,I)PERYLENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	207-08-9	BENZO(K)FLUORANTHENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	65-85-0	BENZOIC ACID	4/6/92	53	ug/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	100-51-6	BENZYL ALCOHOL	4/6/92	10	ug/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-41-7	BERYLLIUM	4/6/92	0.0283	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-41-7	BERYLLIUM	4/6/92	0.001	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/6/92	10	ug/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	75-27-4	BROMODICHLOROMETHANE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	75-25-2	BROMOFORM	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	74-83-9	BROMOMETHANE	4/6/92	5000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	85-68-7	BUTYLBENZYL PHTHALATE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-43-9	CADMIUM	4/6/92	0.002	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-43-9	CADMIUM	4/6/92	0.02	mg/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-70-2	CALCIUM	4/6/92	245	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-70-2	CALCIUM	4/6/92	0.19	mg/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	75-15-0	CARBON DISULFIDE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	56-23-5	CARBON TETRACHLORIDE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	108-90-7	CHLOROBENZENE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	124-48-1	CHLORODIBROMOMETHANE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	75-00-3	CHLOROETHANE	4/6/92	5000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	67-66-3	CHLOROFORM	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	74-87-3	CHLOROMETHANE	4/6/92	5000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-47-3	CHROMIUM	4/6/92	0.0352	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-47-3	CHROMIUM	4/6/92	0.0044	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	218-01-9	CHRYSENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-48-4	COBALT	4/6/92	0.003	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-48-4	COBALT	4/6/92	0.03	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-50-8	COPPER	4/6/92	0.02	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-50-8	COPPER	4/6/92	0.01	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	57-12-5	CYANIDE	4/6/92	0.0323	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	53-70-3	DIBENZO(A,H)ANTHRACENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	132-64-9	DIBENZOFURAN	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	84-66-2	DIETHYL PHTHALATE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	131-11-3	DIMETHYL PHTHALATE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	84-74-2	DI-N-BUTYL PHTHALATE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	117-84-0	DI-N-OCTYL PHTHALATE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	100-41-4	ETHYLBENZENE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	206-44-0	FLUORANTHENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	86-73-7	FLUORENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	118-74-1	HEXACHLOROBENZENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	87-68-3	HEXACHLOROBUTADIENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	67-72-1	HEXACHLOROETHANE	4/6/92	10	ug/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	193-39-5	INDENO(1,2,3-CD)PYRENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7439-89-6	IRON	4/6/92	0.98	mg/L	Y	N	R	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7439-89-6	IRON	4/6/92	20.5	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	78-59-1	ISOPHORONE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7439-92-1	LEAD	4/6/92	0.01	mg/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7439-92-1	LEAD	4/6/92	0.0088	mg/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7439-95-4	MAGNESIUM	4/6/92	13.8	mg/L	Y	N	R	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7439-95-4	MAGNESIUM	4/6/92	131	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7439-96-5	MANGANESE	4/6/92	1.94	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7439-96-5	MANGANESE	4/6/92	0.0396	mg/L	Y	N	R	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7439-97-6	MERCURY	4/6/92	0.00048	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7439-97-6	MERCURY	4/6/92	0.0002	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	75-09-2	METHYLENE CHLORIDE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	91-20-3	NAPHTHALENE	4/6/92	140	ug/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-02-0	NICKEL	4/6/92	0.1	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-02-0	NICKEL	4/6/92	0.0118	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	98-95-3	NITROBENZENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/6/92	10	ug/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	86-30-6	N-NITROSODIPHENYLAMINE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	87-86-5	PENTACHLOROPHENOL	4/6/92	51	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	85-01-8	PHENANTHRENE	4/6/92	2	ug/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	108-95-2	PHENOL	4/6/92	200	ug/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-09-7	POTASSIUM	4/6/92	182	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-09-7	POTASSIUM	4/6/92	101	mg/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	129-00-0	PYRENE	4/6/92	10	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7782-49-2	SELENIUM	4/6/92	0.02	mg/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7782-49-2	SELENIUM	4/6/92	0.02	mg/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-22-4	SILVER	4/6/92	0.0944	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-22-4	SILVER	4/6/92	0.003	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-23-5	SODIUM	4/6/92	1420	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-23-5	SODIUM	4/6/92	0.27	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	100-42-5	STYRENE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	127-18-4	TETRACHLOROETHENE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-28-0	THALLIUM	4/6/92	0.02	mg/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-28-0	THALLIUM	4/6/92	0.002	mg/L	Y	N	UJ	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	108-88-3	TOLUENE	4/6/92	27000	ug/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	79-01-6	TRICHLOROETHENE	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-62-2	VANADIUM	4/6/92	0.0239	mg/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-62-2	VANADIUM	4/6/92	0.132	mg/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	75-01-4	VINYL CHLORIDE	4/6/92	5000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	1330-20-7	XYLENES, TOTAL	4/6/92	2500	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9255F	7440-66-6	ZINC	4/6/92	0.0878	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	WATER	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9255	7440-66-6	ZINC	4/6/92	0.0182	mg/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	Water	METALS
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	71-55-6	1,1,1-TRICHLOROETHANE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	79-00-5	1,1,2-TRICHLOROETHANE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	75-34-3	1,1-DICHLOROETHANE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	75-35-4	1,1-DICHLOROETHENE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	107-06-2	1,2-DICHLOROETHANE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	78-87-5	1,2-DICHLOROPROPANE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	541-73-1	1,3-DICHLOROBENZENE	10/14/92	5000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	106-46-7	1,4-DICHLOROBENZENE	10/14/92	12000	ug/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	E601/602
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	110-75-8	2-CHLOROETHYL VINYL ETHER	10/14/92	10000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	71-43-2	BENZENE	10/14/92	23000	ug/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	75-27-4	BROMODICHLOROMETHANE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	75-25-2	BROMOFORM	10/14/92	10000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	74-83-9	BROMOMETHANE	10/14/92	10000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	56-23-5	CARBON TETRACHLORIDE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	108-90-7	CHLOROBENZENE	10/14/92	25000	ug/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	124-48-1	CHLORODIBROMOMETHANE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	75-00-3	CHLOROETHANE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	67-66-3	CHLOROFORM	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	74-87-3	CHLOROMETHANE	10/14/92	10000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	75-71-8	DICHLORODIFLUOROMETHANE	10/14/92	10000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	100-41-4	ETHYLBENZENE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	75-09-2	METHYLENE CHLORIDE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	127-18-4	TETRACHLOROETHENE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	108-88-3	TOLUENE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	79-01-6	TRICHLOROETHENE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	75-69-4	TRICHLOROFLUOROMETHANE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	75-01-4	VINYL CHLORIDE	10/14/92	1000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9256	1330-20-7	XYLENES, TOTAL	10/14/92	3000	ug/L	Y	N	U	1117873.6	923048.9	8	18	MW	WATER	Water	VOA
Lakeshore Area	Ground Water	WA-WA-02S	WA9257	7439-97-6	MERCURY	10/28/97	0.0006	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	Water	245.1
Lakeshore Area	Ground Water	WA-WA-02S	WA-0000-01	7664-41-7	AMMONIA	2/27/07	20	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	WATER	E350.1
Lakeshore Area	Ground Water	WA-WA-02S	WA-0000-01	CBOD	NACEOUS BIOCHEMICAL OXYGEN D	2/27/07	84	mg/L	Y	Y		1117873.6	923048.9	8	18	MW	WATER	WATER	SM5210B
Lakeshore Area	Ground Water	WA-WA-02S	WA-0000-01	7727-37-9	NITROGEN	2/27/07	26	mg/L	Y	Y	J	1117873.6	923048.9	8	18	MW	WATER	WATER	E351.2
Lakeshore Area	Soil	WA-LS-1	WA9100	71-55-6	1,1,1-TRICHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	79-00-5	1,1,2-TRICHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	75-34-3	1,1-DICHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	75-35-4	1,1-DICHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	35822-46-9	1,2,3,4,6,7,8-HPCDD	4/5/99	105	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	67562-39-4	1,2,3,4,6,7,8-HPCDF	4/5/99	13.5	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	55673-89-7	1,2,3,4,7,8,9-HPCDF	4/5/99	2.38	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	39227-28-6	1,2,3,4,7,8-HXCDD	4/5/99	1.85	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	70648-26-9	1,2,3,4,7,8-HXCDF	4/5/99	8.81	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	57653-85-7	1,2,3,6,7,8-HXCDD	4/5/99	4.93	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	57117-44-9	1,2,3,6,7,8-HXCDF	4/5/99	1.9	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	19408-74-3	1,2,3,7,8,9-HXCDD	4/5/99	2.29	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	72918-21-9	1,2,3,7,8,9-HXCDF	4/5/99	0.21	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	40321-76-4	1,2,3,7,8-PECDD	4/5/99	1.86	ng/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	57117-41-6	1,2,3,7,8-PECDF	4/5/99	8.46	ng/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	120-82-1	1,2,4-TRICHLOROBENZENE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	95-50-1	1,2-DICHLOROBENZENE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	107-06-2	1,2-DICHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	78-87-5	1,2-DICHLOROPROPANE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	541-73-1	1,3-DICHLOROBENZENE	4/5/99	360	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	106-46-7	1,4-DICHLOROBENZENE	4/5/99	360	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	60851-34-5	2,3,4,6,7,8-HXCDF	4/5/99	0.46	ng/kg	Y	N	UJ	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	57117-31-4	2,3,4,7,8-PECDF	4/5/99	4.09	ng/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	1746-01-6	2,3,7,8-TCDD	4/5/99	0.27	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	51207-31-9	2,3,7,8-TCDF	4/5/99	20.8	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	95-95-4	2,4,5-TRICHLOROPHENOL	4/5/99	900	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	88-06-2	2,4,6-TRICHLOROPHENOL	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	120-83-2	2,4-DICHLOROPHENOL	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	105-67-9	2,4-DIMETHYLPHENOL	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	51-28-5	2,4-DINITROPHENOL	4/5/99	900	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	121-14-2	2,4-DINITROTOLUENE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	606-20-2	2,6-DINITROTOLUENE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	78-93-3	2-BUTANONE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-1	WA9100	91-58-7	2-CHLORONAPHTHALENE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	95-57-8	2-CHLOROPHENOL	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	591-78-6	2-HEXANONE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	91-57-6	2-METHYLNAPHTHALENE	4/5/99	360	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	95-48-7	2-METHYLPHENOL	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	88-74-4	2-NITROANILINE	4/5/99	900	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	88-75-5	2-NITROPHENOL	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	91-94-1	3,3'-DICHLOROBENZIDINE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	99-09-2	3-NITROANILINE	4/5/99	900	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	72-54-8	4,4'-DDD	4/5/99	3.6	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	72-55-9	4,4'-DDE	4/5/99	0.93	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	50-29-3	4,4'-DDT	4/5/99	3.6	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/5/99	900	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	59-50-7	4-CHLORO-3-METHYLPHENOL	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	106-47-8	4-CHLOROANILINE	4/5/99	360	ug/Kg	Y	N	UJ	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	108-10-1	4-METHYL-2-PENTANONE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	106-44-5	4-METHYLPHENOL	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	100-01-6	4-NITROANILINE	4/5/99	900	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	100-02-7	4-NITROPHENOL	4/5/99	900	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	83-32-9	ACENAPHTHENE	4/5/99	360	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	208-96-8	ACENAPHTHYLENE	4/5/99	360	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	67-64-1	ACETONE	4/5/99	2	ug/Kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	309-00-2	ALDRIN	4/5/99	1.8	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	319-84-6	ALPHA-BHC	4/5/99	4.8	ug/Kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	5103-71-9	ALPHA-CHLORDANE	4/5/99	1.8	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	7429-90-5	ALUMINUM	4/5/99	7340	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	120-12-7	ANTHRACENE	4/5/99	360	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-36-0	ANTIMONY	4/5/99	0.28	mg/kg	Y	N	UJ	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	12674-11-2	AROCLOR-1016	4/5/99	18	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-1	WA9100	11104-28-2	AROCLOR-1221	4/5/99	18	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-1	WA9100	11141-16-5	AROCLOR-1232	4/5/99	18	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-1	WA9100	53469-21-9	AROCLOR-1242	4/5/99	18	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-1	WA9100	12672-29-6	AROCLOR-1248	4/5/99	18	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-1	WA9100	11097-69-1	AROCLOR-1254	4/5/99	18	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-1	WA9100	11096-82-5	AROCLOR-1260	4/5/99	29	ug/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-38-2	ARSENIC	4/5/99	4.5	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-39-3	BARIUM	4/5/99	25.2	mg/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	71-43-2	BENZENE	4/5/99	11	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	56-55-3	BENZO(A)ANTHRACENE	4/5/99	54	ug/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	50-32-8	BENZO(A)PYRENE	4/5/99	51	ug/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	205-99-2	BENZO(B)FLUORANTHENE	4/5/99	89	ug/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	191-24-2	BENZO(G,H,I)PERYLENE	4/5/99	360	ug/kg	Y	N	UJ	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	207-08-9	BENZO(K)FLUORANTHENE	4/5/99	360	ug/kg	Y	N	UJ	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-41-7	BERYLLIUM	4/5/99	0.51	mg/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	319-85-7	BETA-BHC	4/5/99	1.9	ug/Kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	75-27-4	BROMODICHLOROMETHANE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	75-25-2	BROMOFORM	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	74-83-9	BROMOMETHANE	4/5/99	11	ug/Kg	Y	N	UJ	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	85-68-7	BUTYLBENZYL PHTHALATE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-43-9	CADMIUM	4/5/99	0.37	mg/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-70-2	CALCIUM	4/5/99	116000	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	86-74-8	CARBAZOLE	4/5/99	360	ug/Kg	Y	N	UJ	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	75-15-0	CARBON DISULFIDE	4/5/99	11	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	56-23-5	CARBON TETRACHLORIDE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	108-90-7	CHLOROBENZENE	4/5/99	11	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	124-48-1	CHLORODIBROMOMETHANE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	75-00-3	CHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	67-66-3	CHLOROFORM	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	74-87-3	CHLOROMETHANE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-47-3	CHROMIUM	4/5/99	20.9	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	218-01-9	CHRYSENE	4/5/99	70	ug/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	156-59-2	CIS-1,2-DICHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-1	WA9100	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-48-4	COBALT	4/5/99	6	mg/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-50-8	COPPER	4/5/99	21.3	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	57-12-5	CYANIDE	4/5/99	0.54	mg/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	335.2M
Lakeshore Area	Soil	WA-LS-1	WA9100	319-86-8	DELTA-BHC	4/5/99	1.8	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	53-70-3	DIBENZO(A,H)ANTHRACENE	4/5/99	360	ug/kg	Y	N	UJ	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	132-64-9	DIBENZOFURAN	4/5/99	360	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	60-57-1	DIELDRIN	4/5/99	0.21	ug/Kg	Y	Y	JN	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	84-66-2	DIETHYL PHTHALATE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	131-11-3	DIMETHYL PHTHALATE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	84-74-2	DI-N-BUTYL PHTHALATE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	117-84-0	DI-N-OCTYL PHTHALATE	4/5/99	360	ug/Kg	Y	N	UJ	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	959-98-8	ENDOSULFAN I	4/5/99	0.4	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	33213-65-9	ENDOSULFAN II	4/5/99	2.1	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	1031-07-8	ENDOSULFAN SULFATE	4/5/99	0.46	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	72-20-8	ENDRIN	4/5/99	3.6	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	7421-93-4	ENDRIN ALDEHYDE	4/5/99	2.1	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	53494-70-5	ENDRIN KETONE	4/5/99	0.84	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	100-41-4	ETHYLBENZENE	4/5/99	11	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	206-44-0	FLUORANTHENE	4/5/99	110	ug/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	86-73-7	FLUORENE	4/5/99	360	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	58-89-9	GAMMA-BHC (LINDANE)	4/5/99	1.8	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	5566-34-7	GAMMA-CHLORDANE	4/5/99	0.98	ug/Kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	76-44-8	HEPTACHLOR	4/5/99	1.8	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	1024-57-3	HEPTACHLOR EPOXIDE	4/5/99	1.8	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	118-74-1	HEXACHLOROBENZENE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	87-68-3	HEXACHLOROBUTADIENE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/5/99	360	ug/Kg	Y	N	UJ	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	67-72-1	HEXACHLOROETHANE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	193-39-5	INDENO(1,2,3-CD)PYRENE	4/5/99	360	ug/kg	Y	N	UJ	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	7439-89-6	IRON	4/5/99	14900	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	78-59-1	ISOPHORONE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	7439-92-1	LEAD	4/5/99	13.7	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	7439-95-4	MAGNESIUM	4/5/99	51500	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	7439-96-5	MANGANESE	4/5/99	349	mg/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	7439-97-6	MERCURY	4/5/99	0.24	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	245.1
Lakeshore Area	Soil	WA-LS-1	WA9100	72-43-5	METHOXYCHLOR	4/5/99	0.69	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-1	WA9100	75-09-2	METHYLENE CHLORIDE	4/5/99	11	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	91-20-3	NAPHTHALENE	4/5/99	360	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-02-0	NICKEL	4/5/99	16.1	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	98-95-3	NITROBENZENE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	86-30-6	N-NITROSODIPHENYLAMINE	4/5/99	360	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	3268-87-9	OCDD	4/5/99	936	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	39001-02-0	OCDF	4/5/99	73	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	87-86-5	PENTACHLOROPHENOL	4/5/99	900	ug/Kg	Y	N	R	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	85-01-8	PHENANTHRENE	4/5/99	60	ug/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	108-95-2	PHENOL	4/5/99	360	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-09-7	POTASSIUM	4/5/99	2060	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	129-00-0	PYRENE	4/5/99	120	ug/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-1	WA9100	7782-49-2	SELENIUM	4/5/99	0.78	mg/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-22-4	SILVER	4/5/99	0.26	mg/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-23-5	SODIUM	4/5/99	263	mg/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	100-42-5	STYRENE	4/5/99	11	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	127-18-4	TETRACHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-28-0	THALLIUM	4/5/99	1.2	mg/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	108-88-3	TOLUENE	4/5/99	11	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	37871-00-4	TOTAL HPCDD	4/5/99	168	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	38998-75-3	TOTAL HPCDF	4/5/99	46.1	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	34465-46-8	TOTAL HXCDD	4/5/99	25.6	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	55684-94-1	TOTAL HXCDF	4/5/99	21.9	ng/kg	Y	Y	J	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	36088-22-9	TOTAL PECDD	4/5/99	19.06	ng/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	30402-15-4	TOTAL PECDF	4/5/99	28.3	ng/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	TSO	TOTAL SOLIDS	4/5/99	92.9	%	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	2540-G
Lakeshore Area	Soil	WA-LS-1	WA9100	41903-57-5	TOTAL TCDD	4/5/99	13.5	ng/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	55722-27-5	Total TCDF	4/5/99	55.05	ng/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-1	WA9100	8001-35-2	TOXAPHENE	4/5/99	180	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-3

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-1	WA9100	156-60-5	TRANS-1,2-DICHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	79-01-6	TRICHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-62-2	VANADIUM	4/5/99	15.7	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-1	WA9100	75-01-4	VINYL CHLORIDE	4/5/99	11	ug/Kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	1330-20-7	XYLENES, TOTAL	4/5/99	11	ug/kg	Y	N	U	1117882.5	923128.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-1	WA9100	7440-66-6	ZINC	4/5/99	29.8	mg/kg	Y	Y		1117882.5	923128.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	71-55-6	1,1,1-TRICHLOROETHANE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	79-00-5	1,1,2-TRICHLOROETHANE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	75-34-3	1,1-DICHLOROETHANE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	75-35-4	1,1-DICHLOROETHENE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	120-82-1	1,2,4-TRICHLOROBENZENE	4/5/99	820	ug/Kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	95-50-1	1,2-DICHLOROBENZENE	4/5/99	910	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	107-06-2	1,2-DICHLOROETHANE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	78-87-5	1,2-DICHLOROPROPANE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	541-73-1	1,3-DICHLOROBENZENE	4/5/99	1300	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	106-46-7	1,4-DICHLOROBENZENE	4/5/99	640	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	95-95-4	2,4,5-TRICHLOROPHENOL	4/5/99	3200	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	88-06-2	2,4,6-TRICHLOROPHENOL	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	120-83-2	2,4-DICHLOROPHENOL	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	105-67-9	2,4-DIMETHYLPHENOL	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	51-28-5	2,4-DINITROPHENOL	4/5/99	3200	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	121-14-2	2,4-DINITROTOLUENE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	606-20-2	2,6-DINITROTOLUENE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	78-93-3	2-BUTANONE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	91-58-7	2-CHLORONAPHTHALENE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	95-57-8	2-CHLOROPHENOL	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	591-78-6	2-HEXANONE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	91-57-6	2-METHYLNAPHTHALENE	4/5/99	1300	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	95-48-7	2-METHYLPHENOL	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	88-74-4	2-NITROANILINE	4/5/99	3200	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	88-75-5	2-NITROPHENOL	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	91-94-1	3,3'-DICHLOROBENZIDINE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	99-09-2	3-NITROANILINE	4/5/99	3200	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	72-54-8	4,4'-DDD	4/5/99	210	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	72-55-9	4,4'-DDE	4/5/99	18	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	50-29-3	4,4'-DDT	4/5/99	210	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/5/99	3200	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	59-50-7	4-CHLORO-3-METHYLPHENOL	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	106-47-8	4-CHLOROANILINE	4/5/99	1300	ug/Kg	Y	N	UJ	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	108-10-1	4-METHYL-2-PENTANONE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	106-44-5	4-METHYLPHENOL	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	100-01-6	4-NITROANILINE	4/5/99	3200	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	100-02-7	4-NITROPHENOL	4/5/99	3200	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	83-32-9	ACENAPHTHENE	4/5/99	1300	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	208-96-8	ACENAPHTHYLENE	4/5/99	1300	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	67-64-1	ACETONE	4/5/99	3	ug/Kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	309-00-2	ALDRIN	4/5/99	110	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	319-84-6	ALPHA-BHC	4/5/99	110	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	5103-71-9	ALPHA-CHLORDANE	4/5/99	110	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	7429-90-5	ALUMINUM	4/5/99	6350	mg/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	120-12-7	ANTHRACENE	4/5/99	240	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-36-0	ANTIMONY	4/5/99	0.33	mg/kg	Y	N	UJ	1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	12674-11-2	AROCLOR-1016	4/5/99	430	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-2	WA9101	11104-28-2	AROCLOR-1221	4/5/99	430	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-2	WA9101	11141-16-5	AROCLOR-1232	4/5/99	430	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-2	WA9101	53469-21-9	AROCLOR-1242	4/5/99	430	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-2	WA9101	12672-29-6	AROCLOR-1248	4/5/99	430	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-2	WA9101	11097-69-1	AROCLOR-1254	4/5/99	430	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-2	WA9101	11096-82-5	AROCLOR-1260	4/5/99	3700	ug/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-38-2	ARSENIC	4/5/99	9.7	mg/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-39-3	BARIUM	4/5/99	195	mg/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-2	WA9101	71-43-2	BENZENE	4/5/99	13	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	56-55-3	BENZO(A)ANTHRACENE	4/5/99	900	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	50-32-8	BENZO(A)PYRENE	4/5/99	880	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	205-99-2	BENZO(B)FLUORANTHENE	4/5/99	1400	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	191-24-2	BENZO(G,H,I)PERYLENE	4/5/99	590	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	207-08-9	BENZO(K)FLUORANTHENE	4/5/99	530	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-41-7	BERYLLIUM	4/5/99	0.49	mg/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	319-85-7	BETA-BHC	4/5/99	16	ug/Kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	75-27-4	BROMODICHLOROMETHANE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	75-25-2	BROMOFORM	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	74-83-9	BROMOMETHANE	4/5/99	13	ug/Kg	Y	N	UJ	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	85-68-7	BUTYLBENZYL PHTHALATE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-43-9	CADMIUM	4/5/99	0.7	mg/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-70-2	CALCIUM	4/5/99	113000	mg/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	86-74-8	CARBAZOLE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	75-15-0	CARBON DISULFIDE	4/5/99	13	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	56-23-5	CARBON TETRACHLORIDE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	108-90-7	CHLOROBENZENE	4/5/99	13	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	124-48-1	CHLORODIBROMOMETHANE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	75-00-3	CHLOROETHANE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	67-66-3	CHLOROFORM	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	74-87-3	CHLOROMETHANE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-47-3	CHROMIUM	4/5/99	41.3	mg/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	218-01-9	CHRYSENE	4/5/99	1400	ug/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	156-59-2	CIS-1,2-DICHLOROETHENE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-48-4	COBALT	4/5/99	9.4	mg/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-50-8	COPPER	4/5/99	37.2	mg/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	57-12-5	CYANIDE	4/5/99	0.63	mg/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	335.2M
Lakeshore Area	Soil	WA-LS-2	WA9101	319-86-8	DELTA-BHC	4/5/99	110	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	53-70-3	DIBENZO(A,H)ANTHRACENE	4/5/99	140	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	132-64-9	DIBENZOFURAN	4/5/99	1300	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	60-57-1	DIELDRIN	4/5/99	6.1	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	84-66-2	DIETHYL PHTHALATE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	131-11-3	DIMETHYL PHTHALATE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	84-74-2	DI-N-BUTYL PHTHALATE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	117-84-0	DI-N-OCTYL PHTHALATE	4/5/99	1300	ug/Kg	Y	N	UJ	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	959-98-8	ENDOSULFAN I	4/5/99	25	ug/Kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	33213-65-9	ENDOSULFAN II	4/5/99	110	ug/Kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	1031-07-8	ENDOSULFAN SULFATE	4/5/99	210	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	72-20-8	ENDRIN	4/5/99	210	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	7421-93-4	ENDRIN ALDEHYDE	4/5/99	110	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	53494-70-5	ENDRIN KETONE	4/5/99	20	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	100-41-4	ETHYLBENZENE	4/5/99	13	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	206-44-0	FLUORANTHENE	4/5/99	2700	ug/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	86-73-7	FLUORENE	4/5/99	1300	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	58-89-9	GAMMA-BHC (LINDANE)	4/5/99	110	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	5566-34-7	GAMMA-CHLORDANE	4/5/99	20	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	76-44-8	HEPTACHLOR	4/5/99	110	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	1024-57-3	HEPTACHLOR EPOXIDE	4/5/99	12	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	118-74-1	HEXACHLOROBENZENE	4/5/99	200	ug/Kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	87-68-3	HEXACHLOROBUTADIENE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/5/99	1300	ug/Kg	Y	N	UJ	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	67-72-1	HEXACHLOROETHANE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	193-39-5	INDENO(1,2,3-CD)PYRENE	4/5/99	420	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	7439-89-6	IRON	4/5/99	18200	mg/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	78-59-1	ISOPHORONE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	7439-92-1	LEAD	4/5/99	79.6	mg/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	7439-95-4	MAGNESIUM	4/5/99	29100	mg/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	7439-96-5	MANGANESE	4/5/99	377	mg/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	7439-97-6	MERCURY	4/5/99	1.3	mg/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	245.1
Lakeshore Area	Soil	WA-LS-2	WA9101	72-43-5	METHOXYCHLOR	4/5/99	73	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	75-09-2	METHYLENE CHLORIDE	4/5/99	3	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	91-20-3	NAPHTHALENE	4/5/99	130	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-02-0	NICKEL	4/5/99	33	mg/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	98-95-3	NITROBENZENE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	86-30-6	N-NITROSODIPHENYLAMINE	4/5/99	1300	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	87-86-5	PENTACHLOROPHENOL	4/5/99	3200	ug/Kg	Y	N	UJ	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	85-01-8	PHENANTHRENE	4/5/99	1200	ug/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	108-95-2	PHENOL	4/5/99	1300	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-09-7	POTASSIUM	4/5/99	1240	mg/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	129-00-0	PYRENE	4/5/99	3300	ug/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-2	WA9101	7782-49-2	SELENIUM	4/5/99	0.89	mg/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-22-4	SILVER	4/5/99	0.3	mg/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-23-5	SODIUM	4/5/99	344	mg/kg	Y	Y	J	1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	100-42-5	STYRENE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	127-18-4	TETRACHLOROETHENE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-28-0	THALLIUM	4/5/99	1.4	mg/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	108-88-3	TOLUENE	4/5/99	13	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	TSO	TOTAL SOLIDS	4/5/99	79.2	%	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	2540-G
Lakeshore Area	Soil	WA-LS-2	WA9101	8001-35-2	TOXAPHENE	4/5/99	11000	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-2	WA9101	156-60-5	TRANS-1,2-DICHLOROETHENE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	79-01-6	TRICHLOROETHENE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-62-2	VANADIUM	4/5/99	19	mg/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-2	WA9101	75-01-4	VINYL CHLORIDE	4/5/99	13	ug/Kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	1330-20-7	XYLENES, TOTAL	4/5/99	13	ug/kg	Y	N	U	1117823.5	923176	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-2	WA9101	7440-66-6	ZINC	4/5/99	125	mg/kg	Y	Y		1117823.5	923176	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	71-55-6	1,1,1-TRICHLOROETHANE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	79-00-5	1,1,2-TRICHLOROETHANE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	75-34-3	1,1-DICHLOROETHANE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	75-35-4	1,1-DICHLOROETHENE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	35822-46-9	1,2,3,4,6,7,8-HPCDD	4/5/99	245	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	67562-39-4	1,2,3,4,6,7,8-HPCDF	4/5/99	91.5	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	55673-89-7	1,2,3,4,7,8,9-HPCDF	4/5/99	33.4	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	39227-28-6	1,2,3,4,7,8-HXCDD	4/5/99	4.37	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	70648-26-9	1,2,3,4,7,8-HXCDF	4/5/99	131	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	57653-85-7	1,2,3,6,7,8-HXCDD	4/5/99	13.6	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	57117-44-9	1,2,3,6,7,8-HXCDF	4/5/99	26	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	19408-74-3	1,2,3,7,8,9-HXCDD	4/5/99	7.75	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	72918-21-9	1,2,3,7,8,9-HXCDF	4/5/99	2.92	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	40321-76-4	1,2,3,7,8-PECDD	4/5/99	5.18	ng/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	57117-41-6	1,2,3,7,8-PECDF	4/5/99	127	ng/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	120-82-1	1,2,4-TRICHLOROBENZENE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	95-50-1	1,2-DICHLOROBENZENE	4/5/99	9700	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	107-06-2	1,2-DICHLOROETHANE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	78-87-5	1,2-DICHLOROPROPANE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	541-73-1	1,3-DICHLOROBENZENE	4/5/99	9700	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	106-46-7	1,4-DICHLOROBENZENE	4/5/99	9700	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	60851-34-5	2,3,4,6,7,8-HXCDF	4/5/99	5.87	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	57117-31-4	2,3,4,7,8-PECDF	4/5/99	55.3	ng/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	1746-01-6	2,3,7,8-TCDD	4/5/99	1.15	ng/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	51207-31-9	2,3,7,8-TCDF	4/5/99	260	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	95-95-4	2,4,5-TRICHLOROPHENOL	4/5/99	24000	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	88-06-2	2,4,6-TRICHLOROPHENOL	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	120-83-2	2,4-DICHLOROPHENOL	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	105-67-9	2,4-DIMETHYLPHENOL	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	51-28-5	2,4-DINITROPHENOL	4/5/99	24000	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	121-14-2	2,4-DINITROTOLUENE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	606-20-2	2,6-DINITROTOLUENE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	78-93-3	2-BUTANONE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	91-58-7	2-CHLORONAPHTHALENE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	95-57-8	2-CHLOROPHENOL	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	591-78-6	2-HEXANONE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	91-57-6	2-METHYLNAPHTHALENE	4/5/99	2300	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	95-48-7	2-METHYLPHENOL	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	88-74-4	2-NITROANILINE	4/5/99	24000	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-3	WA9102	88-75-5	2-NITROPHENOL	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	91-94-1	3,3'-DICHLOROBENZIDINE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	99-09-2	3-NITROANILINE	4/5/99	24000	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	72-54-8	4,4'-DDD	4/5/99	190	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	72-55-9	4,4'-DDE	4/5/99	190	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	50-29-3	4,4'-DDT	4/5/99	190	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/5/99	24000	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	59-50-7	4-CHLORO-3-METHYLPHENOL	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	106-47-8	4-CHLOROANILINE	4/5/99	9700	ug/Kg	Y	N	UJ	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	108-10-1	4-METHYL-2-PENTANONE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	106-44-5	4-METHYLPHENOL	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	100-01-6	4-NITROANILINE	4/5/99	24000	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	100-02-7	4-NITROPHENOL	4/5/99	24000	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	83-32-9	ACENAPHTHENE	4/5/99	1400	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	208-96-8	ACENAPHTHYLENE	4/5/99	2100	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	67-64-1	ACETONE	4/5/99	3	ug/Kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	309-00-2	ALDRIN	4/5/99	6.1	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	319-84-6	ALPHA-BHC	4/5/99	16	ug/Kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	5103-71-9	ALPHA-CHLORDANE	4/5/99	3.9	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	7429-90-5	ALUMINUM	4/5/99	8790	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	120-12-7	ANTHRACENE	4/5/99	4800	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-36-0	ANTIMONY	4/5/99	0.3	mg/kg	Y	N	UJ	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	12674-11-2	AROCLOR-1016	4/5/99	98	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-3	WA9102	11104-28-2	AROCLOR-1221	4/5/99	98	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-3	WA9102	11141-16-5	AROCLOR-1232	4/5/99	98	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-3	WA9102	53469-21-9	AROCLOR-1242	4/5/99	98	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-3	WA9102	12672-29-6	AROCLOR-1248	4/5/99	98	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-3	WA9102	11097-69-1	AROCLOR-1254	4/5/99	98	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-3	WA9102	11096-82-5	AROCLOR-1260	4/5/99	460	ug/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-38-2	ARSENIC	4/5/99	7	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-39-3	BARIUM	4/5/99	61.3	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	71-43-2	BENZENE	4/5/99	12	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	56-55-3	BENZO(A)ANTHRACENE	4/5/99	11000	ug/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	50-32-8	BENZO(A)PYRENE	4/5/99	8900	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	205-99-2	BENZO(B)FLUORANTHENE	4/5/99	12000	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	191-24-2	BENZO(G,H,I)PERYLENE	4/5/99	3400	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	207-08-9	BENZO(K)FLUORANTHENE	4/5/99	4300	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-41-7	BERYLLIUM	4/5/99	0.51	mg/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	319-85-7	BETA-BHC	4/5/99	32	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	75-27-4	BROMODICHLOROMETHANE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	75-25-2	BROMOFORM	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	74-83-9	BROMOMETHANE	4/5/99	12	ug/Kg	Y	N	UJ	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	85-68-7	BUTYLBENZYL PHTHALATE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-43-9	CADMIUM	4/5/99	0.59	mg/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-70-2	CALCIUM	4/5/99	95200	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	86-74-8	CARBAZOLE	4/5/99	1700	ug/Kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	75-15-0	CARBON DISULFIDE	4/5/99	12	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	56-23-5	CARBON TETRACHLORIDE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	108-90-7	CHLOROBENZENE	4/5/99	12	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	124-48-1	CHLORODIBROMOMETHANE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	75-00-3	CHLOROETHANE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	67-66-3	CHLOROFORM	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	74-87-3	CHLOROMETHANE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-47-3	CHROMIUM	4/5/99	25.8	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	218-01-9	CHRYSENE	4/5/99	12000	ug/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	156-59-2	CIS-1,2-DICHLOROETHENE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-48-4	COBALT	4/5/99	6.5	mg/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-50-8	COPPER	4/5/99	15.7	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	57-12-5	CYANIDE	4/5/99	0.58	mg/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	335.2M
Lakeshore Area	Soil	WA-LS-3	WA9102	319-86-8	DELTA-BHC	4/5/99	97	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	53-70-3	DIBENZO(A,H)ANTHRACENE	4/5/99	1200	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-3	WA9102	132-64-9	DIBENZOFURAN	4/5/99	2500	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	60-57-1	DIELDRIN	4/5/99	190	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	84-66-2	DIETHYL PHTHALATE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	131-11-3	DIMETHYL PHTHALATE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	84-74-2	DI-N-BUTYL PHTHALATE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	117-84-0	DI-N-OCTYL PHTHALATE	4/5/99	9700	ug/Kg	Y	N	UJ	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	DIOXIN-TEQ	XIN/FURAN TCDD TOXICITY EQUIVAL	4/5/99	88.6	ng/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	959-98-8	ENDOSULFAN I	4/5/99	97	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	33213-65-9	ENDOSULFAN II	4/5/99	37	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	1031-07-8	ENDOSULFAN SULFATE	4/5/99	190	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	72-20-8	ENDRIN	4/5/99	190	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	7421-93-4	ENDRIN ALDEHYDE	4/5/99	15	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	53494-70-5	ENDRIN KETONE	4/5/99	65	ug/Kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	100-41-4	ETHYLBENZENE	4/5/99	12	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	206-44-0	FLUORANTHENE	4/5/99	22000	ug/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	86-73-7	FLUORENE	4/5/99	4700	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	58-89-9	GAMMA-BHC (LINDANE)	4/5/99	97	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	5566-34-7	GAMMA-CHLORDANE	4/5/99	0.83	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	76-44-8	HEPTACHLOR	4/5/99	97	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	1024-57-3	HEPTACHLOR EPOXIDE	4/5/99	15	ug/Kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	118-74-1	HEXACHLOROBENZENE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	87-68-3	HEXACHLOROBUTADIENE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/5/99	9700	ug/Kg	Y	N	UJ	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	67-72-1	HEXACHLOROETHANE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	193-39-5	INDENO(1,2,3-CD)PYRENE	4/5/99	3400	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	7439-89-6	IRON	4/5/99	13000	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	78-59-1	ISOPHORONE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	7439-92-1	LEAD	4/5/99	33.8	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	7439-95-4	MAGNESIUM	4/5/99	12900	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	7439-96-5	MANGANESE	4/5/99	396	mg/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	7439-97-6	MERCURY	4/5/99	0.34	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	245.1
Lakeshore Area	Soil	WA-LS-3	WA9102	72-43-5	METHOXYCHLOR	4/5/99	7.7	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	75-09-2	METHYLENE CHLORIDE	4/5/99	2	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	91-20-3	NAPHTHALENE	4/5/99	1200	ug/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-02-0	NICKEL	4/5/99	21.4	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	98-95-3	NITROBENZENE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	86-30-6	N-NITROSODIPHENYLAMINE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	3268-87-9	OCDD	4/5/99	1830	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	39001-02-0	OCDF	4/5/99	227	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	87-86-5	PENTACHLOROPHENOL	4/5/99	24000	ug/Kg	Y	N	UJ	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	85-01-8	PHENANTHRENE	4/5/99	27000	ug/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	108-95-2	PHENOL	4/5/99	9700	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-09-7	POTASSIUM	4/5/99	1240	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	129-00-0	PYRENE	4/5/99	26000	ug/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-3	WA9102	7782-49-2	SELENIUM	4/5/99	0.78	mg/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-22-4	SILVER	4/5/99	0.28	mg/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-23-5	SODIUM	4/5/99	508	mg/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	100-42-5	STYRENE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	127-18-4	TETRACHLOROETHENE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-28-0	THALLIUM	4/5/99	1.3	mg/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	108-88-3	TOLUENE	4/5/99	12	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	37871-00-4	TOTAL HPCDD	4/5/99	409	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	38998-75-3	TOTAL HPCDF	4/5/99	233	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	34465-46-8	TOTAL HXCDD	4/5/99	82.9	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	55684-94-1	TOTAL HXCDF	4/5/99	265	ng/kg	Y	Y	J	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	36088-22-9	TOTAL PECDD	4/5/99	55.3	ng/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	30402-15-4	TOTAL PECDF	4/5/99	346	ng/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	TSO	TOTAL SOLIDS	4/5/99	86.3	%	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	2540-G
Lakeshore Area	Soil	WA-LS-3	WA9102	41903-57-5	TOTAL TCDD	4/5/99	31.9	ng/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	55722-27-5	Total TCDF	4/5/99	531	ng/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-3	WA9102	8001-35-2	TOXAPHENE	4/5/99	9700	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-3	WA9102	156-60-5	TRANS-1,2-DICHLOROETHENE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	79-01-6	TRICHLOROETHENE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-62-2	VANADIUM	4/5/99	18.5	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-3	WA9102	75-01-4	VINYL CHLORIDE	4/5/99	12	ug/Kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-3	WA9102	1330-20-7	XYLENES, TOTAL	4/5/99	12	ug/kg	Y	N	U	1117895.1	923088.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-3	WA9102	7440-66-6	ZINC	4/5/99	48.5	mg/kg	Y	Y		1117895.1	923088.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	71-55-6	1,1,1-TRICHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	79-00-5	1,1,2-TRICHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	75-34-3	1,1-DICHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	75-35-4	1,1-DICHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	120-82-1	1,2,4-TRICHLOROBENZENE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	95-50-1	1,2-DICHLOROBENZENE	4/5/99	65	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	107-06-2	1,2-DICHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	78-87-5	1,2-DICHLOROPROPANE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	541-73-1	1,3-DICHLOROBENZENE	4/5/99	370	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	106-46-7	1,4-DICHLOROBENZENE	4/5/99	110	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	95-95-4	2,4,5-TRICHLOROPHENOL	4/5/99	920	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	88-06-2	2,4,6-TRICHLOROPHENOL	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	120-83-2	2,4-DICHLOROPHENOL	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	105-67-9	2,4-DIMETHYLPHENOL	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	51-28-5	2,4-DINITROPHENOL	4/5/99	920	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	121-14-2	2,4-DINITROTOLUENE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	606-20-2	2,6-DINITROTOLUENE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	78-93-3	2-BUTANONE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	91-58-7	2-CHLORONAPHTHALENE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	95-57-8	2-CHLOROPHENOL	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	591-78-6	2-HEXANONE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	91-57-6	2-METHYLNAPHTHALENE	4/5/99	370	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	95-48-7	2-METHYLPHENOL	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	88-74-4	2-NITROANILINE	4/5/99	920	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	88-75-5	2-NITROPHENOL	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	91-94-1	3,3'-DICHLOROBENZIDINE	4/5/99	370	ug/Kg	Y	N	UJ	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	99-09-2	3-NITROANILINE	4/5/99	920	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	72-54-8	4,4'-DDD	4/5/99	3.7	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	72-55-9	4,4'-DDE	4/5/99	0.18	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	50-29-3	4,4'-DDT	4/5/99	3.7	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/5/99	920	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	59-50-7	4-CHLORO-3-METHYLPHENOL	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	106-47-8	4-CHLOROANILINE	4/5/99	370	ug/Kg	Y	N	UJ	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	108-10-1	4-METHYL-2-PENTANONE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	106-44-5	4-METHYLPHENOL	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	100-01-6	4-NITROANILINE	4/5/99	920	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	100-02-7	4-NITROPHENOL	4/5/99	920	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	83-32-9	ACENAPHTHENE	4/5/99	370	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	208-96-8	ACENAPHTHYLENE	4/5/99	57	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	67-64-1	ACETONE	4/5/99	3	ug/Kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	309-00-2	ALDRIN	4/5/99	0.12	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	319-84-6	ALPHA-BHC	4/5/99	0.12	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	5103-71-9	ALPHA-CHLORDANE	4/5/99	0.94	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	7429-90-5	ALUMINUM	4/5/99	8460	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	120-12-7	ANTHRACENE	4/5/99	95	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-36-0	ANTIMONY	4/5/99	0.61	mg/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	12674-11-2	AROCLOR-1016	4/5/99	19	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-4	WA9103	11104-28-2	AROCLOR-1221	4/5/99	19	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-4	WA9103	11141-16-5	AROCLOR-1232	4/5/99	19	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-4	WA9103	53469-21-9	AROCLOR-1242	4/5/99	19	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-4	WA9103	12672-29-6	AROCLOR-1248	4/5/99	19	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-4	WA9103	11097-69-1	AROCLOR-1254	4/5/99	19	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-4	WA9103	11096-82-5	AROCLOR-1260	4/5/99	27	ug/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-38-2	ARSENIC	4/5/99	5.3	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-39-3	BARIUM	4/5/99	77.3	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	71-43-2	BENZENE	4/5/99	11	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	56-55-3	BENZO(A)ANTHRACENE	4/5/99	380	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	50-32-8	BENZO(A)PYRENE	4/5/99	410	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	205-99-2	BENZO(B)FLUORANTHENE	4/5/99	750	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	191-24-2	BENZO(G,H,I)PERYLENE	4/5/99	400	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-4	WA9103	207-08-9	BENZO(K)FLUORANTHENE	4/5/99	210	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-41-7	BERYLLIUM	4/5/99	0.55	mg/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	319-85-7	BETA-BHC	4/5/99	4.1	ug/Kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/5/99	79	ug/Kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	75-27-4	BROMODICHLOROMETHANE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	75-25-2	BROMOFORM	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	74-83-9	BROMOMETHANE	4/5/99	11	ug/Kg	Y	N	UJ	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	85-68-7	BUTYLBENZYL PHTHALATE	4/5/99	370	ug/Kg	Y	N	UJ	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-43-9	CADMIUM	4/5/99	0.47	mg/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-70-2	CALCIUM	4/5/99	99600	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	86-74-8	CARBAZOLE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	75-15-0	CARBON DISULFIDE	4/5/99	11	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	56-23-5	CARBON TETRACHLORIDE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	108-90-7	CHLOROBENZENE	4/5/99	11	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	124-48-1	CHLORODIBROMOMETHANE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	75-00-3	CHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	67-66-3	CHLOROFORM	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	74-87-3	CHLOROMETHANE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-47-3	CHROMIUM	4/5/99	56.4	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	218-01-9	CHRYSENE	4/5/99	490	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	156-59-2	CIS-1,2-DICHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-48-4	COBALT	4/5/99	11.8	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-50-8	COPPER	4/5/99	34.3	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	57-12-5	CYANIDE	4/5/99	0.55	mg/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	335.2M
Lakeshore Area	Soil	WA-LS-4	WA9103	319-86-8	DELTA-BHC	4/5/99	1.8	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	53-70-3	DIBENZO(A,H)ANTHRACENE	4/5/99	120	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	132-64-9	DIBENZOFURAN	4/5/99	370	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	60-57-1	DIELDRIN	4/5/99	3.7	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	84-66-2	DIETHYL PHTHALATE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	131-11-3	DIMETHYL PHTHALATE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	84-74-2	DI-N-BUTYL PHTHALATE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	117-84-0	DI-N-OCTYL PHTHALATE	4/5/99	370	ug/Kg	Y	N	R	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	959-98-8	ENDOSULFAN I	4/5/99	1.8	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	33213-65-9	ENDOSULFAN II	4/5/99	2.6	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	1031-07-8	ENDOSULFAN SULFATE	4/5/99	1.7	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	72-20-8	ENDRIN	4/5/99	3.7	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	7421-93-4	ENDRIN ALDEHYDE	4/5/99	1.2	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	53494-70-5	ENDRIN KETONE	4/5/99	8.4	ug/Kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	100-41-4	ETHYLBENZENE	4/5/99	11	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	206-44-0	FLUORANTHENE	4/5/99	460	ug/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	86-73-7	FLUORENE	4/5/99	150	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	58-89-9	GAMMA-BHC (LINDANE)	4/5/99	0.033	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	5566-34-7	GAMMA-CHLORDANE	4/5/99	1.8	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	76-44-8	HEPTACHLOR	4/5/99	1.8	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	1024-57-3	HEPTACHLOR EPOXIDE	4/5/99	0.56	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	118-74-1	HEXACHLOROBENZENE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	87-68-3	HEXACHLOROBUTADIENE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/5/99	370	ug/Kg	Y	N	UJ	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	67-72-1	HEXACHLOROETHANE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	193-39-5	INDENO(1,2,3-CD)PYRENE	4/5/99	340	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	7439-89-6	IRON	4/5/99	19000	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	78-59-1	ISOPHORONE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	7439-92-1	LEAD	4/5/99	33.5	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	7439-95-4	MAGNESIUM	4/5/99	22600	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	7439-96-5	MANGANESE	4/5/99	397	mg/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	7439-97-6	MERCURY	4/5/99	0.17	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	245.1
Lakeshore Area	Soil	WA-LS-4	WA9103	72-43-5	METHOXYCHLOR	4/5/99	0.36	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	75-09-2	METHYLENE CHLORIDE	4/5/99	2	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	91-20-3	NAPHTHALENE	4/5/99	130	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-02-0	NICKEL	4/5/99	36.5	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	98-95-3	NITROBENZENE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	86-30-6	N-NITROSODIPHENYLAMINE	4/5/99	370	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	87-86-5	PENTACHLOROPHENOL	4/5/99	920	ug/Kg	Y	N	R	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-4	WA9103	85-01-8	PHENANTHRENE	4/5/99	230	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	108-95-2	PHENOL	4/5/99	370	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-09-7	POTASSIUM	4/5/99	1910	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	129-00-0	PYRENE	4/5/99	1000	ug/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-4	WA9103	7782-49-2	SELENIUM	4/5/99	0.94	mg/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-22-4	SILVER	4/5/99	0.27	mg/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-23-5	SODIUM	4/5/99	705	mg/kg	Y	Y	J	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	100-42-5	STYRENE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	127-18-4	TETRACHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-28-0	THALLIUM	4/5/99	1.2	mg/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	108-88-3	TOLUENE	4/5/99	11	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	TSO	TOTAL SOLIDS	4/5/99	90.2	%	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	2540-G
Lakeshore Area	Soil	WA-LS-4	WA9103	8001-35-2	TOXAPHENE	4/5/99	180	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-4	WA9103	156-60-5	TRANS-1,2-DICHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	79-01-6	TRICHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-62-2	VANADIUM	4/5/99	22.5	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-4	WA9103	75-01-4	VINYL CHLORIDE	4/5/99	11	ug/Kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	1330-20-7	XYLENES, TOTAL	4/5/99	11	ug/kg	Y	N	U	1117885.9	922993.7	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-4	WA9103	7440-66-6	ZINC	4/5/99	95	mg/kg	Y	Y		1117885.9	922993.7	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	71-55-6	1,1,1-TRICHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	79-00-5	1,1,2-TRICHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	75-34-3	1,1-DICHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	75-35-4	1,1-DICHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	35822-46-9	1,2,3,4,6,7,8-HPCDD	4/5/99	17.4	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	67562-39-4	1,2,3,4,6,7,8-HPCDF	4/5/99	7.03	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	55673-89-7	1,2,3,4,7,8,9-HPCDF	4/5/99	0.78	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	39227-28-6	1,2,3,4,7,8-HXCDD	4/5/99	0.44	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	70648-26-9	1,2,3,4,7,8-HXCDF	4/5/99	2.91	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	57653-85-7	1,2,3,6,7,8-HXCDD	4/5/99	1.53	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	57117-44-9	1,2,3,6,7,8-HXCDF	4/5/99	0.82	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	19408-74-3	1,2,3,7,8,9-HXCDD	4/5/99	104	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	72918-21-9	1,2,3,7,8,9-HXCDF	4/5/99	0.11	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	40321-76-4	1,2,3,7,8-PECDD	4/5/99	0.66	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	57117-41-6	1,2,3,7,8-PECDF	4/5/99	1.72	ng/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	120-82-1	1,2,4-TRICHLOROBENZENE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	95-50-1	1,2-DICHLOROBENZENE	4/5/99	1600	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	107-06-2	1,2-DICHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	78-87-5	1,2-DICHLOROPROPANE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	541-73-1	1,3-DICHLOROBENZENE	4/5/99	7400	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	106-46-7	1,4-DICHLOROBENZENE	4/5/99	1500	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	60851-34-5	2,3,4,6,7,8-HXCDF	4/5/99	0.47	ng/kg	Y	N	UJ	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	57117-31-4	2,3,4,7,8-PECDF	4/5/99	2.67	ng/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	1746-01-6	2,3,7,8-TCDD	4/5/99	1.71	ng/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	51207-31-9	2,3,7,8-TCDF	4/5/99	6.22	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	95-95-4	2,4,5-TRICHLOROPHENOL	4/5/99	18000	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	88-06-2	2,4,6-TRICHLOROPHENOL	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	120-83-2	2,4-DICHLOROPHENOL	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	105-67-9	2,4-DIMETHYLPHENOL	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	51-28-5	2,4-DINITROPHENOL	4/5/99	18000	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	121-14-2	2,4-DINITROTOLUENE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	606-20-2	2,6-DINITROTOLUENE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	78-93-3	2-BUTANONE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	91-58-7	2-CHLORONAPHTHALENE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	95-57-8	2-CHLOROPHENOL	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	591-78-6	2-HEXANONE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	91-57-6	2-METHYLNAPHTHALENE	4/5/99	7400	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	95-48-7	2-METHYLPHENOL	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	88-74-4	2-NITROANILINE	4/5/99	18000	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	88-75-5	2-NITROPHENOL	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	91-94-1	3,3'-DICHLOROBENZIDINE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	99-09-2	3-NITROANILINE	4/5/99	18000	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	72-54-8	4,4'-DDD	4/5/99	3.7	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	72-55-9	4,4'-DDE	4/5/99	3.7	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-5	WA9104	50-29-3	4,4'-DDT	4/5/99	3.7	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/5/99	18000	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	59-50-7	4-CHLORO-3-METHYLPHENOL	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	106-47-8	4-CHLOROANILINE	4/5/99	7400	ug/Kg	Y	N	UJ	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	108-10-1	4-METHYL-2-PENTANONE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	106-44-5	4-METHYLPHENOL	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	100-01-6	4-NITROANILINE	4/5/99	18000	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	100-02-7	4-NITROPHENOL	4/5/99	18000	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	83-32-9	ACENAPHTHENE	4/5/99	7400	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	208-96-8	ACENAPHTHYLENE	4/5/99	7400	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	67-64-1	ACETONE	4/5/99	2	ug/Kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	309-00-2	ALDRIN	4/5/99	0.16	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	319-84-6	ALPHA-BHC	4/5/99	0.86	ug/Kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	5103-71-9	ALPHA-CHLORDANE	4/5/99	0.25	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	7429-90-5	ALUMINUM	4/5/99	4310	mg/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	120-12-7	ANTHRACENE	4/5/99	7400	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-36-0	ANTIMONY	4/5/99	0.29	mg/kg	Y	N	UJ	1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	12674-11-2	AROCLOR-1016	4/5/99	19	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-5	WA9104	11104-28-2	AROCLOR-1221	4/5/99	19	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-5	WA9104	11141-16-5	AROCLOR-1232	4/5/99	19	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-5	WA9104	53469-21-9	AROCLOR-1242	4/5/99	19	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-5	WA9104	12672-29-6	AROCLOR-1248	4/5/99	19	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-5	WA9104	11097-69-1	AROCLOR-1254	4/5/99	19	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-5	WA9104	11096-82-5	AROCLOR-1260	4/5/99	35	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-38-2	ARSENIC	4/5/99	9.8	mg/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-39-3	BARIUM	4/5/99	49.2	mg/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	71-43-2	BENZENE	4/5/99	11	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	56-55-3	BENZO(A)ANTHRACENE	4/5/99	7200	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	50-32-8	BENZO(A)PYRENE	4/5/99	6000	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	205-99-2	BENZO(B)FLUORANTHENE	4/5/99	11000	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	191-24-2	BENZO(G,H,I)PERYLENE	4/5/99	2400	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	207-08-9	BENZO(K)FLUORANTHENE	4/5/99	3300	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-41-7	BERYLLIUM	4/5/99	0.33	mg/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	319-85-7	BETA-BHC	4/5/99	2.7	ug/Kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	75-27-4	BROMODICHLOROMETHANE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	75-25-2	BROMOFORM	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	74-83-9	BROMOMETHANE	4/5/99	11	ug/Kg	Y	N	UJ	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	85-68-7	BUTYLBENZYL PHTHALATE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-43-9	CADMIUM	4/5/99	0.3	mg/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-70-2	CALCIUM	4/5/99	92700	mg/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	86-74-8	CARBAZOLE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	75-15-0	CARBON DISULFIDE	4/5/99	11	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	56-23-5	CARBON TETRACHLORIDE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	108-90-7	CHLOROBENZENE	4/5/99	11	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	124-48-1	CHLORODIBROMOMETHANE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	75-00-3	CHLOROETHANE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	67-66-3	CHLOROFORM	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	74-87-3	CHLOROMETHANE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-47-3	CHROMIUM	4/5/99	24.8	mg/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	218-01-9	CHRYSENE	4/5/99	6900	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	156-59-2	CIS-1,2-DICHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-48-4	COBALT	4/5/99	7.1	mg/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-50-8	COPPER	4/5/99	27.6	mg/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	57-12-5	CYANIDE	4/5/99	0.55	mg/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	335.2M
Lakeshore Area	Soil	WA-LS-5	WA9104	319-86-8	DELTA-BHC	4/5/99	1.8	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	53-70-3	DIBENZO(A,H)ANTHRACENE	4/5/99	1200	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	132-64-9	DIBENZOFURAN	4/5/99	7400	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	60-57-1	DIELDRIN	4/5/99	3.7	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	84-66-2	DIETHYL PHTHALATE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	131-11-3	DIMETHYL PHTHALATE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	84-74-2	DI-N-BUTYL PHTHALATE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-5	WA9104	117-84-0	DI-N-OCTYL PHTHALATE	4/5/99	7400	ug/Kg	Y	N	UJ	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	959-98-8	ENDOSULFAN I	4/5/99	1.8	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	33213-65-9	ENDOSULFAN II	4/5/99	3.7	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	1031-07-8	ENDOSULFAN SULFATE	4/5/99	0.98	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	72-20-8	ENDRIN	4/5/99	3.7	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	7421-93-4	ENDRIN ALDEHYDE	4/5/99	3.7	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	53494-70-5	ENDRIN KETONE	4/5/99	11	ug/Kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	100-41-4	ETHYLBENZENE	4/5/99	11	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	206-44-0	FLUORANTHENE	4/5/99	9700	ug/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	86-73-7	FLUORENE	4/5/99	7400	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	58-89-9	GAMMA-BHC (LINDANE)	4/5/99	1.8	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	5566-34-7	GAMMA-CHLORDANE	4/5/99	0.33	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	76-44-8	HEPTACHLOR	4/5/99	0.085	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	1024-57-3	HEPTACHLOR EPOXIDE	4/5/99	1.1	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	118-74-1	HEXACHLOROBENZENE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	87-68-3	HEXACHLOROBUTADIENE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/5/99	7400	ug/Kg	Y	N	UJ	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	67-72-1	HEXACHLOROETHANE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	193-39-5	INDENO(1,2,3-CD)PYRENE	4/5/99	2600	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	7439-89-6	IRON	4/5/99	13600	mg/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	78-59-1	ISOPHORONE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	7439-92-1	LEAD	4/5/99	23.6	mg/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	7439-95-4	MAGNESIUM	4/5/99	18100	mg/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	7439-96-5	MANGANESE	4/5/99	340	mg/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	7439-97-6	MERCURY	4/5/99	0.17	mg/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	245.1
Lakeshore Area	Soil	WA-LS-5	WA9104	72-43-5	METHOXYCHLOR	4/5/99	18	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	75-09-2	METHYLENE CHLORIDE	4/5/99	1	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	91-20-3	NAPHTHALENE	4/5/99	7400	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-02-0	NICKEL	4/5/99	19	mg/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	98-95-3	NITROBENZENE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	86-30-6	N-NITROSODIPHENYLAMINE	4/5/99	7400	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	3268-87-9	OCDD	4/5/99	117	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	39001-02-0	OCDF	4/5/99	17.4	ng/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	87-86-5	PENTACHLOROPHENOL	4/5/99	18000	ug/Kg	Y	N	UJ	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	85-01-8	PHENANTHRENE	4/5/99	2100	ug/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	108-95-2	PHENOL	4/5/99	7400	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-09-7	POTASSIUM	4/5/99	889	mg/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	129-00-0	PYRENE	4/5/99	11000	ug/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-5	WA9104	7782-49-2	SELENIUM	4/5/99	1.2	mg/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-22-4	SILVER	4/5/99	0.27	mg/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-23-5	SODIUM	4/5/99	232	mg/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	100-42-5	STYRENE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	127-18-4	TETRACHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-28-0	THALLIUM	4/5/99	1.2	mg/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	108-88-3	TOLUENE	4/5/99	11	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	37871-00-4	TOTAL HPCDD	4/5/99	34	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	38998-75-3	TOTAL HPCDF	4/5/99	17.4	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	34465-46-8	TOTAL HXCDD	4/5/99	12	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	55684-94-1	TOTAL HXCDF	4/5/99	12.6	ng/kg	Y	Y	J	1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	36088-22-9	TOTAL PECDD	4/5/99	8.39	ng/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	30402-15-4	TOTAL PECDF	4/5/99	16.2	ng/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	TSO	TOTAL SOLIDS	4/5/99	90.5	%	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	2540-G
Lakeshore Area	Soil	WA-LS-5	WA9104	41903-57-5	TOTAL TCDD	4/5/99	18.4	ng/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	55722-27-5	Total TCDF	4/5/99	31.2	ng/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	SW8290
Lakeshore Area	Soil	WA-LS-5	WA9104	8001-35-2	TOXAPHENE	4/5/99	180	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-5	WA9104	156-60-5	TRANS-1,2-DICHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	79-01-6	TRICHLOROETHENE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-62-2	VANADIUM	4/5/99	13.2	mg/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-5	WA9104	75-01-4	VINYL CHLORIDE	4/5/99	11	ug/Kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	1330-20-7	XYLENES, TOTAL	4/5/99	11	ug/kg	Y	N	U	1118156.4	922728	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-5	WA9104	7440-66-6	ZINC	4/5/99	48.2	mg/kg	Y	Y		1118156.4	922728	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	71-55-6	1,1,1-TRICHLOROETHANE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	79-00-5	1,1,2-TRICHLOROETHANE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	75-34-3	1,1-DICHLOROETHANE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-6	WA9105	75-35-4	1,1-DICHLOROETHENE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	120-82-1	1,2,4-TRICHLOROBENZENE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	95-50-1	1,2-DICHLOROBENZENE	4/5/99	130	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	107-06-2	1,2-DICHLOROETHANE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	78-87-5	1,2-DICHLOROPROPANE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	541-73-1	1,3-DICHLOROBENZENE	4/5/99	380	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	106-46-7	1,4-DICHLOROBENZENE	4/5/99	270	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	95-95-4	2,4,5-TRICHLOROPHENOL	4/5/99	960	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	88-06-2	2,4,6-TRICHLOROPHENOL	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	120-83-2	2,4-DICHLOROPHENOL	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	105-67-9	2,4-DIMETHYLPHENOL	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	51-28-5	2,4-DINITROPHENOL	4/5/99	960	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	121-14-2	2,4-DINITROTOLUENE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	606-20-2	2,6-DINITROTOLUENE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	78-93-3	2-BUTANONE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	91-58-7	2-CHLORONAPHTHALENE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	95-57-8	2-CHLOROPHENOL	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	591-78-6	2-HEXANONE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	91-57-6	2-METHYLNAPHTHALENE	4/5/99	140	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	95-48-7	2-METHYLPHENOL	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	88-74-4	2-NITROANILINE	4/5/99	960	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	88-75-5	2-NITROPHENOL	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	91-94-1	3,3'-DICHLOROBENZIDINE	4/5/99	380	ug/Kg	Y	N	UJ	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	99-09-2	3-NITROANILINE	4/5/99	960	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	72-54-8	4,4'-DDD	4/5/99	3.8	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	72-55-9	4,4'-DDE	4/5/99	3.8	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	50-29-3	4,4'-DDT	4/5/99	3.8	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/5/99	960	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	59-50-7	4-CHLORO-3-METHYLPHENOL	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	106-47-8	4-CHLOROANILINE	4/5/99	380	ug/Kg	Y	N	UJ	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	108-10-1	4-METHYL-2-PENTANONE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	106-44-5	4-METHYLPHENOL	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	100-01-6	4-NITROANILINE	4/5/99	960	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	100-02-7	4-NITROPHENOL	4/5/99	960	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	83-32-9	ACENAPHTHENE	4/5/99	380	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	208-96-8	ACENAPHTHYLENE	4/5/99	120	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	67-64-1	ACETONE	4/5/99	3	ug/Kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	309-00-2	ALDRIN	4/5/99	0.052	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	319-84-6	ALPHA-BHC	4/5/99	3.5	ug/Kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	5103-71-9	ALPHA-CHLORDANE	4/5/99	1.9	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	7429-90-5	ALUMINUM	4/5/99	4260	mg/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	120-12-7	ANTHRACENE	4/5/99	270	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-36-0	ANTIMONY	4/5/99	0.34	mg/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	12674-11-2	AROCLOR-1016	4/5/99	20	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-6	WA9105	11104-28-2	AROCLOR-1221	4/5/99	20	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-6	WA9105	11141-16-5	AROCLOR-1232	4/5/99	20	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-6	WA9105	53469-21-9	AROCLOR-1242	4/5/99	20	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-6	WA9105	12672-29-6	AROCLOR-1248	4/5/99	20	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-6	WA9105	11097-69-1	AROCLOR-1254	4/5/99	20	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-6	WA9105	11096-82-5	AROCLOR-1260	4/5/99	27	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	SW8082
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-38-2	ARSENIC	4/5/99	13.5	mg/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-39-3	BARIUM	4/5/99	130	mg/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	71-43-2	BENZENE	4/5/99	12	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	56-55-3	BENZO(A)ANTHRACENE	4/5/99	700	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	50-32-8	BENZO(A)PYRENE	4/5/99	520	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	205-99-2	BENZO(B)FLUORANTHENE	4/5/99	960	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	191-24-2	BENZO(G,H,I)PERYLENE	4/5/99	410	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	207-08-9	BENZO(K)FLUORANTHENE	4/5/99	300	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-41-7	BERYLLIUM	4/5/99	0.44	mg/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	319-85-7	BETA-BHC	4/5/99	4.7	ug/Kg	Y	N	R	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/5/99	66	ug/Kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-6	WA9105	75-27-4	BROMODICHLOROMETHANE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	75-25-2	BROMOFORM	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	74-83-9	BROMOMETHANE	4/5/99	12	ug/Kg	Y	N	UJ	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	85-68-7	BUTYLBENZYL PHTHALATE	4/5/99	380	ug/Kg	Y	N	UJ	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-43-9	CADMIUM	4/5/99	0.38	mg/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-70-2	CALCIUM	4/5/99	94200	mg/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	86-74-8	CARBAZOLE	4/5/99	54	ug/Kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	75-15-0	CARBON DISULFIDE	4/5/99	12	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	56-23-5	CARBON TETRACHLORIDE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	108-90-7	CHLOROBENZENE	4/5/99	12	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	124-48-1	CHLORODIBROMOMETHANE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	75-00-3	CHLOROETHANE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	67-66-3	CHLOROFORM	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	74-87-3	CHLOROMETHANE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-47-3	CHROMIUM	4/5/99	30.3	mg/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	218-01-9	CHRYSENE	4/5/99	840	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	156-59-2	CIS-1,2-DICHLOROETHENE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-48-4	COBALT	4/5/99	10.6	mg/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-50-8	COPPER	4/5/99	28.9	mg/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	57-12-5	CYANIDE	4/5/99	0.58	mg/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	335.2M
Lakeshore Area	Soil	WA-LS-6	WA9105	319-86-8	DELTA-BHC	4/5/99	0.35	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	53-70-3	DIBENZO(A,H)ANTHRACENE	4/5/99	150	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	132-64-9	DIBENZOFURAN	4/5/99	79	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	60-57-1	DIELDRIN	4/5/99	1.8	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	84-66-2	DIETHYL PHTHALATE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	131-11-3	DIMETHYL PHTHALATE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	84-74-2	DI-N-BUTYL PHTHALATE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	117-84-0	DI-N-OCTYL PHTHALATE	4/5/99	380	ug/Kg	Y	N	R	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	959-98-8	ENDOSULFAN I	4/5/99	1.9	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	33213-65-9	ENDOSULFAN II	4/5/99	3.8	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	1031-07-8	ENDOSULFAN SULFATE	4/5/99	2	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	72-20-8	ENDRIN	4/5/99	3.8	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	7421-93-4	ENDRIN ALDEHYDE	4/5/99	3.8	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	53494-70-5	ENDRIN KETONE	4/5/99	13	ug/Kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	100-41-4	ETHYLBENZENE	4/5/99	12	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	206-44-0	FLUORANTHENE	4/5/99	1100	ug/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	86-73-7	FLUORENE	4/5/99	160	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	58-89-9	GAMMA-BHC (LINDANE)	4/5/99	1.9	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	5566-34-7	GAMMA-CHLORDANE	4/5/99	0.78	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	76-44-8	HEPTACHLOR	4/5/99	1.9	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	1024-57-3	HEPTACHLOR EPOXIDE	4/5/99	1.6	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	118-74-1	HEXACHLOROBENZENE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	87-68-3	HEXACHLOROBUTADIENE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/5/99	380	ug/Kg	Y	N	UJ	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	67-72-1	HEXACHLOROETHANE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	193-39-5	INDENO(1,2,3-CD)PYRENE	4/5/99	370	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	7439-89-6	IRON	4/5/99	13000	mg/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	78-59-1	ISOPHORONE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	7439-92-1	LEAD	4/5/99	31.3	mg/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	7439-95-4	MAGNESIUM	4/5/99	16400	mg/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	7439-96-5	MANGANESE	4/5/99	300	mg/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	7439-97-6	MERCURY	4/5/99	3.2	mg/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	245.1
Lakeshore Area	Soil	WA-LS-6	WA9105	72-43-5	METHOXYCHLOR	4/5/99	19	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	75-09-2	METHYLENE CHLORIDE	4/5/99	1	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	91-20-3	NAPHTHALENE	4/5/99	99	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-02-0	NICKEL	4/5/99	26.6	mg/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	98-95-3	NITROBENZENE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	86-30-6	N-NITROSODIPHENYLAMINE	4/5/99	380	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	87-86-5	PENTACHLOROPHENOL	4/5/99	960	ug/Kg	Y	N	R	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	85-01-8	PHENANTHRENE	4/5/99	860	ug/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	108-95-2	PHENOL	4/5/99	380	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-09-7	POTASSIUM	4/5/99	775	mg/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	129-00-0	PYRENE	4/5/99	1600	ug/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Lakeshore Area	Soil	WA-LS-6	WA9105	7782-49-2	SELENIUM	4/5/99	0.89	mg/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-22-4	SILVER	4/5/99	0.28	mg/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-23-5	SODIUM	4/5/99	321	mg/kg	Y	Y	J	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	100-42-5	STYRENE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	127-18-4	TETRACHLOROETHENE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-28-0	THALLIUM	4/5/99	1.3	mg/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	108-88-3	TOLUENE	4/5/99	12	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	TSO	TOTAL SOLIDS	4/5/99	86.6	%	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	2540-G
Lakeshore Area	Soil	WA-LS-6	WA9105	8001-35-2	TOXAPHENE	4/5/99	190	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Lakeshore Area	Soil	WA-LS-6	WA9105	156-60-5	TRANS-1,2-DICHLOROETHENE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	79-01-6	TRICHLOROETHENE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-62-2	VANADIUM	4/5/99	16.5	mg/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-LS-6	WA9105	75-01-4	VINYL CHLORIDE	4/5/99	12	ug/Kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	1330-20-7	XYLENES, TOTAL	4/5/99	12	ug/kg	Y	N	U	1118411.8	922476.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Lakeshore Area	Soil	WA-LS-6	WA9105	7440-66-6	ZINC	4/5/99	82.2	mg/kg	Y	Y		1118411.8	922476.5	0	0.5	SS	SOIL	Soil	200.7
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	71-55-6	1,1,1-TRICHLOROETHANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	79-00-5	1,1,2-TRICHLOROETHANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	75-34-3	1,1-DICHLOROETHANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	75-35-4	1,1-DICHLOROETHENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	563-58-6	1,1-DICHLOROPROPENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	87-61-6	1,2,3-TRICHLOROBENZENE	9/17/97	1.5	ug/Kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	96-18-4	1,2,3-TRICHLOROPROPANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	120-82-1	1,2,4-TRICHLOROBENZENE	9/17/97	4.2	ug/Kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	95-63-6	1,2,4-TRIMETHYLBENZENE	9/17/97	4.6	ug/Kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	106-93-4	1,2-DIBROMOETHANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	95-50-1	1,2-DICHLOROBENZENE	9/17/97	42	ug/kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	107-06-2	1,2-DICHLOROETHANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	78-87-5	1,2-DICHLOROPROPANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	108-67-8	1,3,5-TRIMETHYLBENZENE	9/17/97	3.6	ug/Kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	541-73-1	1,3-DICHLOROBENZENE	9/17/97	3.3	ug/kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	142-28-9	1,3-DICHLOROPROPANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	106-46-7	1,4-DICHLOROBENZENE	9/17/97	47	ug/kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	594-20-7	2,2-DICHLOROPROPANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	95-49-8	2-CHLOROTOLUENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	72-54-8	4,4'-DDD	9/17/97	22	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	72-55-9	4,4'-DDE	9/17/97	22	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	50-29-3	4,4'-DDT	9/17/97	22	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	106-43-4	4-CHLOROTOLUENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	309-00-2	ALDRIN	9/17/97	11	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	319-84-6	ALPHA-BHC	9/17/97	11	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	12674-11-2	AROCLOR-1016	9/17/97	220	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	11104-28-2	AROCLOR-1221	9/17/97	220	ug/kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	11141-16-5	AROCLOR-1232	9/17/97	220	ug/kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	53469-21-9	AROCLOR-1242	9/17/97	220	ug/kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	12672-29-6	AROCLOR-1248	9/17/97	220	ug/kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	11097-69-1	AROCLOR-1254	9/17/97	220	ug/kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	11096-82-5	AROCLOR-1260	9/17/97	420	ug/kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	71-43-2	BENZENE	9/17/97	20	ug/kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	319-85-7	BETA-BHC	9/17/97	11	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	108-86-1	BROMOBENZENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	74-97-5	BROMOCHLOROMETHANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	75-27-4	BROMODICHLOROMETHANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	75-25-2	BROMOFORM	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	74-83-9	BROMOMETHANE	9/17/97	6.7	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	104-51-8	BUTYLBENZENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	56-23-5	CARBON TETRACHLORIDE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	57-74-9	CHLORDANE	9/17/97	110	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	108-90-7	CHLOROBENZENE	9/17/97	19	ug/kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	124-48-1	CHLORODIBROMOMETHANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	75-00-3	CHLOROETHANE	9/17/97	6.7	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	67-66-3	CHLOROFORM	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	74-87-3	CHLOROMETHANE	9/17/97	6.7	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	156-59-2	CIS-1,2-DICHLOROETHENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	319-86-8	DELTA-BHC	9/17/97	11	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	74-95-3	DIBROMOMETHANE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	75-71-8	DICHLORODIFLUOROMETHANE	9/17/97	6.7	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	60-57-1	DIELDRIN	9/17/97	22	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	959-98-8	ENDOSULFAN I	9/17/97	22	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	33213-65-9	ENDOSULFAN II	9/17/97	22	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	1031-07-8	ENDOSULFAN SULFATE	9/17/97	22	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	72-20-8	ENDRIN	9/17/97	22	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	7421-93-4	ENDRIN ALDEHYDE	9/17/97	22	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	100-41-4	ETHYLBENZENE	9/17/97	3.3	ug/kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	58-89-9	GAMMA-BHC (LINDANE)	9/17/97	11	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	76-44-8	HEPTACHLOR	9/17/97	11	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	1024-57-3	HEPTACHLOR EPOXIDE	9/17/97	11	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	118-74-1	HEXACHLOROBENZENE	9/17/97	14	ug/Kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	87-68-3	HEXACHLOROBUTADIENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	98-82-8	ISOPROPYLBENZENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	7439-97-6	MERCURY	9/17/97	3	mg/kg	Y	Y		1117698.2	923159.9	11	11	TP	SOIL	Soil	7471A/NONE
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	72-43-5	METHOXYCHLOR	9/17/97	110	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	75-09-2	METHYLENE CHLORIDE	9/17/97	3.1	ug/kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	91-20-3	NAPHTHALENE	9/17/97	100	ug/kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	103-65-1	N-PROPYLBENZENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	99-87-6	P-ISOPROPYLTOLUENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	135-98-8	SEC-BUTYLBENZENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	100-42-5	STYRENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	98-06-6	TERT-BUTYLBENZENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	127-18-4	TETRACHLOROETHENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	108-88-3	TOLUENE	9/17/97	9.2	ug/kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	TSO	TOTAL SOLIDS	9/17/97	75.1	%	Y	Y		1117698.2	923159.9	11	11	TP	SOIL	Soil	2540-G
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	8001-35-2	TOXAPHENE	9/17/97	110	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8080
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	156-60-5	TRANS-1,2-DICHLOROETHENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	79-01-6	TRICHLOROETHENE	9/17/97	3.3	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	75-69-4	TRICHLOROFLUOROMETHANE	9/17/97	6.7	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	75-01-4	VINYL CHLORIDE	9/17/97	6.7	ug/Kg	Y	N	UJ	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
Lakeshore Area	Soil	WA-P.A.S.#1	WA9156	1330-20-7	XYLENES, TOTAL	9/17/97	6.7	ug/kg	Y	Y	J	1117698.2	923159.9	11	11	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	71-55-6	1,1,1-TRICHLOROETHANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	79-00-5	1,1,2-TRICHLOROETHANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	75-34-3	1,1-DICHLOROETHANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	75-35-4	1,1-DICHLOROETHENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	563-58-6	1,1-DICHLOROPROPENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	87-61-6	1,2,3-TRICHLOROBENZENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	96-18-4	1,2,3-TRICHLOROPROPANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	120-82-1	1,2,4-TRICHLOROBENZENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	95-63-6	1,2,4-TRIMETHYLBENZENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	106-93-4	1,2-DIBROMOETHANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	95-50-1	1,2-DICHLOROBENZENE	9/15/97	4.5	ug/kg	Y	Y		1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	107-06-2	1,2-DICHLOROETHANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	78-87-5	1,2-DICHLOROPROPANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	108-67-8	1,3,5-TRIMETHYLBENZENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	541-73-1	1,3-DICHLOROBENZENE	9/15/97	2.8	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	142-28-9	1,3-DICHLOROPROPANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	106-46-7	1,4-DICHLOROBENZENE	9/15/97	4.3	ug/kg	Y	Y		1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	594-20-7	2,2-DICHLOROPROPANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	95-49-8	2-CHLOROTOLUENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	72-54-8	4,4'-DDD	9/15/97	37	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	72-55-9	4,4'-DDE	9/15/97	37	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	50-29-3	4,4'-DDT	9/15/97	37	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	106-43-4	4-CHLOROTOLUENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	309-00-2	ALDRIN	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	319-84-6	ALPHA-BHC	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	12674-11-2	AROCLOR-1016	9/15/97	190	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001N	12674-11-2	AROCLOR-1016	9/15/97	76	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	11104-28-2	AROCLOR-1221	9/15/97	190	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001N	11104-28-2	AROCLOR-1221	9/15/97	150	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001N	11141-16-5	AROCLOR-1232	9/15/97	76	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	SOIL	SW8080

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
NW-Outfall-004	Soil	WA-004A	WA9001	11141-16-5	AROCLOR-1232	9/15/97	190	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	53469-21-9	AROCLOR-1242	9/15/97	190	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001N	53469-21-9	AROCLOR-1242	9/15/97	76	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001N	12672-29-6	AROCLOR-1248	9/15/97	76	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	12672-29-6	AROCLOR-1248	9/15/97	190	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001N	11097-69-1	AROCLOR-1254	9/15/97	76	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	11097-69-1	AROCLOR-1254	9/15/97	190	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	11096-82-5	AROCLOR-1260	9/15/97	920	ug/kg	Y	Y		1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001N	11096-82-5	AROCLOR-1260	9/15/97	76	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	71-43-2	BENZENE	9/15/97	2.8	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	319-85-7	BETA-BHC	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	108-86-1	BROMOBENZENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	74-97-5	BROMOCHLOROMETHANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	75-27-4	BROMODICHLOROMETHANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	75-25-2	BROMOFORM	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	74-83-9	BROMOMETHANE	9/15/97	5.6	ug/Kg	Y	N	UJ	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	104-51-8	BUTYLBENZENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	56-23-5	CARBON TETRACHLORIDE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	57-74-9	CHLORDANE	9/15/97	190	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	108-90-7	CHLOROBENZENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	124-48-1	CHLORODIBROMOMETHANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	75-00-3	CHLOROETHANE	9/15/97	5.6	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	67-66-3	CHLOROFORM	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	74-87-3	CHLOROMETHANE	9/15/97	5.6	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	156-59-2	CIS-1,2-DICHLOROETHENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	319-86-8	DELTA-BHC	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	74-95-3	DIBROMOMETHANE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	75-71-8	DICHLORODIFLUOROMETHANE	9/15/97	5.6	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	60-57-1	DIELDRIN	9/15/97	37	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	959-98-8	ENDOSULFAN I	9/15/97	37	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	33213-65-9	ENDOSULFAN II	9/15/97	37	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	1031-07-8	ENDOSULFAN SULFATE	9/15/97	37	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	72-20-8	ENDRIN	9/15/97	37	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	7421-93-4	ENDRIN ALDEHYDE	9/15/97	37	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	100-41-4	ETHYLBENZENE	9/15/97	2.8	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	58-89-9	GAMMA-BHC (LINDANE)	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	76-44-8	HEPTACHLOR	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	1024-57-3	HEPTACHLOR EPOXIDE	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	118-74-1	HEXACHLOROBENZENE	9/15/97	100	ug/Kg	Y	Y		1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	87-68-3	HEXACHLOROBUTADIENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	98-82-8	ISOPROPYLBENZENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	7439-97-6	MERCURY	9/15/97	40	mg/kg	Y	Y		1118147.3	922452.7	0	0.5	SS	SOIL	Soil	7471A/NONE
NW-Outfall-004	Soil	WA-004A	WA9001N	7439-97-6	MERCURY	9/15/97	21.9	mg/kg	Y	Y		1118147.3	922452.7	0	0.5	SS	SOIL	SOIL	7471A/NONE
NW-Outfall-004	Soil	WA-004A	WA9001	72-43-5	METHOXYCHLOR	9/15/97	190	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	75-09-2	METHYLENE CHLORIDE	9/15/97	5.6	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	91-20-3	NAPHTHALENE	9/15/97	2.8	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	103-65-1	N-PROPYLBENZENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	99-87-6	P-ISOPROPYLTOLUENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	135-98-8	SEC-BUTYLBENZENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	100-42-5	STYRENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	98-06-6	TERT-BUTYLBENZENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	127-18-4	TETRACHLOROETHENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	108-88-3	TOLUENE	9/15/97	2.8	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	TSO	TOTAL SOLIDS	9/15/97	89	%	Y	Y		1118147.3	922452.7	0	0.5	SS	SOIL	Soil	2540-G
NW-Outfall-004	Soil	WA-004A	WA9001	8001-35-2	TOXAPHENE	9/15/97	190	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9001	156-60-5	TRANS-1,2-DICHLOROETHENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/15/97	2.8	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	79-01-6	TRICHLOROETHENE	9/15/97	10	ug/Kg	Y	Y		1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	75-69-4	TRICHLOROFLUOROMETHANE	9/15/97	5.6	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	75-01-4	VINYL CHLORIDE	9/15/97	5.6	ug/Kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9001	1330-20-7	XYLENES, TOTAL	9/15/97	2.8	ug/kg	Y	N	U	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9003	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/1/98	1580	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/1/98	468	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/1/98	248	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	39227-28-6	1,2,3,4,7,8-HXCDD	10/1/98	23.4	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	70648-26-9	1,2,3,4,7,8-HXCDF	10/1/98	1210	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
NW-Outfall-004	Soil	WA-004A	WA9003	57653-85-7	1,2,3,6,7,8-HXCDD	10/1/98	65	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	57117-44-9	1,2,3,6,7,8-HXCDF	10/1/98	189	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	19408-74-3	1,2,3,7,8,9-HXCDD	10/1/98	38.8	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	72918-21-9	1,2,3,7,8,9-HXCDF	10/1/98	20.5	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	40321-76-4	1,2,3,7,8-PECDD	10/1/98	11.8	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	57117-41-6	1,2,3,7,8-PECDF	10/1/98	904	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	60851-34-5	2,3,4,6,7,8-HXCDF	10/1/98	112	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	57117-31-4	2,3,4,7,8-PECDF	10/1/98	413	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	1746-01-6	2,3,7,8-TCDD	10/1/98	34.3	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	51207-31-9	2,3,7,8-TCDF	10/1/98	1370	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	3268-87-9	OCDD	10/1/98	14900	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	39001-02-0	OCDF	10/1/98	1840	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	37871-00-4	TOTAL HPCDD	10/1/98	2650	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	38998-75-3	TOTAL HPCDF	10/1/98	1640	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	34465-46-8	TOTAL HXCDD	10/1/98	302	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	55684-94-1	TOTAL HXCDF	10/1/98	2080	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	TOC	TOTAL ORGANIC CARBON	10/1/98	43600	mg/Kg	Y	Y		1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW9060
NW-Outfall-004	Soil	WA-004A	WA9003	36088-22-9	TOTAL PECDD	10/1/98	98.4	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	30402-15-4	TOTAL PECDF	10/1/98	2220	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	TSO	TOTAL SOLIDS	10/1/98	91.7	%	Y	Y		1118147.3	922452.7	0	0.5	SS	SOIL	Soil	WET CHEMISTRY
NW-Outfall-004	Soil	WA-004A	WA9003	41903-57-5	TOTAL TCDD	10/1/98	303	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003	55722-27-5	Total TCDF	10/1/98	3040	ng/kg	Y	Y	J	1118147.3	922452.7	0	0.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9003N	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/1/98	1120	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/1/98	407	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/1/98	354	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	39227-28-6	1,2,3,4,7,8-HXCDD	10/1/98	24.6	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	70648-26-9	1,2,3,4,7,8-HXCDF	10/1/98	1130	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	57653-85-7	1,2,3,6,7,8-HXCDD	10/1/98	45.5	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	57117-44-9	1,2,3,6,7,8-HXCDF	10/1/98	184	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	19408-74-3	1,2,3,7,8,9-HXCDD	10/1/98	34.2	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	72918-21-9	1,2,3,7,8,9-HXCDF	10/1/98	28.9	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	40321-76-4	1,2,3,7,8-PECDD	10/1/98	9.85	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	57117-41-6	1,2,3,7,8-PECDF	10/1/98	797	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	60851-34-5	2,3,4,6,7,8-HXCDF	10/1/98	30.3	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	57117-31-4	2,3,4,7,8-PECDF	10/1/98	442	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	1746-01-6	2,3,7,8-TCDD	10/1/98	35.5	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	51207-31-9	2,3,7,8-TCDF	10/1/98	2030	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	3268-87-9	OCDD	10/1/98	10400	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	39001-02-0	OCDF	10/1/98	1450	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	SOLID	SOLIDS, PERCENT	10/1/98	82.4	%	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	WET CHEMISTRY
NW-Outfall-004	Soil	WA-004A	WA9003N	37871-00-4	TOTAL HPCDD	10/1/98	1850	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	38998-75-3	TOTAL HPCDF	10/1/98	1610	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	34465-46-8	TOTAL HXCDD	10/1/98	261	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	55684-94-1	TOTAL HXCDF	10/1/98	1970	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	TOC	TOTAL ORGANIC CARBON	10/1/98	72600	mg/Kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	SW9060
NW-Outfall-004	Soil	WA-004A	WA9003N	36088-22-9	TOTAL PECDD	10/1/98	59.9	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	30402-15-4	TOTAL PECDF	10/1/98	2210	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	41903-57-5	TOTAL TCDD	10/1/98	398	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9003N	55722-27-5	Total TCDF	10/1/98	2990	ng/kg	Y	Y		1118147.3	922452.7	0.5	1	SS	SOIL	SOIL	DFLM/NONE
NW-Outfall-004	Soil	WA-004A	WA9002	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	71-55-6	1,1,1-TRICHLOROETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	79-00-5	1,1,2-TRICHLOROETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	75-34-3	1,1-DICHLOROETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	75-35-4	1,1-DICHLOROETHENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	563-58-6	1,1-DICHLOROPROPENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	87-61-6	1,2,3-TRICHLOROBENZENE	9/15/97	2	ug/Kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	96-18-4	1,2,3-TRICHLOROPROPANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	120-82-1	1,2,4-TRICHLOROBENZENE	9/15/97	2.8	ug/Kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	95-63-6	1,2,4-TRIMETHYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	106-93-4	1,2-DIBROMOETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	95-50-1	1,2-DICHLOROBENZENE	9/15/97	28	ug/kg	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	107-06-2	1,2-DICHLOROETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	78-87-5	1,2-DICHLOROPROPANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	108-67-8	1,3,5-TRIMETHYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	541-73-1	1,3-DICHLOROBENZENE	9/15/97	7.1	ug/kg	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
NW-Outfall-004	Soil	WA-004A	WA9002	142-28-9	1,3-DICHLOROPROPANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	106-46-7	1,4-DICHLOROBENZENE	9/15/97	46	ug/kg	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	594-20-7	2,2-DICHLOROPROPANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	95-49-8	2-CHLOROTOLUENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	72-54-8	4,4'-DDD	9/15/97	39	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	72-55-9	4,4'-DDE	9/15/97	39	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	50-29-3	4,4'-DDT	9/15/97	39	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	106-43-4	4-CHLOROTOLUENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	309-00-2	ALDRIN	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	319-84-6	ALPHA-BHC	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	12674-11-2	AROCLOR-1016	9/15/97	190	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002N	12674-11-2	AROCLOR-1016	9/15/97	78	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	11104-28-2	AROCLOR-1221	9/15/97	190	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002N	11104-28-2	AROCLOR-1221	9/15/97	160	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002N	11141-16-5	AROCLOR-1232	9/15/97	78	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	11141-16-5	AROCLOR-1232	9/15/97	190	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002N	53469-21-9	AROCLOR-1242	9/15/97	78	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	53469-21-9	AROCLOR-1242	9/15/97	190	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002N	12672-29-6	AROCLOR-1248	9/15/97	78	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	12672-29-6	AROCLOR-1248	9/15/97	190	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002N	11097-69-1	AROCLOR-1254	9/15/97	78	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	11097-69-1	AROCLOR-1254	9/15/97	190	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	11096-82-5	AROCLOR-1260	9/15/97	730	ug/kg	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002N	11096-82-5	AROCLOR-1260	9/15/97	78	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	71-43-2	BENZENE	9/15/97	1.4	ug/Kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	319-85-7	BETA-BHC	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	108-86-1	BROMOBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	74-97-5	BROMOCHLOROMETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	75-27-4	BROMODICHLOROMETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	75-25-2	BROMOFORM	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	74-83-9	BROMOMETHANE	9/15/97	5.8	ug/Kg	Y	N	UJ	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	104-51-8	BUTYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	56-23-5	CARBON TETRACHLORIDE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	57-74-9	CHLORDANE	9/15/97	190	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	108-90-7	CHLOROBENZENE	9/15/97	16	ug/kg	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	124-48-1	CHLORODIBROMOMETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	75-00-3	CHLOROETHANE	9/15/97	5.8	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	67-66-3	CHLOROFORM	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	74-87-3	CHLOROMETHANE	9/15/97	5.8	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	156-59-2	CIS-1,2-DICHLOROETHENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	319-86-8	DELTA-BHC	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	74-95-3	DIBROMOMETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	75-71-8	DICHLORODIFLUOROMETHANE	9/15/97	5.8	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	60-57-1	DIELDRIN	9/15/97	39	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	959-98-8	ENDOSULFAN I	9/15/97	39	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	33213-65-9	ENDOSULFAN II	9/15/97	39	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	1031-07-8	ENDOSULFAN SULFATE	9/15/97	39	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	72-20-8	ENDRIN	9/15/97	39	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	7421-93-4	ENDRIN ALDEHYDE	9/15/97	39	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	100-41-4	ETHYLBENZENE	9/15/97	2.9	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	58-89-9	GAMMA-BHC (LINDANE)	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	76-44-8	HEPTACHLOR	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	1024-57-3	HEPTACHLOR EPOXIDE	9/15/97	19	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	118-74-1	HEXACHLOROBENZENE	9/15/97	69	ug/Kg	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	87-68-3	HEXACHLOROBUTADIENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	98-82-8	ISOPROPYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	7439-97-6	MERCURY	9/15/97	60	mg/kg	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	Soil	7471A/NONE
NW-Outfall-004	Soil	WA-004A	WA9002N	7439-97-6	MERCURY	9/15/97	23.1	mg/kg	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	SOIL	7471A/NONE
NW-Outfall-004	Soil	WA-004A	WA9002	72-43-5	METHOXYCHLOR	9/15/97	190	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	75-09-2	METHYLENE CHLORIDE	9/15/97	5.8	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	91-20-3	NAPHTHALENE	9/15/97	3.8	ug/kg	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	103-65-1	N-PROPYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	99-87-6	P-ISOPROPYLTOLUENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	135-98-8	SEC-BUTYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	100-42-5	STYRENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	98-06-6	TERT-BUTYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
NW-Outfall-004	Soil	WA-004A	WA9002	127-18-4	TETRACHLOROETHENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	108-88-3	TOLUENE	9/15/97	2.9	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	TSO	TOTAL SOLIDS	9/15/97	86.1	%	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	Soil	2540-G
NW-Outfall-004	Soil	WA-004A	WA9002	8001-35-2	TOXAPHENE	9/15/97	190	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004A	WA9002	156-60-5	TRANS-1,2-DICHLOROETHENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/15/97	2.9	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	79-01-6	TRICHLOROETHENE	9/15/97	21	ug/Kg	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	75-69-4	TRICHLOROFLUOROMETHANE	9/15/97	5.8	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	75-01-4	VINYL CHLORIDE	9/15/97	5.8	ug/Kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9002	1330-20-7	XYLENES, TOTAL	9/15/97	2.9	ug/kg	Y	N	U	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004A	WA9004	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/1/98	609	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/1/98	285	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/1/98	205	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	39227-28-6	1,2,3,4,7,8-HXCDD	10/1/98	10.3	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	70648-26-9	1,2,3,4,7,8-HXCDF	10/1/98	1080	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	57653-85-7	1,2,3,6,7,8-HXCDD	10/1/98	29.9	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	57117-44-9	1,2,3,6,7,8-HXCDF	10/1/98	177	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	19408-74-3	1,2,3,7,8,9-HXCDD	10/1/98	16.6	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	72918-21-9	1,2,3,7,8,9-HXCDF	10/1/98	20.7	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	40321-76-4	1,2,3,7,8-PECDD	10/1/98	5.66	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	57117-41-6	1,2,3,7,8-PECDF	10/1/98	802	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	60851-34-5	2,3,4,6,7,8-HXCDF	10/1/98	41.9	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	57117-31-4	2,3,4,7,8-PECDF	10/1/98	399	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	1746-01-6	2,3,7,8-TCDD	10/1/98	21.1	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	51207-31-9	2,3,7,8-TCDF	10/1/98	1260	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	3268-87-9	OCDD	10/1/98	5530	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	39001-02-0	OCDF	10/1/98	1000	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	37871-00-4	TOTAL HPCDD	10/1/98	1030	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	38998-75-3	TOTAL HPCDF	10/1/98	967	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	34465-46-8	TOTAL HXCDD	10/1/98	149	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	55684-94-1	TOTAL HXCDF	10/1/98	1870	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	TOC	TOTAL ORGANIC CARBON	10/1/98	89600	mg/Kg	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW9060
NW-Outfall-004	Soil	WA-004A	WA9004	36088-22-9	TOTAL PECDD	10/1/98	53.7	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	30402-15-4	TOTAL PECDF	10/1/98	2170	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	TSO	TOTAL SOLIDS	10/1/98	82.4	%	Y	Y		1118147.3	922452.7	1	1.5	SS	SOIL	Soil	WET CHEMISTRY
NW-Outfall-004	Soil	WA-004A	WA9004	41903-57-5	TOTAL TCDD	10/1/98	145	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004A	WA9004	55722-27-5	Total TCDF	10/1/98	2880	ng/kg	Y	Y	J	1118147.3	922452.7	1	1.5	SS	SOIL	Soil	SW8290
NW-Outfall-004	Soil	WA-004B	WA9005	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	71-55-6	1,1,1-TRICHLOROETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	79-00-5	1,1,2-TRICHLOROETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	75-34-3	1,1-DICHLOROETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	75-35-4	1,1-DICHLOROETHENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	563-58-6	1,1-DICHLOROPROPENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	87-61-6	1,2,3-TRICHLOROBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	96-18-4	1,2,3-TRICHLOROPROPANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	120-82-1	1,2,4-TRICHLOROBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	95-63-6	1,2,4-TRIMETHYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	106-93-4	1,2-DIBROMOETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	95-50-1	1,2-DICHLOROBENZENE	9/15/97	2.9	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	107-06-2	1,2-DICHLOROETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	78-87-5	1,2-DICHLOROPROPANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	108-67-8	1,3,5-TRIMETHYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	541-73-1	1,3-DICHLOROBENZENE	9/15/97	2.9	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	142-28-9	1,3-DICHLOROPROPANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	106-46-7	1,4-DICHLOROBENZENE	9/15/97	2.9	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	594-20-7	2,2-DICHLOROPROPANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	95-49-8	2-CHLOROTOLUENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	72-54-8	4,4'-DDD	9/15/97	39	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	72-55-9	4,4'-DDE	9/15/97	39	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	50-29-3	4,4'-DDT	9/15/97	39	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	106-43-4	4-CHLOROTOLUENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	309-00-2	ALDRIN	9/15/97	19	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	319-84-6	ALPHA-BHC	9/15/97	19	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	12674-11-2	AROCLOR-1016	9/15/97	190	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	11104-28-2	AROCLOR-1221	9/15/97	190	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
NW-Outfall-004	Soil	WA-004B	WA9005	11141-16-5	AROCLOR-1232	9/15/97	190	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	53469-21-9	AROCLOR-1242	9/15/97	190	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	12672-29-6	AROCLOR-1248	9/15/97	190	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	11097-69-1	AROCLOR-1254	9/15/97	190	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	11096-82-5	AROCLOR-1260	9/15/97	1500	ug/kg	Y	Y		1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	71-43-2	BENZENE	9/15/97	2.9	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	319-85-7	BETA-BHC	9/15/97	19	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	108-86-1	BROMOBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	74-97-5	BROMOCHLOROMETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	75-27-4	BROMODICHLOROMETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	75-25-2	BROMOFORM	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	74-83-9	BROMOMETHANE	9/15/97	5.8	ug/Kg	Y	N	UJ	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	104-51-8	BUTYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	56-23-5	CARBON TETRACHLORIDE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	57-74-9	CHLORDANE	9/15/97	190	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	108-90-7	CHLOROBENZENE	9/15/97	2.9	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	124-48-1	CHLORODIBROMOMETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	75-00-3	CHLOROETHANE	9/15/97	5.8	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	67-66-3	CHLOROFORM	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	74-87-3	CHLOROMETHANE	9/15/97	5.8	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	156-59-2	CIS-1,2-DICHLOROETHENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	319-86-8	DELTA-BHC	9/15/97	19	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	74-95-3	DIBROMOMETHANE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	75-71-8	DICHLORODIFLUOROMETHANE	9/15/97	5.8	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	60-57-1	DIELDRIN	9/15/97	39	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	959-98-8	ENDOSULFAN I	9/15/97	39	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	33213-65-9	ENDOSULFAN II	9/15/97	39	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	1031-07-8	ENDOSULFAN SULFATE	9/15/97	39	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	72-20-8	ENDRIN	9/15/97	39	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	7421-93-4	ENDRIN ALDEHYDE	9/15/97	39	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	100-41-4	ETHYLBENZENE	9/15/97	2.9	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	58-89-9	GAMMA-BHC (LINDANE)	9/15/97	19	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	76-44-8	HEPTACHLOR	9/15/97	19	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	1024-57-3	HEPTACHLOR EPOXIDE	9/15/97	19	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	118-74-1	HEXACHLOROBENZENE	9/15/97	140	ug/Kg	Y	Y		1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	87-68-3	HEXACHLOROBUTADIENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	98-82-8	ISOPROPYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	7439-97-6	MERCURY	9/15/97	7.3	mg/kg	Y	Y		1118046.4	922541	0	0.5	SS	SOIL	Soil	7471A/NONE
NW-Outfall-004	Soil	WA-004B	WA9005	72-43-5	METHOXYCHLOR	9/15/97	190	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	75-09-2	METHYLENE CHLORIDE	9/15/97	5.8	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	91-20-3	NAPHTHALENE	9/15/97	2.9	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	103-65-1	N-PROPYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	99-87-6	P-ISOPROPYLTOLUENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	135-98-8	SEC-BUTYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	100-42-5	STYRENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	98-06-6	TERT-BUTYLBENZENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	127-18-4	TETRACHLOROETHENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	108-88-3	TOLUENE	9/15/97	2.9	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	TSO	TOTAL SOLIDS	9/15/97	85.7	%	Y	Y		1118046.4	922541	0	0.5	SS	SOIL	Soil	2540-G
NW-Outfall-004	Soil	WA-004B	WA9005	8001-35-2	TOXAPHENE	9/15/97	190	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9005	156-60-5	TRANS-1,2-DICHLOROETHENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/15/97	2.9	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	79-01-6	TRICHLOROETHENE	9/15/97	9	ug/Kg	Y	Y		1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	75-69-4	TRICHLOROFLUOROMETHANE	9/15/97	5.8	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	75-01-4	VINYL CHLORIDE	9/15/97	5.8	ug/Kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9005	1330-20-7	XYLENES, TOTAL	9/15/97	2.9	ug/kg	Y	N	U	1118046.4	922541	0	0.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	71-55-6	1,1,1-TRICHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	79-00-5	1,1,2-TRICHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	75-34-3	1,1-DICHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	75-35-4	1,1-DICHLOROETHENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	563-58-6	1,1-DICHLOROPROPENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	87-61-6	1,2,3-TRICHLOROBENZENE	9/15/97	12	ug/Kg	Y	Y	J	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	96-18-4	1,2,3-TRICHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	120-82-1	1,2,4-TRICHLOROBENZENE	9/15/97	13	ug/Kg	Y	Y	J	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
NW-Outfall-004	Soil	WA-004B	WA9006	95-63-6	1,2,4-TRIMETHYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	106-93-4	1,2-DIBROMOETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	95-50-1	1,2-DICHLOROBENZENE	9/15/97	20	ug/kg	Y	Y	J	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	107-06-2	1,2-DICHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	78-87-5	1,2-DICHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	108-67-8	1,3,5-TRIMETHYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	541-73-1	1,3-DICHLOROBENZENE	9/15/97	6.1	ug/kg	Y	Y	J	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	142-28-9	1,3-DICHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	106-46-7	1,4-DICHLOROBENZENE	9/15/97	20	ug/kg	Y	Y	J	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	594-20-7	2,2-DICHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	95-49-8	2-CHLOROTOLUENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	72-54-8	4,4'-DDD	9/15/97	2400	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	72-55-9	4,4'-DDE	9/15/97	2400	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	50-29-3	4,4'-DDT	9/15/97	2400	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	106-43-4	4-CHLOROTOLUENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	309-00-2	ALDRIN	9/15/97	1200	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	319-84-6	ALPHA-BHC	9/15/97	1200	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006N	12674-11-2	AROCLOR-1016	9/15/97	83	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	12674-11-2	AROCLOR-1016	9/15/97	200	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	11104-28-2	AROCLOR-1221	9/15/97	200	ug/kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006N	11104-28-2	AROCLOR-1221	9/15/97	170	ug/kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006N	11141-16-5	AROCLOR-1232	9/15/97	83	ug/kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	11141-16-5	AROCLOR-1232	9/15/97	200	ug/kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	53469-21-9	AROCLOR-1242	9/15/97	200	ug/kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006N	53469-21-9	AROCLOR-1242	9/15/97	83	ug/kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	12672-29-6	AROCLOR-1248	9/15/97	200	ug/kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006N	12672-29-6	AROCLOR-1248	9/15/97	83	ug/kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006N	11097-69-1	AROCLOR-1254	9/15/97	83	ug/kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	11097-69-1	AROCLOR-1254	9/15/97	200	ug/kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	11096-82-5	AROCLOR-1260	9/15/97	830	ug/kg	Y	Y	JN	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006N	11096-82-5	AROCLOR-1260	9/15/97	83	ug/kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	SOIL	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	71-43-2	BENZENE	9/15/97	3	ug/kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	319-85-7	BETA-BHC	9/15/97	1200	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	108-86-1	BROMOBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	74-97-5	BROMOCHLOROMETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	75-27-4	BROMODICHLOROMETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	75-25-2	BROMOFORM	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	74-83-9	BROMOMETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	104-51-8	BUTYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	56-23-5	CARBON TETRACHLORIDE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	57-74-9	CHLORDANE	9/15/97	12000	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	108-90-7	CHLOROBENZENE	9/15/97	7.3	ug/kg	Y	Y	J	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	124-48-1	CHLORODIBROMOMETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	75-00-3	CHLOROETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	67-66-3	CHLOROFORM	9/15/97	1.3	ug/Kg	Y	Y	J	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	74-87-3	CHLOROMETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	156-59-2	CIS-1,2-DICHLOROETHENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	319-86-8	DELTA-BHC	9/15/97	1200	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	74-95-3	DIBROMOMETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	75-71-8	DICHLORODIFLUOROMETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	60-57-1	DIELDRIN	9/15/97	2400	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	959-98-8	ENDOSULFAN I	9/15/97	2400	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	33213-65-9	ENDOSULFAN II	9/15/97	2400	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	1031-07-8	ENDOSULFAN SULFATE	9/15/97	2400	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	72-20-8	ENDRIN	9/15/97	2400	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	7421-93-4	ENDRIN ALDEHYDE	9/15/97	2400	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	100-41-4	ETHYLBENZENE	9/15/97	3	ug/kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	58-89-9	GAMMA-BHC (LINDANE)	9/15/97	1200	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	76-44-8	HEPTACHLOR	9/15/97	1200	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	1024-57-3	HEPTACHLOR EPOXIDE	9/15/97	1200	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	118-74-1	HEXACHLOROBENZENE	9/15/97	17000	ug/Kg	Y	Y	JN	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	87-68-3	HEXACHLOROBUTADIENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	98-82-8	ISOPROPYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	7439-97-6	MERCURY	9/15/97	160	mg/kg	Y	Y		1118046.4	922541	1	1.5	SS	SOIL	Soil	7471A/NONE
NW-Outfall-004	Soil	WA-004B	WA9006N	7439-97-6	MERCURY	9/15/97	87.8	mg/kg	Y	Y		1118046.4	922541	1	1.5	SS	SOIL	SOIL	7471A/NONE

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
NW-Outfall-004	Soil	WA-004B	WA9006	72-43-5	METHOXYCHLOR	9/15/97	12000	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	75-09-2	METHYLENE CHLORIDE	9/15/97	6	ug/kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	91-20-3	NAPHTHALENE	9/15/97	3	ug/kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	103-65-1	N-PROPYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	99-87-6	P-ISOPROPYLTOLUENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	135-98-8	SEC-BUTYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	100-42-5	STYRENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	98-06-6	TERT-BUTYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	127-18-4	TETRACHLOROETHENE	9/15/97	1.7	ug/Kg	Y	Y	J	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	108-88-3	TOLUENE	9/15/97	3	ug/kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	TSO	TOTAL SOLIDS	9/15/97	83.4	%	Y	Y		1118046.4	922541	1	1.5	SS	SOIL	Soil	2540-G
NW-Outfall-004	Soil	WA-004B	WA9006	8001-35-2	TOXAPHENE	9/15/97	12000	ug/Kg	Y	N	U	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-004B	WA9006	156-60-5	TRANS-1,2-DICHLOROETHENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/15/97	3	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	79-01-6	TRICHLOROETHENE	9/15/97	7.4	ug/Kg	Y	Y	J	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	75-69-4	TRICHLOROFLUOROMETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	75-01-4	VINYL CHLORIDE	9/15/97	6	ug/Kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-004B	WA9006	1330-20-7	XYLENES, TOTAL	9/15/97	3	ug/kg	Y	N	UJ	1118046.4	922541	1	1.5	SS	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	71-55-6	1,1,1-TRICHLOROETHANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	79-00-5	1,1,2-TRICHLOROETHANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	75-34-3	1,1-DICHLOROETHANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	75-35-4	1,1-DICHLOROETHENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	563-58-6	1,1-DICHLOROPROPENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	87-61-6	1,2,3-TRICHLOROBENZENE	9/15/97	7400	ug/Kg	Y	Y		1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	96-18-4	1,2,3-TRICHLOROPROPANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	120-82-1	1,2,4-TRICHLOROBENZENE	9/15/97	5200	ug/Kg	Y	Y		1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	95-63-6	1,2,4-TRIMETHYLBENZENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	106-93-4	1,2-DIBROMOETHANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	95-50-1	1,2-DICHLOROBENZENE	9/15/97	980	ug/kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	107-06-2	1,2-DICHLOROETHANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	78-87-5	1,2-DICHLOROPROPANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	108-67-8	1,3,5-TRIMETHYLBENZENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	541-73-1	1,3-DICHLOROBENZENE	9/15/97	980	ug/kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	142-28-9	1,3-DICHLOROPROPANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	106-46-7	1,4-DICHLOROBENZENE	9/15/97	2400000	ug/kg	Y	Y		1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	594-20-7	2,2-DICHLOROPROPANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	95-49-8	2-CHLOROTOLUENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	72-54-8	4,4'-DDD	9/15/97	100	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	72-55-9	4,4'-DDE	9/15/97	100	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	50-29-3	4,4'-DDT	9/15/97	100	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	106-43-4	4-CHLOROTOLUENE	9/15/97	510	ug/Kg	Y	Y	J	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	309-00-2	ALDRIN	9/15/97	52	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	319-84-6	ALPHA-BHC	9/15/97	52	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	12674-11-2	AROCLOR-1016	9/15/97	260	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	11104-28-2	AROCLOR-1221	9/15/97	260	ug/kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	11141-16-5	AROCLOR-1232	9/15/97	260	ug/kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	53469-21-9	AROCLOR-1242	9/15/97	690	ug/kg	Y	Y		1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	12672-29-6	AROCLOR-1248	9/15/97	260	ug/kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	11097-69-1	AROCLOR-1254	9/15/97	260	ug/kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	11096-82-5	AROCLOR-1260	9/15/97	1000	ug/kg	Y	Y		1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	71-43-2	BENZENE	9/15/97	980	ug/kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	319-85-7	BETA-BHC	9/15/97	52	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	108-86-1	BROMOBENZENE	9/15/97	260	ug/Kg	Y	Y	J	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	74-97-5	BROMOCHLOROMETHANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	75-27-4	BROMODICHLOROMETHANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	75-25-2	BROMOFORM	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	74-83-9	BROMOMETHANE	9/15/97	2000	ug/Kg	Y	N	UJ	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	104-51-8	BUTYLBENZENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	56-23-5	CARBON TETRACHLORIDE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	57-74-9	CHLORDANE	9/15/97	520	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	108-90-7	CHLOROBENZENE	9/15/97	2200	ug/kg	Y	Y		1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	124-48-1	CHLORODIBROMOMETHANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	75-00-3	CHLOROETHANE	9/15/97	2000	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	67-66-3	CHLOROFORM	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
NW-Outfall-004	Soil	WA-SS#3	WA9241	74-87-3	CHLOROMETHANE	9/15/97	2000	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	156-59-2	CIS-1,2-DICHLOROETHENE	9/15/97	570	ug/Kg	Y	Y	J	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	319-86-8	DELTA-BHC	9/15/97	52	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	74-95-3	DIBROMOMETHANE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	75-71-8	DICHLORODIFLUOROMETHANE	9/15/97	2000	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	60-57-1	DIELDRIN	9/15/97	100	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	959-98-8	ENDOSULFAN I	9/15/97	100	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	33213-65-9	ENDOSULFAN II	9/15/97	100	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	1031-07-8	ENDOSULFAN SULFATE	9/15/97	100	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	72-20-8	ENDRIN	9/15/97	100	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	7421-93-4	ENDRIN ALDEHYDE	9/15/97	100	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	100-41-4	ETHYLBENZENE	9/15/97	980	ug/kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	58-89-9	GAMMA-BHC (LINDANE)	9/15/97	52	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	76-44-8	HEPTACHLOR	9/15/97	52	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	1024-57-3	HEPTACHLOR EPOXIDE	9/15/97	52	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	118-74-1	HEXACHLOROBENZENE	9/15/97	730	ug/Kg	Y	Y		1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	87-68-3	HEXACHLOROBUTADIENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	98-82-8	ISOPROPYLBENZENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	7439-97-6	MERCURY	9/15/97	12	mg/kg	Y	Y		1117958.6	922445.5	9	9	TP	SOIL	Soil	7471A/NONE
NW-Outfall-004	Soil	WA-SS#3	WA9241	72-43-5	METHOXYCHLOR	9/15/97	520	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	75-09-2	METHYLENE CHLORIDE	9/15/97	2000	ug/kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	91-20-3	NAPHTHALENE	9/15/97	350	ug/kg	Y	Y	J	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	103-65-1	N-PROPYLBENZENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	99-87-6	P-ISOPROPYLTOLUENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	135-98-8	SEC-BUTYLBENZENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	100-42-5	STYRENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	98-06-6	TERT-BUTYLBENZENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	127-18-4	TETRACHLOROETHENE	9/15/97	340	ug/Kg	Y	Y	J	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	108-88-3	TOLUENE	9/15/97	980	ug/kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	TSO	TOTAL SOLIDS	9/15/97	63.7	%	Y	Y		1117958.6	922445.5	9	9	TP	SOIL	Soil	2540-G
NW-Outfall-004	Soil	WA-SS#3	WA9241	8001-35-2	TOXAPHENE	9/15/97	520	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8080
NW-Outfall-004	Soil	WA-SS#3	WA9241	156-60-5	TRANS-1,2-DICHLOROETHENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/15/97	980	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	79-01-6	TRICHLOROETHENE	9/15/97	570	ug/Kg	Y	Y	J	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	75-69-4	TRICHLOROFLUOROMETHANE	9/15/97	2000	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	75-01-4	VINYL CHLORIDE	9/15/97	2000	ug/Kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
NW-Outfall-004	Soil	WA-SS#3	WA9241	1330-20-7	XYLENES, TOTAL	9/15/97	980	ug/kg	Y	N	U	1117958.6	922445.5	9	9	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	71-55-6	1,1,1-TRICHLOROETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	79-00-5	1,1,2-TRICHLOROETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	75-34-3	1,1-DICHLOROETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	75-35-4	1,1-DICHLOROETHENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	563-58-6	1,1-DICHLOROPROPENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	87-61-6	1,2,3-TRICHLOROBENZENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	96-18-4	1,2,3-TRICHLOROPROPANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	120-82-1	1,2,4-TRICHLOROBENZENE	9/18/97	9500	ug/Kg	Y	Y		1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	95-63-6	1,2,4-TRIMETHYLBENZENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	106-93-4	1,2-DIBROMOETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	95-50-1	1,2-DICHLOROBENZENE	9/18/97	274400	ug/kg	Y	Y		1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	107-06-2	1,2-DICHLOROETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	78-87-5	1,2-DICHLOROPROPANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	108-67-8	1,3,5-TRIMETHYLBENZENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	541-73-1	1,3-DICHLOROBENZENE	9/18/97	116200	ug/kg	Y	Y		1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	142-28-9	1,3-DICHLOROPROPANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	106-46-7	1,4-DICHLOROBENZENE	9/18/97	2098100	ug/kg	Y	Y		1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	594-20-7	2,2-DICHLOROPROPANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	95-49-8	2-CHLOROTOLUENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	106-43-4	4-CHLOROTOLUENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	12674-11-2	AROCLOR-1016	9/18/97	100	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144N	11104-28-2	AROCLOR-1221	9/18/97	200	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144N	11141-16-5	AROCLOR-1232	9/18/97	100	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144N	53469-21-9	AROCLOR-1242	9/18/97	100	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144N	12672-29-6	AROCLOR-1248	9/18/97	100	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144N	11097-69-1	AROCLOR-1254	9/18/97	100	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8080

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
On-Site Ditches	Soil	WA-NIMO1	WA9144N	11096-82-5	AROCLOR-1260	9/18/97	100	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144N	71-43-2	BENZENE	9/18/97	9300	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	108-86-1	BROMOBENZENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	74-97-5	BROMOCHLOROMETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	75-27-4	BROMODICHLOROMETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	75-25-2	BROMOFORM	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	74-83-9	BROMOMETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	104-51-8	BUTYLBENZENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	56-23-5	CARBON TETRACHLORIDE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	108-90-7	CHLOROBENZENE	9/18/97	29100	ug/kg	Y	Y		1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	124-48-1	CHLORODIBROMOMETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	75-00-3	CHLOROETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	67-66-3	CHLOROFORM	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	74-87-3	CHLOROMETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	156-59-2	CIS-1,2-DICHLOROETHENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	74-95-3	DIBROMOMETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	75-71-8	DICHLORODIFLUOROMETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	100-41-4	ETHYLBENZENE	9/18/97	9300	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	87-68-3	HEXACHLOROBUTADIENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	98-82-8	ISOPROPYLBENZENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	7439-97-6	MERCURY	9/18/97	35.5	mg/kg	Y	Y		1118206.8	922392.2	3	3	TP	SOIL	SOIL	7471A/NONE
On-Site Ditches	Soil	WA-NIMO1	WA9144N	75-09-2	METHYLENE CHLORIDE	9/18/97	12100	ug/kg	Y	Y	J	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	136777-61-2	m-Xylene & p-Xylene	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	91-20-3	NAPHTHALENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	103-65-1	N-PROPYLBENZENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	95-47-6	O-XYLENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	99-87-6	P-ISOPROPYLTOLUENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	135-98-8	SEC-BUTYLBENZENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	100-42-5	STYRENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	98-06-6	TERT-BUTYLBENZENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	127-18-4	TETRACHLOROETHENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	108-88-3	TOLUENE	9/18/97	9300	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	156-60-5	TRANS-1,2-DICHLOROETHENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	79-01-6	TRICHLOROETHENE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	75-69-4	TRICHLOROFLUOROMETHANE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144N	75-01-4	VINYL CHLORIDE	9/18/97	9300	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	SOIL	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	71-55-6	1,1,1-TRICHLOROETHANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	79-00-5	1,1,2-TRICHLOROETHANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	75-34-3	1,1-DICHLOROETHANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	75-35-4	1,1-DICHLOROETHENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	563-58-6	1,1-DICHLOROPROPENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	87-61-6	1,2,3-TRICHLOROBENZENE	9/18/97	2200	ug/Kg	Y	Y	J	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	96-18-4	1,2,3-TRICHLOROPROPANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	120-82-1	1,2,4-TRICHLOROBENZENE	9/18/97	7500	ug/Kg	Y	Y	J	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	95-63-6	1,2,4-TRIMETHYLBENZENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	106-93-4	1,2-DIBROMOETHANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	95-50-1	1,2-DICHLOROBENZENE	9/18/97	190000	ug/kg	Y	Y		1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	107-06-2	1,2-DICHLOROETHANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	78-87-5	1,2-DICHLOROPROPANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	108-67-8	1,3,5-TRIMETHYLBENZENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	541-73-1	1,3-DICHLOROBENZENE	9/18/97	76000	ug/kg	Y	Y		1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	142-28-9	1,3-DICHLOROPROPANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	106-46-7	1,4-DICHLOROBENZENE	9/18/97	430000	ug/kg	Y	Y		1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	594-20-7	2,2-DICHLOROPROPANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	95-49-8	2-CHLOROTOLUENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	72-54-8	4,4'-DDD	9/18/97	250	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	72-55-9	4,4'-DDE	9/18/97	250	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	50-29-3	4,4'-DDT	9/18/97	250	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	106-43-4	4-CHLOROTOLUENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	309-00-2	ALDRIN	9/18/97	120	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	319-84-6	ALPHA-BHC	9/18/97	120	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	12674-11-2	AROCLOR-1016	9/18/97	250	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
On-Site Ditches	Soil	WA-NIMO1	WA9144	11104-28-2	AROCLOR-1221	9/18/97	250	ug/kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	11141-16-5	AROCLOR-1232	9/18/97	250	ug/kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	53469-21-9	AROCLOR-1242	9/18/97	250	ug/kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	12672-29-6	AROCLOR-1248	9/18/97	250	ug/kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	11097-69-1	AROCLOR-1254	9/18/97	250	ug/kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	11096-82-5	AROCLOR-1260	9/18/97	1200	ug/kg	Y	Y	J	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	71-43-2	BENZENE	9/18/97	9200	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	319-85-7	BETA-BHC	9/18/97	120	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	108-86-1	BROMOBENZENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	74-97-5	BROMOCHLOROMETHANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	75-27-4	BROMODICHLOROMETHANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	75-25-2	BROMOFORM	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	74-83-9	BROMOMETHANE	9/18/97	18000	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	104-51-8	BUTYLBENZENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	56-23-5	CARBON TETRACHLORIDE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	57-74-9	CHLORDANE	9/18/97	1200	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	108-90-7	CHLOROBENZENE	9/18/97	71000	ug/kg	Y	Y		1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	124-48-1	CHLORODIBROMOMETHANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	75-00-3	CHLOROETHANE	9/18/97	18000	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	67-66-3	CHLOROFORM	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	74-87-3	CHLOROMETHANE	9/18/97	18000	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	156-59-2	CIS-1,2-DICHLOROETHENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	319-86-8	DELTA-BHC	9/18/97	120	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	74-95-3	DIBROMOMETHANE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	75-71-8	DICHLORODIFLUOROMETHANE	9/18/97	18000	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	60-57-1	DIELDRIN	9/18/97	250	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	959-98-8	ENDOSULFAN I	9/18/97	250	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	33213-65-9	ENDOSULFAN II	9/18/97	250	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	1031-07-8	ENDOSULFAN SULFATE	9/18/97	250	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	72-20-8	ENDRIN	9/18/97	250	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	7421-93-4	ENDRIN ALDEHYDE	9/18/97	250	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	100-41-4	ETHYLBENZENE	9/18/97	9200	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	58-89-9	GAMMA-BHC (LINDANE)	9/18/97	120	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	76-44-8	HEPTACHLOR	9/18/97	120	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	1024-57-3	HEPTACHLOR EPOXIDE	9/18/97	120	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	118-74-1	HEXACHLOROBENZENE	9/18/97	270	ug/Kg	Y	Y	J	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	87-68-3	HEXACHLOROBUTADIENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	98-82-8	ISOPROPYLBENZENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	7439-97-6	MERCURY	9/18/97	65	mg/kg	Y	Y		1118206.8	922392.2	3	3	TP	SOIL	Soil	7471A/NONE
On-Site Ditches	Soil	WA-NIMO1	WA9144	72-43-5	METHOXYCHLOR	9/18/97	1200	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	75-09-2	METHYLENE CHLORIDE	9/18/97	2700	ug/kg	Y	Y	J	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	91-20-3	NAPHTHALENE	9/18/97	9200	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	103-65-1	N-PROPYLBENZENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	99-87-6	P-ISOPROPYLTOLUENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	135-98-8	SEC-BUTYLBENZENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	100-42-5	STYRENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	98-06-6	TERT-BUTYLBENZENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	127-18-4	TETRACHLOROETHENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	108-88-3	TOLUENE	9/18/97	9200	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	TSO	TOTAL SOLIDS	9/18/97	67.6	%	Y	Y		1118206.8	922392.2	3	3	TP	SOIL	Soil	2540-G
On-Site Ditches	Soil	WA-NIMO1	WA9144	8001-35-2	TOXAPHENE	9/18/97	1200	ug/Kg	Y	N	UJ	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO1	WA9144	156-60-5	TRANS-1,2-DICHLOROETHENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	79-01-6	TRICHLOROETHENE	9/18/97	9200	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	75-69-4	TRICHLOROFLUOROMETHANE	9/18/97	18000	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	75-01-4	VINYL CHLORIDE	9/18/97	18000	ug/Kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO1	WA9144	1330-20-7	XYLENES, TOTAL	9/18/97	9200	ug/kg	Y	N	U	1118206.8	922392.2	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	71-55-6	1,1,1-TRICHLOROETHANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	79-00-5	1,1,2-TRICHLOROETHANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	75-34-3	1,1-DICHLOROETHANE	9/18/97	3.4	ug/Kg	Y	Y	J	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	75-35-4	1,1-DICHLOROETHENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	563-58-6	1,1-DICHLOROPROPENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	87-61-6	1,2,3-TRICHLOROBENZENE	9/18/97	8	ug/Kg	Y	Y	J	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	96-18-4	1,2,3-TRICHLOROPROPANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
On-Site Ditches	Soil	WA-NIMO2	WA9145	120-82-1	1,2,4-TRICHLOROBENZENE	9/18/97	14	ug/Kg	Y	Y	J	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	95-63-6	1,2,4-TRIMETHYLBENZENE	9/18/97	50	ug/Kg	Y	Y		1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	106-93-4	1,2-DIBROMOETHANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	95-50-1	1,2-DICHLOROBENZENE	9/18/97	230	ug/kg	Y	Y		1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	107-06-2	1,2-DICHLOROETHANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	78-87-5	1,2-DICHLOROPROPANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	108-67-8	1,3,5-TRIMETHYLBENZENE	9/18/97	23	ug/Kg	Y	Y		1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	541-73-1	1,3-DICHLOROBENZENE	9/18/97	160	ug/kg	Y	Y		1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	142-28-9	1,3-DICHLOROPROPANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	106-46-7	1,4-DICHLOROBENZENE	9/18/97	440	ug/kg	Y	Y		1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	594-20-7	2,2-DICHLOROPROPANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	95-49-8	2-CHLOROTOLUENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	72-54-8	4,4'-DDD	9/18/97	39	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	72-55-9	4,4'-DDE	9/18/97	39	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	50-29-3	4,4'-DDT	9/18/97	39	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	106-43-4	4-CHLOROTOLUENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	309-00-2	ALDRIN	9/18/97	20	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	319-84-6	ALPHA-BHC	9/18/97	20	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	12674-11-2	AROCLOR-1016	9/18/97	200	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	11104-28-2	AROCLOR-1221	9/18/97	200	ug/kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	11141-16-5	AROCLOR-1232	9/18/97	200	ug/kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	53469-21-9	AROCLOR-1242	9/18/97	200	ug/kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	12672-29-6	AROCLOR-1248	9/18/97	200	ug/kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	11097-69-1	AROCLOR-1254	9/18/97	200	ug/kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	11096-82-5	AROCLOR-1260	9/18/97	560	ug/kg	Y	Y	J	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	71-43-2	BENZENE	9/18/97	120	ug/kg	Y	Y		1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	319-85-7	BETA-BHC	9/18/97	20	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	108-86-1	BROMOBENZENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	74-97-5	BROMOCHLOROMETHANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	75-27-4	BROMODICHLOROMETHANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	75-25-2	BROMOFORM	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	74-83-9	BROMOMETHANE	9/18/97	29	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	104-51-8	BUTYLBENZENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	56-23-5	CARBON TETRACHLORIDE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	57-74-9	CHLORDANE	9/18/97	200	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	108-90-7	CHLOROBENZENE	9/18/97	1200	ug/kg	Y	Y		1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	124-48-1	CHLORODIBROMOMETHANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	75-00-3	CHLOROETHANE	9/18/97	29	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	67-66-3	CHLOROFORM	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	74-87-3	CHLOROMETHANE	9/18/97	29	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	156-59-2	CIS-1,2-DICHLOROETHENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	319-86-8	DELTA-BHC	9/18/97	20	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	74-95-3	DIBROMOMETHANE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	75-71-8	DICHLORODIFLUOROMETHANE	9/18/97	29	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	60-57-1	DIELDRIN	9/18/97	39	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	959-98-8	ENDOSULFAN I	9/18/97	39	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	33213-65-9	ENDOSULFAN II	9/18/97	39	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	1031-07-8	ENDOSULFAN SULFATE	9/18/97	39	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	72-20-8	ENDRIN	9/18/97	39	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	7421-93-4	ENDRIN ALDEHYDE	9/18/97	39	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	100-41-4	ETHYLBENZENE	9/18/97	3.8	ug/kg	Y	Y	J	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	58-89-9	GAMMA-BHC (LINDANE)	9/18/97	20	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	76-44-8	HEPTACHLOR	9/18/97	20	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	1024-57-3	HEPTACHLOR EPOXIDE	9/18/97	20	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	118-74-1	HEXACHLOROBENZENE	9/18/97	74	ug/Kg	Y	Y	J	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	87-68-3	HEXACHLOROBUTADIENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	98-82-8	ISOPROPYLBENZENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	7439-97-6	MERCURY	9/18/97	16	mg/kg	Y	Y		1118155.3	922435.5	3	3	TP	SOIL	Soil	7471A/NONE
On-Site Ditches	Soil	WA-NIMO2	WA9145	72-43-5	METHOXYCHLOR	9/18/97	200	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	75-09-2	METHYLENE CHLORIDE	9/18/97	15	ug/kg	Y	Y	J	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	91-20-3	NAPHTHALENE	9/18/97	290	ug/kg	Y	Y		1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	103-65-1	N-PROPYLBENZENE	9/18/97	8.1	ug/Kg	Y	Y	J	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	99-87-6	P-ISOPROPYLTOLUENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	135-98-8	SEC-BUTYLBENZENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	100-42-5	STYRENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
On-Site Ditches	Soil	WA-NIMO2	WA9145	98-06-6	TERT-BUTYLBENZENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	127-18-4	TETRACHLOROETHENE	9/18/97	9.6	ug/Kg	Y	Y	J	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	108-88-3	TOLUENE	9/18/97	170	ug/kg	Y	Y		1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	TSO	TOTAL SOLIDS	9/18/97	85	%	Y	Y		1118155.3	922435.5	3	3	TP	SOIL	Soil	2540-G
On-Site Ditches	Soil	WA-NIMO2	WA9145	8001-35-2	TOXAPHENE	9/18/97	200	ug/Kg	Y	N	UJ	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NIMO2	WA9145	156-60-5	TRANS-1,2-DICHLOROETHENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	79-01-6	TRICHLOROETHENE	9/18/97	15	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	75-69-4	TRICHLOROFLUOROMETHANE	9/18/97	29	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	75-01-4	VINYL CHLORIDE	9/18/97	29	ug/Kg	Y	N	U	1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NIMO2	WA9145	1330-20-7	XYLENES, TOTAL	9/18/97	65	ug/kg	Y	Y		1118155.3	922435.5	3	3	TP	SOIL	Soil	SW8260
On-Site Ditches	Soil	WA-NW DITCH #	WA9146	12674-11-2	AROCLOR-1016	11/18/97	14000	ug/Kg	Y	N	UJ	1117936.8	922316.8	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146N	12674-11-2	AROCLOR-1016	11/18/97	56	ug/Kg	Y	N	U	1117936.8	922316.8	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146	11104-28-2	AROCLOR-1221	11/18/97	14000	ug/kg	Y	N	UJ	1117936.8	922316.8	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146N	11104-28-2	AROCLOR-1221	11/18/97	110	ug/kg	Y	N	U	1117936.8	922316.8	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146N	11141-16-5	AROCLOR-1232	11/18/97	56	ug/kg	Y	N	U	1117936.8	922316.8	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146	11141-16-5	AROCLOR-1232	11/18/97	14000	ug/kg	Y	N	UJ	1117936.8	922316.8	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146	53469-21-9	AROCLOR-1242	11/18/97	14000	ug/kg	Y	N	UJ	1117936.8	922316.8	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146N	53469-21-9	AROCLOR-1242	11/18/97	56	ug/kg	Y	N	U	1117936.8	922316.8	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146	12672-29-6	AROCLOR-1248	11/18/97	14000	ug/kg	Y	N	UJ	1117936.8	922316.8	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146N	11097-69-1	AROCLOR-1254	11/18/97	56	ug/kg	Y	N	U	1117936.8	922316.8	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146	11097-69-1	AROCLOR-1254	11/18/97	14000	ug/kg	Y	Y	J	1117936.8	922316.8	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146	11096-82-5	AROCLOR-1260	11/18/97	14000	ug/kg	Y	N	UJ	1117936.8	922316.8	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146N	11096-82-5	AROCLOR-1260	11/18/97	56	ug/kg	Y	N	U	1117936.8	922316.8	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NW DITCH #	WA9146	7439-97-6	MERCURY	11/18/97	1800	mg/kg	Y	Y		1117936.8	922316.8	0.5	1	SS	SOIL	Soil	7471A/NONE
On-Site Ditches	Soil	WA-NW DITCH #	WA9146N	7439-97-6	MERCURY	11/18/97	12.3	mg/kg	Y	Y	J	1117936.8	922316.8	0.5	1	SS	SOIL	SOIL	7471A/NONE
On-Site Ditches	Soil	WA-NW DITCH #	WA9146	TSO	TOTAL SOLIDS	11/18/97	60.3	%	Y	Y		1117936.8	922316.8	0.5	1	SS	SOIL	Soil	2540-G
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147	12674-11-2	AROCLOR-1016	11/18/97	3400	ug/Kg	Y	N	UJ	1117897.2	922286.4	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147N	12674-11-2	AROCLOR-1016	11/18/97	65	ug/Kg	Y	N	U	1117897.2	922286.4	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147	11104-28-2	AROCLOR-1221	11/18/97	3400	ug/kg	Y	N	UJ	1117897.2	922286.4	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147N	11104-28-2	AROCLOR-1221	11/18/97	130	ug/kg	Y	N	U	1117897.2	922286.4	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147N	11141-16-5	AROCLOR-1232	11/18/97	65	ug/kg	Y	N	U	1117897.2	922286.4	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147	11141-16-5	AROCLOR-1232	11/18/97	3400	ug/kg	Y	N	UJ	1117897.2	922286.4	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147	53469-21-9	AROCLOR-1242	11/18/97	3400	ug/kg	Y	N	UJ	1117897.2	922286.4	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147N	53469-21-9	AROCLOR-1242	11/18/97	65	ug/kg	Y	N	U	1117897.2	922286.4	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147	12672-29-6	AROCLOR-1248	11/18/97	3400	ug/kg	Y	N	UJ	1117897.2	922286.4	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147N	11097-69-1	AROCLOR-1254	11/18/97	65	ug/kg	Y	N	U	1117897.2	922286.4	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147	11097-69-1	AROCLOR-1254	11/18/97	3400	ug/kg	Y	N	UJ	1117897.2	922286.4	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147	11096-82-5	AROCLOR-1260	11/18/97	10000	ug/kg	Y	Y	J	1117897.2	922286.4	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147N	11096-82-5	AROCLOR-1260	11/18/97	65	ug/kg	Y	N	U	1117897.2	922286.4	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147	7439-97-6	MERCURY	11/18/97	13.7	mg/kg	Y	Y		1117897.2	922286.4	0.5	1	SS	SOIL	SOIL	7471A/NONE
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147	7439-97-6	MERCURY	11/18/97	1900	mg/kg	Y	Y	J	1117897.2	922286.4	0.5	1	SS	SOIL	Soil	7471A/NONE
On-Site Ditches	Soil	WA-NW DITCH #2	WA9147	TSO	TOTAL SOLIDS	11/18/97	49.8	%	Y	Y		1117897.2	922286.4	0.5	1	SS	SOIL	Soil	2540-G
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/1/98	810	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/1/98	35200	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/1/98	16400	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	39227-28-6	1,2,3,4,7,8-HXCDD	10/1/98	47.8	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	70648-26-9	1,2,3,4,7,8-HXCDF	10/1/98	46900	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	57653-85-7	1,2,3,6,7,8-HXCDD	10/1/98	75.4	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	57117-44-9	1,2,3,6,7,8-HXCDF	10/1/98	7530	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	19408-74-3	1,2,3,7,8,9-HXCDD	10/1/98	61.9	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	72918-21-9	1,2,3,7,8,9-HXCDF	10/1/98	449	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	40321-76-4	1,2,3,7,8-PECDD	10/1/98	41.1	ng/kg	Y	N	U	1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	57117-41-6	1,2,3,7,8-PECDF	10/1/98	6720	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	60851-34-5	2,3,4,6,7,8-HXCDF	10/1/98	729	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	57117-31-4	2,3,4,7,8-PECDF	10/1/98	2580	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	1746-01-6	2,3,7,8-TCDD	10/1/98	53.5	ng/kg	Y	N	U	1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	51207-31-9	2,3,7,8-TCDF	10/1/98	3523	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	3268-87-9	OCDD	10/1/98	3820	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	39001-02-0	OCDF	10/1/98	200000	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	37871-00-4	TOTAL HPCDD	10/1/98	1450	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	38998-75-3	TOTAL HPCDF	10/1/98	83500	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	34465-46-8	TOTAL HXCDD	10/1/98	260	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	55684-94-1	TOTAL HXCDF	10/1/98	74900	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	TOC	TOTAL ORGANIC CARBON	10/1/98	181000	mg/Kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW9060
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	36088-22-9	TOTAL PECDD	10/1/98	41.1	ng/kg	Y	N	U	1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	30402-15-4	TOTAL PECDF	10/1/98	20700	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	TSO	TOTAL SOLIDS	10/1/98	62.3	%	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	WET CHEMISTRY
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	41903-57-5	TOTAL TCDD	10/1/98	53.5	ng/kg	Y	N	U	1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9148	55722-27-5	Total TCDF	10/1/98	11100	ng/kg	Y	Y		1117914.4	922299.4	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/1/98	3320	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/1/98	21600	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/1/98	18700	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	39227-28-6	1,2,3,4,7,8-HXCDD	10/1/98	37	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	70648-26-9	1,2,3,4,7,8-HXCDF	10/1/98	9190	ng/kg	Y	N	U*	1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	57653-85-7	1,2,3,6,7,8-HXCDD	10/1/98	81.1	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	57117-44-9	1,2,3,6,7,8-HXCDF	10/1/98	6670	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	19408-74-3	1,2,3,7,8,9-HXCDD	10/1/98	63.2	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	72918-21-9	1,2,3,7,8,9-HXCDF	10/1/98	1170	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	40321-76-4	1,2,3,7,8-PECDD	10/1/98	23.4	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	57117-41-6	1,2,3,7,8-PECDF	10/1/98	6550	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	60851-34-5	2,3,4,6,7,8-HXCDF	10/1/98	1050	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	57117-31-4	2,3,4,7,8-PECDF	10/1/98	3080	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	1746-01-6	2,3,7,8-TCDD	10/1/98	40.1	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	51207-31-9	2,3,7,8-TCDF	10/1/98	4940	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	3268-87-9	OCDD	10/1/98	18900	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	39001-02-0	OCDF	10/1/98	118000	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	37871-00-4	TOTAL HPCDD	10/1/98	6450	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	38998-75-3	TOTAL HPCDF	10/1/98	61700	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	34465-46-8	TOTAL HXCDD	10/1/98	825	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	55684-94-1	TOTAL HXCDF	10/1/98	32000	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	36088-22-9	TOTAL PECDD	10/1/98	280	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	30402-15-4	TOTAL PECDF	10/1/98	19700	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	41903-57-5	TOTAL TCDD	10/1/98	463	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9349N	55722-27-5	Total TCDF	10/1/98	1480	ng/kg	Y	Y		1117914.4	922299.4	0.5	1	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/1/98	2350	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/1/98	9750	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/1/98	6610	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	39227-28-6	1,2,3,4,7,8-HXCDD	10/1/98	20.4	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	70648-26-9	1,2,3,4,7,8-HXCDF	10/1/98	13500	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	57653-85-7	1,2,3,6,7,8-HXCDD	10/1/98	56.8	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	57117-44-9	1,2,3,6,7,8-HXCDF	10/1/98	3400	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	19408-74-3	1,2,3,7,8,9-HXCDD	10/1/98	31.1	ng/kg	Y	Y	J*	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	72918-21-9	1,2,3,7,8,9-HXCDF	10/1/98	145	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	40321-76-4	1,2,3,7,8-PECDD	10/1/98	17	ng/kg	Y	N	UJ	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	57117-41-6	1,2,3,7,8-PECDF	10/1/98	3250	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	60851-34-5	2,3,4,6,7,8-HXCDF	10/1/98	497	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	57117-31-4	2,3,4,7,8-PECDF	10/1/98	1430	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	1746-01-6	2,3,7,8-TCDD	10/1/98	21.5	ng/kg	Y	Y	J*	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	51207-31-9	2,3,7,8-TCDF	10/1/98	1010	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	3268-87-9	OCDD	10/1/98	14000	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	39001-02-0	OCDF	10/1/98	39600	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	37871-00-4	TOTAL HPCDD	10/1/98	4230	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	38998-75-3	TOTAL HPCDF	10/1/98	26440	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	34465-46-8	TOTAL HXCDD	10/1/98	311	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	55684-94-1	TOTAL HXCDF	10/1/98	26400	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	TOC	TOTAL ORGANIC CARBON	10/1/98	96300	mg/Kg	Y	Y		1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW9060
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	36088-22-9	TOTAL PECDD	10/1/98	67.6	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	30402-15-4	TOTAL PECDF	10/1/98	10800	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	TSO	TOTAL SOLIDS	10/1/98	57.2	%	Y	Y		1117914.4	922299.4	1	1.5	SS	SOIL	Soil	WET CHEMISTRY
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	41903-57-5	TOTAL TCDD	10/1/98	262	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH #3	WA9149	55722-27-5	Total TCDF	10/1/98	6410	ng/kg	Y	Y	J	1117914.4	922299.4	1	1.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	71-55-6	1,1,1-TRICHLOROETHANE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	71-55-6	1,1,1-TRICHLOROETHANE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/26/99	15	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/26/99	16	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	79-00-5	1,1,2-TRICHLOROETHANE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	79-00-5	1,1,2-TRICHLOROETHANE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	75-34-3	1,1-DICHLOROETHANE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	75-34-3	1,1-DICHLOROETHANE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	75-35-4	1,1-DICHLOROETHENE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	75-35-4	1,1-DICHLOROETHENE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/26/99	745	ng/Kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	35822-46-9V	1,2,3,4,6,7,8-HpCDD	10/26/99	880	ng/Kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/26/99	7100	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/26/99	3450	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/26/99	7330	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/26/99	3400	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	39227-28-6	1,2,3,4,7,8-HXCDD	10/26/99	29.9	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	39227-28-6	1,2,3,4,7,8-HXCDD	10/26/99	29.6	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	70648-26-9	1,2,3,4,7,8-HXCDF	10/26/99	6230	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	70648-26-9	1,2,3,4,7,8-HXCDF	10/26/99	13400	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	57653-85-7	1,2,3,6,7,8-HXCDD	10/26/99	48.5	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	57653-85-7	1,2,3,6,7,8-HXCDD	10/26/99	38.5	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	57117-44-9	1,2,3,6,7,8-HXCDF	10/26/99	1260	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	57117-44-9	1,2,3,6,7,8-HXCDF	10/26/99	3350	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	19408-74-3	1,2,3,7,8,9-HXCDD	10/26/99	35.1	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	19408-74-3	1,2,3,7,8,9-HXCDD	10/26/99	32.9	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	72918-21-9	1,2,3,7,8,9-HXCDF	10/26/99	786	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	72918-21-9	1,2,3,7,8,9-HXCDF	10/26/99	196	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	40321-76-4	1,2,3,7,8-PECDD	10/26/99	15.6	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	40321-76-4	1,2,3,7,8-PECDD	10/26/99	17.2	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	57117-41-6	1,2,3,7,8-PECDF	10/26/99	4850	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	57117-41-6	1,2,3,7,8-PECDF	10/26/99	2920	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	120-82-1	1,2,4-TRICHLOROBENZENE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	120-82-1	1,2,4-TRICHLOROBENZENE	10/26/99	330	ug/Kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	95-50-1	1,2-DICHLOROBENZENE	10/26/99	540	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	95-50-1	1,2-DICHLOROBENZENE	10/26/99	960	ug/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	107-06-2	1,2-DICHLOROETHANE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	107-06-2	1,2-DICHLOROETHANE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	78-87-5	1,2-DICHLOROPROPANE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	78-87-5	1,2-DICHLOROPROPANE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	541-73-1	1,3-DICHLOROBENZENE	10/26/99	73	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	541-73-1	1,3-DICHLOROBENZENE	10/26/99	540	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	106-46-7	1,4-DICHLOROBENZENE	10/26/99	2100	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	106-46-7	1,4-DICHLOROBENZENE	10/26/99	540	ug/kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	60851-34-5	2,3,4,6,7,8-HXCDF	10/26/99	662	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	60851-34-5	2,3,4,6,7,8-HXCDF	10/26/99	494	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	57117-31-4	2,3,4,7,8-PECDF	10/26/99	1500	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	57117-31-4	2,3,4,7,8-PECDF	10/26/99	2420	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	1746-01-6	2,3,7,8-TCDD	10/26/99	11.8	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	1746-01-6	2,3,7,8-TCDD	10/26/99	29.1	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	51207-31-9	2,3,7,8-TCDF	10/26/99	3890	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	51207-31-9	2,3,7,8-TCDF	10/26/99	1690	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	95-95-4	2,4,5-TRICHLOROPHENOL	10/26/99	1300	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	95-95-4	2,4,5-TRICHLOROPHENOL	10/26/99	1400	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	88-06-2	2,4,6-TRICHLOROPHENOL	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	88-06-2	2,4,6-TRICHLOROPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	120-83-2	2,4-DICHLOROPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	120-83-2	2,4-DICHLOROPHENOL	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	105-67-9	2,4-DIMETHYLPHENOL	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	105-67-9	2,4-DIMETHYLPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	51-28-5	2,4-DINITROPHENOL	10/26/99	1300	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	51-28-5	2,4-DINITROPHENOL	10/26/99	1400	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	121-14-2	2,4-DINITROTOLUENE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	121-14-2	2,4-DINITROTOLUENE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	606-20-2	2,6-DINITROTOLUENE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	606-20-2	2,6-DINITROTOLUENE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	78-93-3	2-BUTANONE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	78-93-3	2-BUTANONE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	91-58-7	2-CHLORONAPHTHALENE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	91-58-7	2-CHLORONAPHTHALENE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	95-57-8	2-CHLOROPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	95-57-8	2-CHLOROPHENOL	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	591-78-6	2-HEXANONE	10/26/99	15	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	591-78-6	2-HEXANONE	10/26/99	16	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	91-57-6	2-METHYLNAPHTHALENE	10/26/99	320	ug/Kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	91-57-6	2-METHYLNAPHTHALENE	10/26/99	400	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	95-48-7	2-METHYLPHENOL	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	95-48-7	2-METHYLPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	88-74-4	2-NITROANILINE	10/26/99	1300	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	88-74-4	2-NITROANILINE	10/26/99	1400	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	88-75-5	2-NITROPHENOL	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	88-75-5	2-NITROPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	91-94-1	3,3'-DICHLOROBENZIDINE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	91-94-1	3,3'-DICHLOROBENZIDINE	10/26/99	510	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	99-09-2	3-NITROANILINE	10/26/99	1400	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	99-09-2	3-NITROANILINE	10/26/99	1.3	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	72-54-8	4,4'-DDD	10/26/99	91	ug/Kg	Y	Y	JN	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	72-54-8	4,4'-DDD	10/26/99	5.4	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	72-55-9	4,4'-DDE	10/26/99	5.4	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	72-55-9	4,4'-DDE	10/26/99	78	ug/Kg	Y	Y	JN	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	50-29-3	4,4'-DDT	10/26/99	7.4	ug/Kg	Y	Y	JN	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	50-29-3	4,4'-DDT	10/26/99	290	ug/Kg	Y	Y	JN	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/26/99	1400	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/26/99	1300	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	59-50-7	4-CHLORO-3-METHYLPHENOL	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	59-50-7	4-CHLORO-3-METHYLPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	106-47-8	4-CHLOROANILINE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	106-47-8	4-CHLOROANILINE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	108-10-1	4-METHYL-2-PENTANONE	10/26/99	15	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	108-10-1	4-METHYL-2-PENTANONE	10/26/99	16	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	106-44-5	4-METHYLPHENOL	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	106-44-5	4-METHYLPHENOL	10/26/99	170	ug/Kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	100-01-6	4-NITROANILINE	10/26/99	1300	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	100-01-6	4-NITROANILINE	10/26/99	1400	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	100-02-7	4-NITROPHENOL	10/26/99	1400	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	100-02-7	4-NITROPHENOL	10/26/99	1300	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	83-32-9	ACENAPHTHENE	10/26/99	620	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	83-32-9	ACENAPHTHENE	10/26/99	120	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	208-96-8	ACENAPHTHYLENE	10/26/99	170	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	208-96-8	ACENAPHTHYLENE	10/26/99	160	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	67-64-1	ACETONE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	67-64-1	ACETONE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	309-00-2	ALDRIN	10/26/99	5.1	ug/Kg	Y	N	R	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	309-00-2	ALDRIN	10/26/99	2.7	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	319-84-6	ALPHA-BHC	10/26/99	2.7	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	319-84-6	ALPHA-BHC	10/26/99	5.1	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	5103-71-9	ALPHA-CHLORDANE	10/26/99	5.1	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	5103-71-9	ALPHA-CHLORDANE	10/26/99	2.7	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7429-90-5	ALUMINUM	10/26/99	6630	mg/Kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7429-90-5	ALUMINUM	10/26/99	6390	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	120-12-7	ANTHRACENE	10/26/99	1400	ug/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	120-12-7	ANTHRACENE	10/26/99	470	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-36-0	ANTIMONY	10/26/99	0.81	mg/kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-36-0	ANTIMONY	10/26/99	0.76	mg/kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	12674-11-2	AROCLOR-1016	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	12674-11-2	AROCLOR-1016	10/26/99	54	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	11104-28-2	AROCLOR-1221	10/26/99	110	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	11104-28-2	AROCLOR-1221	10/26/99	1000	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	11141-16-5	AROCLOR-1232	10/26/99	510	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	11141-16-5	AROCLOR-1232	10/26/99	54	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	53469-21-9	AROCLOR-1242	10/26/99	510	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	53469-21-9	AROCLOR-1242	10/26/99	54	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	12672-29-6	AROCLOR-1248	10/26/99	54	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	12672-29-6	AROCLOR-1248	10/26/99	510	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	11097-69-1	AROCLOR-1254	10/26/99	54	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	11097-69-1	AROCLOR-1254	10/26/99	510	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	11096-82-5	AROCLOR-1260	10/26/99	4900	ug/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	11096-82-5	AROCLOR-1260	10/26/99	110	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	11100-14-4	AROCLOR-1268	10/26/99	1000	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	11100-14-4	AROCLOR-1268	10/26/99	110	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-38-2	ARSENIC	10/26/99	35.6	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-38-2	ARSENIC	10/26/99	39.9	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-39-3	BARIUM	10/26/99	193	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-39-3	BARIUM	10/26/99	191	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	71-43-2	BENZENE	10/26/99	15	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	71-43-2	BENZENE	10/26/99	16	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	56-55-3	BENZO(A)ANTHRACENE	10/26/99	2100	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	56-55-3	BENZO(A)ANTHRACENE	10/26/99	5900	ug/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	50-32-8	BENZO(A)PYRENE	10/26/99	2000	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	50-32-8	BENZO(A)PYRENE	10/26/99	6100	ug/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	205-99-2	BENZO(B)FLUORANTHENE	10/26/99	10000	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	205-99-2	BENZO(B)FLUORANTHENE	10/26/99	3000	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	191-24-2	BENZO(G,H,I)PERYLENE	10/26/99	1400	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	191-24-2	BENZO(G,H,I)PERYLENE	10/26/99	4100	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	207-08-9	BENZO(K)FLUORANTHENE	10/26/99	3000	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	207-08-9	BENZO(K)FLUORANTHENE	10/26/99	1000	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-41-7	BERYLLIUM	10/26/99	1	mg/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-41-7	BERYLLIUM	10/26/99	1	mg/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	319-85-7	BETA-BHC	10/26/99	5.1	ug/Kg	Y	N	R	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	319-85-7	BETA-BHC	10/26/99	2.7	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	39638-32-9	BIS(2-CHLOROISOPROPYL)ETHER	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/26/99	700	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	75-27-4	BROMODICHLOROMETHANE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	75-27-4	BROMODICHLOROMETHANE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	75-25-2	BROMOFORM	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	75-25-2	BROMOFORM	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	74-83-9	BROMOMETHANE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	74-83-9	BROMOMETHANE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	85-68-7	BUTYLBENZYL PHTHALATE	10/26/99	510	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	85-68-7	BUTYLBENZYL PHTHALATE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-43-9	CADMIUM	10/26/99	2.1	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-43-9	CADMIUM	10/26/99	2	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-70-2	CALCIUM	10/26/99	143000	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-70-2	CALCIUM	10/26/99	152000	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	86-74-8	CARBAZOLE	10/26/99	190	ug/Kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	86-74-8	CARBAZOLE	10/26/99	680	ug/Kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	75-15-0	CARBON DISULFIDE	10/26/99	16	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	75-15-0	CARBON DISULFIDE	10/26/99	15	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	56-23-5	CARBON TETRACHLORIDE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	56-23-5	CARBON TETRACHLORIDE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	108-90-7	CHLOROBENZENE	10/26/99	15	ug/kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	108-90-7	CHLOROBENZENE	10/26/99	16	ug/kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	124-48-1	CHLORODIBROMOMETHANE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	124-48-1	CHLORODIBROMOMETHANE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	75-00-3	CHLOROETHANE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	75-00-3	CHLOROETHANE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	67-66-3	CHLOROFORM	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	67-66-3	CHLOROFORM	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	74-87-3	CHLOROMETHANE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	74-87-3	CHLOROMETHANE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-47-3	CHROMIUM	10/26/99	144	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-47-3	CHROMIUM	10/26/99	192	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	218-01-9	CHRYSENE	10/26/99	8400	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	218-01-9	CHRYSENE	10/26/99	2500	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	156-59-2	CIS-1,2-DICHLOROETHENE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	156-59-2	CIS-1,2-DICHLOROETHENE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-48-4	COBALT	10/26/99	29.1	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-48-4	COBALT	10/26/99	23.5	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-50-8	COPPER	10/26/99	282	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-50-8	COPPER	10/26/99	326	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	57-12-5	CYANIDE	10/26/99	0.81	mg/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	EPA 335.2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	57-12-5	CYANIDE	10/26/99	0.92	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	EPA 335.2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	319-86-8	DELTA-BHC	10/26/99	2.7	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	319-86-8	DELTA-BHC	10/26/99	5.1	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	53-70-3	DIBENZO(A,H)ANTHRACENE	10/26/99	1400	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	53-70-3	DIBENZO(A,H)ANTHRACENE	10/26/99	440	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	132-64-9	DIBENZOFURAN	10/26/99	580	ug/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	132-64-9	DIBENZOFURAN	10/26/99	170	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	60-57-1	DIELDRIN	10/26/99	5.4	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	60-57-1	DIELDRIN	10/26/99	22	ug/Kg	Y	Y	JN	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	84-66-2	DIETHYL PHTHALATE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	84-66-2	DIETHYL PHTHALATE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	131-11-3	DIMETHYL PHTHALATE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	131-11-3	DIMETHYL PHTHALATE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	84-74-2	DI-N-BUTYL PHTHALATE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	84-74-2	DI-N-BUTYL PHTHALATE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	117-84-0	DI-N-OCTYL PHTHALATE	10/26/99	510	ug/Kg	Y	N	R	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	117-84-0	DI-N-OCTYL PHTHALATE	10/26/99	540	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	959-98-8	ENDOSULFAN I	10/26/99	5.1	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	959-98-8	ENDOSULFAN I	10/26/99	2.7	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	33213-65-9	ENDOSULFAN II	10/26/99	150	ug/Kg	Y	Y	JN	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	33213-65-9	ENDOSULFAN II	10/26/99	4.2	ug/Kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	1031-07-8	ENDOSULFAN SULFATE	10/26/99	5.4	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	1031-07-8	ENDOSULFAN SULFATE	10/26/99	10	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	72-20-8	ENDRIN	10/26/99	140	ug/Kg	Y	Y	JN	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	72-20-8	ENDRIN	10/26/99	22	ug/Kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7421-93-4	ENDRIN ALDEHYDE	10/26/99	5.4	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7421-93-4	ENDRIN ALDEHYDE	10/26/99	5.1	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	53494-70-5	ENDRIN KETONE	10/26/99	16	ug/Kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	53494-70-5	ENDRIN KETONE	10/26/99	120	ug/Kg	Y	Y	JN	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	100-41-4	ETHYLBENZENE	10/26/99	15	ug/kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	100-41-4	ETHYLBENZENE	10/26/99	16	ug/kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	206-44-0	FLUORANTHENE	10/26/99	2600	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	206-44-0	FLUORANTHENE	10/26/99	11000	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	86-73-7	FLUORENE	10/26/99	440	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	86-73-7	FLUORENE	10/26/99	140	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	58-89-9	GAMMA-BHC (LINDANE)	10/26/99	2.7	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	58-89-9	GAMMA-BHC (LINDANE)	10/26/99	5.1	ug/Kg	Y	N	R	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	5566-34-7	GAMMA-CHLORDANE	10/26/99	2.7	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	5566-34-7	GAMMA-CHLORDANE	10/26/99	64	ug/Kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	76-44-8	HEPTACHLOR	10/26/99	2.7	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	76-44-8	HEPTACHLOR	10/26/99	5.1	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	1024-57-3	HEPTACHLOR EPOXIDE	10/26/99	5.1	ug/Kg	Y	N	R	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	1024-57-3	HEPTACHLOR EPOXIDE	10/26/99	1.7	ug/Kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	118-74-1	HEXACHLOROBENZENE	10/26/99	540	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	118-74-1	HEXACHLOROBENZENE	10/26/99	13000	ug/Kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	87-68-3	HEXACHLOROBUTADIENE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	87-68-3	HEXACHLOROBUTADIENE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	67-72-1	HEXACHLOROETHANE	10/26/99	390	ug/Kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	67-72-1	HEXACHLOROETHANE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	193-39-5	INDENO(1,2,3-CD)PYRENE	10/26/99	3900	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	193-39-5	INDENO(1,2,3-CD)PYRENE	10/26/99	1200	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7439-89-6	IRON	10/26/99	53900	mg/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7439-89-6	IRON	10/26/99	30400	mg/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	78-59-1	ISOPHORONE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	78-59-1	ISOPHORONE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7439-92-1	LEAD	10/26/99	575	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7439-92-1	LEAD	10/26/99	692	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7439-95-4	MAGNESIUM	10/26/99	9270	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7439-95-4	MAGNESIUM	10/26/99	9910	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7439-96-5	MANGANESE	10/26/99	351	mg/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7439-96-5	MANGANESE	10/26/99	432	mg/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7439-97-6	MERCURY	10/26/99	4270	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	245.5M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7439-97-6	MERCURY	10/26/99	4780	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	245.5M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	72-43-5	METHOXYCHLOR	10/26/99	27	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	72-43-5	METHOXYCHLOR	10/26/99	51	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	22967-92-6	METHYL MERCURY	10/26/99	686	ng/g	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	1630/NONE
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	75-09-2	METHYLENE CHLORIDE	10/26/99	15	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	75-09-2	METHYLENE CHLORIDE	10/26/99	16	ug/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	91-20-3	NAPHTHALENE	10/26/99	1100	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	91-20-3	NAPHTHALENE	10/26/99	350	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-02-0	NICKEL	10/26/99	301	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-02-0	NICKEL	10/26/99	301	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	98-95-3	NITROBENZENE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	98-95-3	NITROBENZENE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	1621-64-7	N-NITROSODI-N-PROPYLAMINE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	86-30-6	N-NITROSODIPHENYLAMINE	10/26/99	540	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	86-30-6	N-NITROSODIPHENYLAMINE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	3268-87-9	OCDD	10/26/99	4170	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	3268-87-9	OCDD	10/26/99	1620	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	39001-02-0	OCDF	10/26/99	15700	ng/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	39001-02-0	OCDF	10/26/99	32000	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	87-86-5	PENTACHLOROPHENOL	10/26/99	1300	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	87-86-5	PENTACHLOROPHENOL	10/26/99	1400	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	85-01-8	PHENANTHRENE	10/26/99	2000	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	85-01-8	PHENANTHRENE	10/26/99	8500	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	108-95-2	PHENOL	10/26/99	54	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	108-95-2	PHENOL	10/26/99	170	ug/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-09-7	POTASSIUM	10/26/99	1170	mg/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-09-7	POTASSIUM	10/26/99	1140	mg/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	129-00-0	PYRENE	10/26/99	14000	ug/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	129-00-0	PYRENE	10/26/99	5000	ug/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-2
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7782-49-2	SELENIUM	10/26/99	2.9	mg/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7782-49-2	SELENIUM	10/26/99	3.8	mg/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-22-4	SILVER	10/26/99	0.24	mg/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-22-4	SILVER	10/26/99	0.31	mg/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-23-5	SODIUM	10/26/99	278	mg/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-23-5	SODIUM	10/26/99	319	mg/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	SOLID	SOLIDS, PERCENT	10/26/99	65.5	%	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	2540-G
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	100-42-5	STYRENE	10/26/99	16	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	100-42-5	STYRENE	10/26/99	15	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	127-18-4	TETRACHLOROETHENE	10/26/99	16	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	127-18-4	TETRACHLOROETHENE	10/26/99	15	ug/Kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-28-0	THALLIUM	10/26/99	1.8	mg/kg	Y	Y	J	1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-28-0	THALLIUM	10/26/99	1.7	mg/kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	108-88-3	TOLUENE	10/26/99	16	ug/kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	108-88-3	TOLUENE	10/26/99	15	ug/kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	37871-00-4	TOTAL HPCDD	10/26/99	1370	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	37871-00-4	TOTAL HPCDD	10/26/99	1700	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	38998-75-3	TOTAL HPCDF	10/26/99	23600	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	38998-75-3	TOTAL HPCDF	10/26/99	10800	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	34465-46-8	TOTAL HXCDD	10/26/99	488	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	34465-46-8	TOTAL HXCDD	10/26/99	553	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	55684-94-1	TOTAL HXCDF	10/26/99	11300	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	55684-94-1	TOTAL HXCDF	10/26/99	24800	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	TOC	TOTAL ORGANIC CARBON	10/26/99	206	mg/Kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW9060
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	TOC	TOTAL ORGANIC CARBON	10/26/99	140000	mg/Kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	SW9060
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	36088-22-9	TOTAL PECDD	10/26/99	219	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	36088-22-9	TOTAL PECDD	10/26/99	134	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	30402-15-4	TOTAL PECDF	10/26/99	9870	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	30402-15-4	TOTAL PECDF	10/26/99	15200	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	TSO	TOTAL SOLIDS	10/26/99	61.7	%	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	2540-G
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	41903-57-5	TOTAL TCDD	10/26/99	792	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	41903-57-5	TOTAL TCDD	10/26/99	319	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	55722-27-5	Total TCDF	10/26/99	10600	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	55722-27-5	Total TCDF	10/26/99	5310	ng/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	SW8290
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	8001-35-2	TOXAPHENE	10/26/99	270	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	8001-35-2	TOXAPHENE	10/26/99	510	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-3
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	156-60-5	TRANS-1,2-DICHLOROETHENE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	156-60-5	TRANS-1,2-DICHLOROETHENE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	79-01-6	TRICHLOROETHENE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	79-01-6	TRICHLOROETHENE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-62-2	VANADIUM	10/26/99	63.9	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-62-2	VANADIUM	10/26/99	48.6	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	75-01-4	VINYL CHLORIDE	10/26/99	16	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	75-01-4	VINYL CHLORIDE	10/26/99	15	ug/Kg	Y	N	U	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	1330-20-7	XYLENES, TOTAL	10/26/99	16	ug/kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	Soil	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	1330-20-7	XYLENES, TOTAL	10/26/99	15	ug/kg	Y	N	UJ	1117921	922298.7	0	0.5	SS	SOIL	SOIL	ASP 95-1
On-Site Ditches	Soil	WA-NW DITCH-S	WA9351	7440-66-6	ZINC	10/26/99	428	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	SOIL	200.7M
On-Site Ditches	Soil	WA-NW DITCH-S	WA9150	7440-66-6	ZINC	10/26/99	449	mg/kg	Y	Y		1117921	922298.7	0	0.5	SS	SOIL	Soil	200.7M
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229	12674-11-2	AROCLOR-1016	11/18/97	250	ug/Kg	Y	N	UJ	1117982.9	922533.9	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229N	12674-11-2	AROCLOR-1016	11/18/97	67	ug/Kg	Y	N	U	1117982.9	922533.9	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229	11104-28-2	AROCLOR-1221	11/18/97	250	ug/kg	Y	N	UJ	1117982.9	922533.9	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229N	11104-28-2	AROCLOR-1221	11/18/97	130	ug/kg	Y	N	U	1117982.9	922533.9	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229N	11141-16-5	AROCLOR-1232	11/18/97	67	ug/kg	Y	N	U	1117982.9	922533.9	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229	11141-16-5	AROCLOR-1232	11/18/97	250	ug/kg	Y	N	UJ	1117982.9	922533.9	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229	53469-21-9	AROCLOR-1242	11/18/97	250	ug/kg	Y	N	UJ	1117982.9	922533.9	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229N	53469-21-9	AROCLOR-1242	11/18/97	67	ug/kg	Y	N	U	1117982.9	922533.9	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229	12672-29-6	AROCLOR-1248	11/18/97	250	ug/kg	Y	N	UJ	1117982.9	922533.9	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229N	11097-69-1	AROCLOR-1254	11/18/97	67	ug/kg	Y	N	U	1117982.9	922533.9	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229	11097-69-1	AROCLOR-1254	11/18/97	250	ug/kg	Y	N	UJ	1117982.9	922533.9	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229	11096-82-5	AROCLOR-1260	11/18/97	740	ug/kg	Y	Y	J	1117982.9	922533.9	0.5	1	SS	SOIL	Soil	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229N	11096-82-5	AROCLOR-1260	11/18/97	67	ug/kg	Y	N	U	1117982.9	922533.9	0.5	1	SS	SOIL	SOIL	SW8080
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229N	7439-97-6	MERCURY	11/18/97	13.2	mg/kg	Y	Y	J	1117982.9	922533.9	0.5	1	SS	SOIL	SOIL	7471A/NONE
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229	7439-97-6	MERCURY	11/18/97	11	mg/kg	Y	Y		1117982.9	922533.9	0.5	1	SS	SOIL	Soil	7471A/NONE
On-Site Ditches	Soil	WA-SEMETDITCH	WA9229	TSO	TOTAL SOLIDS	11/18/97	69.1	%	Y	Y		1117982.9	922533.9	0.5	1	SS	SOIL	Soil	2540-G
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	71-55-6	1,1,1-TRICHLOROETHANE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	79-00-5	1,1,2-TRICHLOROETHANE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	75-34-3	1,1-DICHLOROETHANE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	75-35-4	1,1-DICHLOROETHENE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	120-82-1	1,2,4-TRICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	95-50-1	1,2-DICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	107-06-2	1,2-DICHLOROETHANE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	78-87-5	1,2-DICHLOROPROPANE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	541-73-1	1,3-DICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	106-46-7	1,4-DICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	95-95-4	2,4,5-TRICHLOROPHENOL	4/8/92	50	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	88-06-2	2,4,6-TRICHLOROPHENOL	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	120-83-2	2,4-DICHLOROPHENOL	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	105-67-9	2,4-DIMETHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	51-28-5	2,4-DINITROPHENOL	4/8/92	50	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	121-14-2	2,4-DINITROTOLUENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	606-20-2	2,6-DINITROTOLUENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	78-93-3	2-BUTANONE	4/8/92	250	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	91-58-7	2-CHLORONAPHTHALENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	95-57-8	2-CHLOROPHENOL	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	591-78-6	2-HEXANONE	4/8/92	250	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	91-57-6	2-METHYLNAPHTHALENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	95-48-7	2-METHYLPHENOL	4/8/92	2	ug/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	88-74-4	2-NITROANILINE	4/8/92	50	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	88-75-5	2-NITROPHENOL	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	99-09-2	3-NITROANILINE	4/8/92	50	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/8/92	50	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	59-50-7	4-CHLORO-3-METHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	106-47-8	4-CHLOROANILINE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	108-10-1	4-METHYL-2-PENTANONE	4/8/92	250	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	106-44-5	4-METHYLPHENOL	4/8/92	6	ug/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	100-01-6	4-NITROANILINE	4/8/92	50	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	100-02-7	4-NITROPHENOL	4/8/92	50	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	83-32-9	ACENAPHTHENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	208-96-8	ACENAPHTHYLENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	67-64-1	ACETONE	4/8/92	250	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7429-90-5	ALUMINUM	4/8/92	0.0262	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7429-90-5	ALUMINUM	4/8/92	23.7	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	120-12-7	ANTHRACENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-36-0	ANTIMONY	4/8/92	0.0325	mg/L	Y	N	UJ	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-36-0	ANTIMONY	4/8/92	0.014	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-38-2	ARSENIC	4/8/92	0.0011	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-38-2	ARSENIC	4/8/92	0.0092	mg/L	Y	N	UJ	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-39-3	BARIUM	4/8/92	0.254	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-39-3	BARIUM	4/8/92	0.0579	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	71-43-2	BENZENE	4/8/92	2900	ug/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	56-55-3	BENZO(A)ANTHRACENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	50-32-8	BENZO(A)PYRENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	205-99-2	BENZO(B)FLUORANTHENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	191-24-2	BENZO(G,H,I)PERYLENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	207-08-9	BENZO(K)FLUORANTHENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	65-85-0	BENZOIC ACID	4/8/92	50	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	100-51-6	BENZYL ALCOHOL	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-41-7	BERYLLIUM	4/8/92	0.001	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-41-7	BERYLLIUM	4/8/92	0.0028	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	75-27-4	BROMODICHLOROMETHANE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	75-25-2	BROMOFORM	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	74-83-9	BROMOMETHANE	4/8/92	250	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	85-68-7	BUTYLBENZYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-43-9	CADMIUM	4/8/92	0.002	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-43-9	CADMIUM	4/8/92	0.002	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-70-2	CALCIUM	4/8/92	159	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-70-2	CALCIUM	4/8/92	78.9	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	75-15-0	CARBON DISULFIDE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	56-23-5	CARBON TETRACHLORIDE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	108-90-7	CHLOROBENZENE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	124-48-1	CHLORODIBROMOMETHANE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	75-00-3	CHLOROETHANE	4/8/92	250	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	67-66-3	CHLOROFORM	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	74-87-3	CHLOROMETHANE	4/8/92	250	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-47-3	CHROMIUM	4/8/92	0.003	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-47-3	CHROMIUM	4/8/92	0.0508	mg/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	218-01-9	CHRYSENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-48-4	COBALT	4/8/92	0.0175	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-48-4	COBALT	4/8/92	0.003	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-50-8	COPPER	4/8/92	0.002	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-50-8	COPPER	4/8/92	0.133	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	57-12-5	CYANIDE	4/8/92	0.01	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	53-70-3	DIBENZO(A,H)ANTHRACENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	132-64-9	DIBENZOFURAN	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	84-66-2	DIETHYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	131-11-3	DIMETHYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	84-74-2	DI-N-BUTYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	117-84-0	DI-N-OCTYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	100-41-4	ETHYLBENZENE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	206-44-0	FLUORANTHENE	4/8/92	1	ug/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	86-73-7	FLUORENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	118-74-1	HEXACHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	87-68-3	HEXACHLOROBUTADIENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	67-72-1	HEXACHLOROETHANE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	193-39-5	INDENO(1,2,3-CD)PYRENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7439-89-6	IRON	4/8/92	50.6	mg/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7439-89-6	IRON	4/8/92	0.028	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	78-59-1	ISOPHORONE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7439-92-1	LEAD	4/8/92	0.01	mg/L	Y	N	UJ	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7439-92-1	LEAD	4/8/92	0.114	mg/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7439-95-4	MAGNESIUM	4/8/92	64.6	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7439-95-4	MAGNESIUM	4/8/92	21.3	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7439-96-5	MANGANESE	4/8/92	0.131	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7439-96-5	MANGANESE	4/8/92	1.04	mg/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7439-97-6	MERCURY	4/8/92	0.0022	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7439-97-6	MERCURY	4/8/92	0.0002	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	75-09-2	METHYLENE CHLORIDE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	91-20-3	NAPHTHALENE	4/8/92	10	ug/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-02-0	NICKEL	4/8/92	0.01	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-02-0	NICKEL	4/8/92	0.0525	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	98-95-3	NITROBENZENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	86-30-6	N-NITROSODIPHENYLAMINE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	87-86-5	PENTACHLOROPHENOL	4/8/92	50	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	85-01-8	PHENANTHRENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	108-95-2	PHENOL	4/8/92	44	ug/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-09-7	POTASSIUM	4/8/92	11.9	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-09-7	POTASSIUM	4/8/92	7.72	mg/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	129-00-0	PYRENE	4/8/92	10	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7782-49-2	SELENIUM	4/8/92	0.002	mg/L	Y	N	UJ	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7782-49-2	SELENIUM	4/8/92	0.002	mg/L	Y	N	UJ	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-22-4	SILVER	4/8/92	0.003	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-22-4	SILVER	4/8/92	0.0066	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-23-5	SODIUM	4/8/92	176	mg/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-23-5	SODIUM	4/8/92	219	mg/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	100-42-5	STYRENE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	127-18-4	TETRACHLOROETHENE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-28-0	THALLIUM	4/8/92	0.002	mg/L	Y	N	UJ	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-28-0	THALLIUM	4/8/92	0.002	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	108-88-3	TOLUENE	4/8/92	64	ug/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	79-01-6	TRICHLOROETHENE	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-62-2	VANADIUM	4/8/92	0.0578	mg/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-62-2	VANADIUM	4/8/92	0.0042	mg/L	Y	Y		1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	75-01-4	VINYL CHLORIDE	4/8/92	250	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	1330-20-7	XYLENES, TOTAL	4/8/92	120	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157F	7440-66-6	ZINC	4/8/92	0.003	mg/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9157	7440-66-6	ZINC	4/8/92	0.149	mg/L	Y	Y	J	1116929.6	921094	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	71-55-6	1,1,1-TRICHLOROETHANE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	79-00-5	1,1,2-TRICHLOROETHANE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	75-34-3	1,1-DICHLOROETHANE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	75-35-4	1,1-DICHLOROETHENE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	95-50-1	1,2-DICHLOROBENZENE	10/2/92	500	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	107-06-2	1,2-DICHLOROETHANE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	78-87-5	1,2-DICHLOROPROPANE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	541-73-1	1,3-DICHLOROBENZENE	10/2/92	500	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	106-46-7	1,4-DICHLOROBENZENE	10/2/92	500	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	110-75-8	2-CHLOROETHYL VINYL ETHER	10/2/92	1000	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	71-43-2	BENZENE	10/2/92	4400	ug/L	Y	Y		1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	75-27-4	BROMODICHLOROMETHANE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	75-25-2	BROMOFORM	10/2/92	1000	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	74-83-9	BROMOMETHANE	10/2/92	1000	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	56-23-5	CARBON TETRACHLORIDE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	108-90-7	CHLOROBENZENE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	124-48-1	CHLORODIBROMOMETHANE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	75-00-3	CHLOROETHANE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	67-66-3	CHLOROFORM	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	74-87-3	CHLOROMETHANE	10/2/92	1000	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	75-71-8	DICHLORODIFLUOROMETHANE	10/2/92	1000	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	100-41-4	ETHYLBENZENE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	75-09-2	METHYLENE CHLORIDE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	127-18-4	TETRACHLOROETHENE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	108-88-3	TOLUENE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	79-01-6	TRICHLOROETHENE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	75-69-4	TRICHLOROFLUOROMETHANE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	75-01-4	VINYL CHLORIDE	10/2/92	100	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-1	WA9158	1330-20-7	XYLENES, TOTAL	10/2/92	300	ug/L	Y	N	U	1116929.6	921094	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	71-55-6	1,1,1-TRICHLOROETHANE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	79-00-5	1,1,2-TRICHLOROETHANE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	75-34-3	1,1-DICHLOROETHANE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	75-35-4	1,1-DICHLOROETHENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	120-82-1	1,2,4-TRICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	95-50-1	1,2-DICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	107-06-2	1,2-DICHLOROETHANE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	78-87-5	1,2-DICHLOROPROPANE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	541-73-1	1,3-DICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	106-46-7	1,4-DICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	95-95-4	2,4,5-TRICHLOROPHENOL	4/8/92	50	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	88-06-2	2,4,6-TRICHLOROPHENOL	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	120-83-2	2,4-DICHLOROPHENOL	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	105-67-9	2,4-DIMETHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	51-28-5	2,4-DINITROPHENOL	4/8/92	50	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	121-14-2	2,4-DINITROTOLUENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	606-20-2	2,6-DINITROTOLUENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	78-93-3	2-BUTANONE	4/8/92	20	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	91-58-7	2-CHLORONAPHTHALENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	95-57-8	2-CHLOROPHENOL	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	591-78-6	2-HEXANONE	4/8/92	20	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	91-57-6	2-METHYLNAPHTHALENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	95-48-7	2-METHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	88-74-4	2-NITROANILINE	4/8/92	50	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	88-75-5	2-NITROPHENOL	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	99-09-2	3-NITROANILINE	4/8/92	50	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/8/92	50	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	59-50-7	4-CHLORO-3-METHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	106-47-8	4-CHLOROANILINE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	108-10-1	4-METHYL-2-PENTANONE	4/8/92	20	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	106-44-5	4-METHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	100-01-6	4-NITROANILINE	4/8/92	50	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	100-02-7	4-NITROPHENOL	4/8/92	50	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	83-32-9	ACENAPHTHENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	208-96-8	ACENAPHTHYLENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	67-64-1	ACETONE	4/8/92	20	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7429-90-5	ALUMINUM	4/8/92	0.0321	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7429-90-5	ALUMINUM	4/8/92	38.3	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	120-12-7	ANTHRACENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-36-0	ANTIMONY	4/8/92	0.0175	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-36-0	ANTIMONY	4/8/92	0.0314	mg/L	Y	N	UJ	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-38-2	ARSENIC	4/8/92	0.0076	mg/L	Y	N	UJ	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-38-2	ARSENIC	4/8/92	0.0015	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-39-3	BARIUM	4/8/92	0.233	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-39-3	BARIUM	4/8/92	0.477	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	71-43-2	BENZENE	4/8/92	160	ug/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	56-55-3	BENZO(A)ANTHRACENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	50-32-8	BENZO(A)PYRENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	205-99-2	BENZO(B)FLUORANTHENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	191-24-2	BENZO(G,H,I)PERYLENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	207-08-9	BENZO(K)FLUORANTHENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	65-85-0	BENZOIC ACID	4/8/92	50	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	100-51-6	BENZYL ALCOHOL	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-41-7	BERYLLIUM	4/8/92	0.0026	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-41-7	BERYLLIUM	4/8/92	0.001	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	75-27-4	BROMODICHLOROMETHANE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	75-25-2	BROMOFORM	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	74-83-9	BROMOMETHANE	4/8/92	20	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	85-68-7	BUTYLBENZYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-43-9	CADMIUM	4/8/92	0.002	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-43-9	CADMIUM	4/8/92	0.002	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-70-2	CALCIUM	4/8/92	151	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-70-2	CALCIUM	4/8/92	349	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	75-15-0	CARBON DISULFIDE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	56-23-5	CARBON TETRACHLORIDE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	108-90-7	CHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	124-48-1	CHLORODIBROMOMETHANE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	75-00-3	CHLOROETHANE	4/8/92	20	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	67-66-3	CHLOROFORM	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	74-87-3	CHLOROMETHANE	4/8/92	20	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-47-3	CHROMIUM	4/8/92	0.0707	mg/L	Y	Y	J	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-47-3	CHROMIUM	4/8/92	0.003	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	218-01-9	CHRYSENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-48-4	COBALT	4/8/92	0.0034	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-48-4	COBALT	4/8/92	0.0388	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-50-8	COPPER	4/8/92	0.209	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-50-8	COPPER	4/8/92	0.002	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	57-12-5	CYANIDE	4/8/92	0.028	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	53-70-3	DIBENZO(A,H)ANTHRACENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	132-64-9	DIBENZOFURAN	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	84-66-2	DIETHYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	131-11-3	DIMETHYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	84-74-2	DI-N-BUTYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	117-84-0	DI-N-OCTYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	100-41-4	ETHYLBENZENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	206-44-0	FLUORANTHENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	86-73-7	FLUORENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	118-74-1	HEXACHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	87-68-3	HEXACHLOROBUTADIENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	67-72-1	HEXACHLOROETHANE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	193-39-5	INDENO(1,2,3-CD)PYRENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7439-89-6	IRON	4/8/92	58	mg/L	Y	Y	J	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7439-89-6	IRON	4/8/92	0.0226	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	78-59-1	ISOPHORONE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7439-92-1	LEAD	4/8/92	0.001	mg/L	Y	N	UJ	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7439-92-1	LEAD	4/8/92	0.015	mg/L	Y	Y	J	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7439-95-4	MAGNESIUM	4/8/92	155	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7439-95-4	MAGNESIUM	4/8/92	44.6	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7439-96-5	MANGANESE	4/8/92	1.36	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7439-96-5	MANGANESE	4/8/92	2.62	mg/L	Y	Y	J	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7439-97-6	MERCURY	4/8/92	0.0002	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7439-97-6	MERCURY	4/8/92	0.0002	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	75-09-2	METHYLENE CHLORIDE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	91-20-3	NAPHTHALENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-02-0	NICKEL	4/8/92	0.01	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-02-0	NICKEL	4/8/92	0.0802	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	98-95-3	NITROBENZENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	86-30-6	N-NITROSODIPHENYLAMINE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	87-86-5	PENTACHLOROPHENOL	4/8/92	50	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	85-01-8	PHENANTHRENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	108-95-2	PHENOL	4/8/92	1	ug/L	Y	Y	J	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-09-7	POTASSIUM	4/8/92	12.7	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-09-7	POTASSIUM	4/8/92	5.32	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	129-00-0	PYRENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7782-49-2	SELENIUM	4/8/92	0.002	mg/L	Y	N	UJ	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7782-49-2	SELENIUM	4/8/92	0.002	mg/L	Y	N	UJ	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-22-4	SILVER	4/8/92	0.003	mg/L	Y	N	UJ	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-22-4	SILVER	4/8/92	0.0047	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-23-5	SODIUM	4/8/92	73.7	mg/L	Y	Y	J	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-23-5	SODIUM	4/8/92	85.2	mg/L	Y	Y	J	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	100-42-5	STYRENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	127-18-4	TETRACHLOROETHENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-28-0	THALLIUM	4/8/92	0.002	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-28-0	THALLIUM	4/8/92	0.002	mg/L	Y	N	UJ	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	108-88-3	TOLUENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	79-01-6	TRICHLOROETHENE	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-62-2	VANADIUM	4/8/92	0.0119	mg/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-62-2	VANADIUM	4/8/92	0.0861	mg/L	Y	Y	J	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	75-01-4	VINYL CHLORIDE	4/8/92	20	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	1330-20-7	XYLENES, TOTAL	4/8/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159	7440-66-6	ZINC	4/8/92	0.188	mg/L	Y	Y	J	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9159F	7440-66-6	ZINC	4/8/92	0.003	mg/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	71-55-6	1,1,1-TRICHLOROETHANE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	79-00-5	1,1,2-TRICHLOROETHANE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	75-34-3	1,1-DICHLOROETHANE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	75-35-4	1,1-DICHLOROETHENE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	95-50-1	1,2-DICHLOROBENZENE	10/2/92	50	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	107-06-2	1,2-DICHLOROETHANE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	78-87-5	1,2-DICHLOROPROPANE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	541-73-1	1,3-DICHLOROBENZENE	10/2/92	50	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	106-46-7	1,4-DICHLOROBENZENE	10/2/92	50	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	110-75-8	2-CHLOROETHYL VINYL ETHER	10/2/92	100	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	71-43-2	BENZENE	10/2/92	770	ug/L	Y	Y		1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	75-27-4	BROMODICHLOROMETHANE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	75-25-2	BROMOFORM	10/2/92	100	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	74-83-9	BROMOMETHANE	10/2/92	100	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	56-23-5	CARBON TETRACHLORIDE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	108-90-7	CHLOROBENZENE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	124-48-1	CHLORODIBROMOMETHANE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	75-00-3	CHLOROETHANE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	67-66-3	CHLOROFORM	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	74-87-3	CHLOROMETHANE	10/2/92	100	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	75-71-8	DICHLORODIFLUOROMETHANE	10/2/92	100	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	100-41-4	ETHYLBENZENE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	75-09-2	METHYLENE CHLORIDE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	127-18-4	TETRACHLOROETHENE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	108-88-3	TOLUENE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	79-01-6	TRICHLOROETHENE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	75-69-4	TRICHLOROFLUOROMETHANE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	75-01-4	VINYL CHLORIDE	10/2/92	10	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-2	WA9160	1330-20-7	XYLENES, TOTAL	10/2/92	30	ug/L	Y	N	U	1117113.7	921176.7	3.5	13.5	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	71-55-6	1,1,1-TRICHLOROETHANE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	79-00-5	1,1,2-TRICHLOROETHANE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	75-34-3	1,1-DICHLOROETHANE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	75-35-4	1,1-DICHLOROETHENE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	120-82-1	1,2,4-TRICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	95-50-1	1,2-DICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	107-06-2	1,2-DICHLOROETHANE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	78-87-5	1,2-DICHLOROPROPANE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	541-73-1	1,3-DICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	106-46-7	1,4-DICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	95-95-4	2,4,5-TRICHLOROPHENOL	4/8/92	50	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	88-06-2	2,4,6-TRICHLOROPHENOL	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	120-83-2	2,4-DICHLOROPHENOL	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	105-67-9	2,4-DIMETHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	51-28-5	2,4-DINITROPHENOL	4/8/92	50	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	121-14-2	2,4-DINITROTOLUENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	606-20-2	2,6-DINITROTOLUENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	78-93-3	2-BUTANONE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	91-58-7	2-CHLORONAPHTHALENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	95-57-8	2-CHLOROPHENOL	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	591-78-6	2-HEXANONE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	91-57-6	2-METHYLNAPHTHALENE	4/8/92	2	ug/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	95-48-7	2-METHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	88-74-4	2-NITROANILINE	4/8/92	50	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	88-75-5	2-NITROPHENOL	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	99-09-2	3-NITROANILINE	4/8/92	50	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/8/92	50	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	59-50-7	4-CHLORO-3-METHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	106-47-8	4-CHLOROANILINE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	108-10-1	4-METHYL-2-PENTANONE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	106-44-5	4-METHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	100-01-6	4-NITROANILINE	4/8/92	50	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	100-02-7	4-NITROPHENOL	4/8/92	50	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	83-32-9	ACENAPHTHENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	208-96-8	ACENAPHTHYLENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	67-64-1	ACETONE	4/8/92	12	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7429-90-5	ALUMINUM	4/8/92	0.0683	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7429-90-5	ALUMINUM	4/8/92	152	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	120-12-7	ANTHRACENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-36-0	ANTIMONY	4/8/92	0.0456	mg/L	Y	N	UJ	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-36-0	ANTIMONY	4/8/92	0.0463	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-38-2	ARSENIC	4/8/92	0.0017	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-38-2	ARSENIC	4/8/92	0.0123	mg/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-39-3	BARIUM	4/8/92	0.354	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-39-3	BARIUM	4/8/92	0.0302	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	71-43-2	BENZENE	4/8/92	42	ug/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	56-55-3	BENZO(A)ANTHRACENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	50-32-8	BENZO(A)PYRENE	4/8/92	10	ug/L	Y	N	UJ	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	205-99-2	BENZO(B)FLUORANTHENE	4/8/92	10	ug/L	Y	N	UJ	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	191-24-2	BENZO(G,H,I)PERYLENE	4/8/92	10	ug/L	Y	N	UJ	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	207-08-9	BENZO(K)FLUORANTHENE	4/8/92	10	ug/L	Y	N	UJ	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	65-85-0	BENZOIC ACID	4/8/92	50	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	100-51-6	BENZYL ALCOHOL	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-41-7	BERYLLIUM	4/8/92	0.0021	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-41-7	BERYLLIUM	4/8/92	0.0069	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	75-27-4	BROMODICHLOROMETHANE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	75-25-2	BROMOFORM	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	74-83-9	BROMOMETHANE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	85-68-7	BUTYLBENZYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-43-9	CADMIUM	4/8/92	0.002	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-43-9	CADMIUM	4/8/92	0.002	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-70-2	CALCIUM	4/8/92	642	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-70-2	CALCIUM	4/8/92	419	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	75-15-0	CARBON DISULFIDE	4/8/92	41	ug/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	56-23-5	CARBON TETRACHLORIDE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	108-90-7	CHLOROBENZENE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	124-48-1	CHLORODIBROMOMETHANE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	75-00-3	CHLOROETHANE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	67-66-3	CHLOROFORM	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	74-87-3	CHLOROMETHANE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-47-3	CHROMIUM	4/8/92	0.003	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-47-3	CHROMIUM	4/8/92	0.262	mg/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	218-01-9	CHRYSENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-48-4	COBALT	4/8/92	0.0883	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-48-4	COBALT	4/8/92	0.003	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-50-8	COPPER	4/8/92	0.002	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-50-8	COPPER	4/8/92	0.0898	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	57-12-5	CYANIDE	4/8/92	0.01	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	53-70-3	DIBENZO(A,H)ANTHRACENE	4/8/92	10	ug/L	Y	N	UJ	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	132-64-9	DIBENZOFURAN	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	84-66-2	DIETHYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	131-11-3	DIMETHYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	84-74-2	DI-N-BUTYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	117-84-0	DI-N-OCTYL PHTHALATE	4/8/92	10	ug/L	Y	N	UJ	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	100-41-4	ETHYLBENZENE	4/8/92	1	ug/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	206-44-0	FLUORANTHENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	86-73-7	FLUORENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	118-74-1	HEXACHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	87-68-3	HEXACHLOROBUTADIENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	67-72-1	HEXACHLOROETHANE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	193-39-5	INDENO(1,2,3-CD)PYRENE	4/8/92	10	ug/L	Y	N	UJ	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7439-89-6	IRON	4/8/92	206	mg/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7439-89-6	IRON	4/8/92	0.212	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	78-59-1	ISOPHORONE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7439-92-1	LEAD	4/8/92	0.01	mg/L	Y	N	UJ	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7439-92-1	LEAD	4/8/92	0.0235	mg/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7439-95-4	MAGNESIUM	4/8/92	315	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7439-95-4	MAGNESIUM	4/8/92	109	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7439-96-5	MANGANESE	4/8/92	0.249	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7439-96-5	MANGANESE	4/8/92	2.96	mg/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7439-97-6	MERCURY	4/8/92	0.002	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7439-97-6	MERCURY	4/8/92	0.0002	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	75-09-2	METHYLENE CHLORIDE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	91-20-3	NAPHTHALENE	4/8/92	3	ug/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-02-0	NICKEL	4/8/92	0.01	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-02-0	NICKEL	4/8/92	0.279	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	98-95-3	NITROBENZENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	86-30-6	N-NITROSODIPHENYLAMINE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	87-86-5	PENTACHLOROPHENOL	4/8/92	50	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	85-01-8	PHENANTHRENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	108-95-2	PHENOL	4/8/92	1	ug/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-09-7	POTASSIUM	4/8/92	56.8	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-09-7	POTASSIUM	4/8/92	40.4	mg/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	129-00-0	PYRENE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7782-49-2	SELENIUM	4/8/92	0.02	mg/L	Y	N	UJ	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7782-49-2	SELENIUM	4/8/92	0.0218	mg/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-22-4	SILVER	4/8/92	0.003	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-22-4	SILVER	4/8/92	0.004	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-23-5	SODIUM	4/8/92	108	mg/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-23-5	SODIUM	4/8/92	139	mg/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	100-42-5	STYRENE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	127-18-4	TETRACHLOROETHENE	4/8/92	4	ug/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-28-0	THALLIUM	4/8/92	0.002	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-28-0	THALLIUM	4/8/92	0.002	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	108-88-3	TOLUENE	4/8/92	1	ug/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	79-01-6	TRICHLOROETHENE	4/8/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-62-2	VANADIUM	4/8/92	0.26	mg/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-62-2	VANADIUM	4/8/92	0.255	mg/L	Y	Y		1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	75-01-4	VINYL CHLORIDE	4/8/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	1330-20-7	XYLENES, TOTAL	4/8/92	43	ug/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163F	7440-66-6	ZINC	4/8/92	0.003	mg/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9163	7440-66-6	ZINC	4/8/92	0.411	mg/L	Y	Y	J	1117023	921574.8	31	41	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	71-55-6	1,1,1-TRICHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/2/92	1	ug/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	79-00-5	1,1,2-TRICHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	75-34-3	1,1-DICHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	75-35-4	1,1-DICHLOROETHENE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	95-50-1	1,2-DICHLOROBENZENE	10/2/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	107-06-2	1,2-DICHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	78-87-5	1,2-DICHLOROPROPANE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	541-73-1	1,3-DICHLOROBENZENE	10/2/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	106-46-7	1,4-DICHLOROBENZENE	10/2/92	5	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	110-75-8	2-CHLOROETHYL VINYL ETHER	10/2/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	71-43-2	BENZENE	10/2/92	14	ug/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	75-27-4	BROMODICHLOROMETHANE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	75-25-2	BROMOFORM	10/2/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	74-83-9	BROMOMETHANE	10/2/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	56-23-5	CARBON TETRACHLORIDE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	108-90-7	CHLOROBENZENE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	124-48-1	CHLORODIBROMOMETHANE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	75-00-3	CHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	67-66-3	CHLOROFORM	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	74-87-3	CHLOROMETHANE	10/2/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	75-71-8	DICHLORODIFLUOROMETHANE	10/2/92	10	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	100-41-4	ETHYLBENZENE	10/2/92	2	ug/L	Y	Y		1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	75-09-2	METHYLENE CHLORIDE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	127-18-4	TETRACHLOROETHENE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	108-88-3	TOLUENE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	79-01-6	TRICHLOROETHENE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	75-69-4	TRICHLOROFLUOROMETHANE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	75-01-4	VINYL CHLORIDE	10/2/92	1	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3D	WA9164	1330-20-7	XYLENES, TOTAL	10/2/92	3	ug/L	Y	N	U	1117023	921574.8	31	41	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	71-55-6	1,1,1-TRICHLOROETHANE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	79-34-5	1,1,2,2-TETRACHLOROETHANE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	79-00-5	1,1,2-TRICHLOROETHANE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	75-34-3	1,1-DICHLOROETHANE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	75-35-4	1,1-DICHLOROETHENE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	120-82-1	1,2,4-TRICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	95-50-1	1,2-DICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	107-06-2	1,2-DICHLOROETHANE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	540-59-0	1,2-DICHLOROETHENE (TOTAL)	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	78-87-5	1,2-DICHLOROPROPANE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	541-73-1	1,3-DICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	106-46-7	1,4-DICHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	95-95-4	2,4,5-TRICHLOROPHENOL	4/8/92	50	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	88-06-2	2,4,6-TRICHLOROPHENOL	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	120-83-2	2,4-DICHLOROPHENOL	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	105-67-9	2,4-DIMETHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	51-28-5	2,4-DINITROPHENOL	4/8/92	50	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	121-14-2	2,4-DINITROTOLUENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	606-20-2	2,6-DINITROTOLUENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	78-93-3	2-BUTANONE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	91-58-7	2-CHLORONAPHTHALENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	95-57-8	2-CHLOROPHENOL	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	591-78-6	2-HEXANONE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	91-57-6	2-METHYLNAPHTHALENE	4/8/92	24	ug/L	Y	Y		1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	95-48-7	2-METHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	88-74-4	2-NITROANILINE	4/8/92	50	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	88-75-5	2-NITROPHENOL	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	99-09-2	3-NITROANILINE	4/8/92	50	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	534-52-1	4,6-DINITRO-2-METHYLPHENOL	4/8/92	50	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	101-55-3	4-BROMOPHENYL PHENYL ETHER	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	59-50-7	4-CHLORO-3-METHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	106-47-8	4-CHLOROANILINE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	108-10-1	4-METHYL-2-PENTANONE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	106-44-5	4-METHYLPHENOL	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	100-01-6	4-NITROANILINE	4/8/92	50	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	100-02-7	4-NITROPHENOL	4/8/92	50	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	83-32-9	ACENAPHTHENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	208-96-8	ACENAPHTHYLENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	67-64-1	ACETONE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7429-90-5	ALUMINUM	4/8/92	0.0279	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7429-90-5	ALUMINUM	4/8/92	3.66	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	120-12-7	ANTHRACENE	4/8/92	1	ug/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-36-0	ANTIMONY	4/8/92	0.0316	mg/L	Y	N	UJ	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-36-0	ANTIMONY	4/8/92	0.014	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-38-2	ARSENIC	4/8/92	0.001	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-38-2	ARSENIC	4/8/92	0.0036	mg/L	Y	N	UJ	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-39-3	BARIUM	4/8/92	0.0748	mg/L	Y	Y		1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-39-3	BARIUM	4/8/92	0.0469	mg/L	Y	Y		1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	71-43-2	BENZENE	4/8/92	3	ug/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	56-55-3	BENZO(A)ANTHRACENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	50-32-8	BENZO(A)PYRENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	205-99-2	BENZO(B)FLUORANTHENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	191-24-2	BENZO(G,H,I)PERYLENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	207-08-9	BENZO(K)FLUORANTHENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	65-85-0	BENZOIC ACID	4/8/92	50	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	100-51-6	BENZYL ALCOHOL	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-41-7	BERYLLIUM	4/8/92	0.001	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-41-7	BERYLLIUM	4/8/92	0.001	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	111-91-1	BIS(2-CHLOROETHOXY)METHANE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	111-44-4	BIS(2-CHLOROETHYL)ETHER	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	75-27-4	BROMODICHLOROMETHANE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	75-25-2	BROMOFORM	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	74-83-9	BROMOMETHANE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	85-68-7	BUTYLBENZYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-43-9	CADMIUM	4/8/92	0.002	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-43-9	CADMIUM	4/8/92	0.002	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-70-2	CALCIUM	4/8/92	194	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-70-2	CALCIUM	4/8/92	230	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	75-15-0	CARBON DISULFIDE	4/8/92	1	ug/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	56-23-5	CARBON TETRACHLORIDE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	108-90-7	CHLOROBENZENE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	124-48-1	CHLORODIBROMOMETHANE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	75-00-3	CHLOROETHANE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	67-66-3	CHLOROFORM	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	74-87-3	CHLOROMETHANE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-47-3	CHROMIUM	4/8/92	0.003	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-47-3	CHROMIUM	4/8/92	0.0082	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	218-01-9	CHRYSENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	10061-01-5	CIS-1,3-DICHLOROPROPENE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-48-4	COBALT	4/8/92	0.003	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-48-4	COBALT	4/8/92	0.003	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-50-8	COPPER	4/8/92	0.002	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-50-8	COPPER	4/8/92	0.0164	mg/L	Y	N	UJ	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	57-12-5	CYANIDE	4/8/92	0.01	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	53-70-3	DIBENZO(A,H)ANTHRACENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	132-64-9	DIBENZOFURAN	4/8/92	2	ug/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	84-66-2	DIETHYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	131-11-3	DIMETHYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	84-74-2	DI-N-BUTYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	117-84-0	DI-N-OCTYL PHTHALATE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	100-41-4	ETHYLBENZENE	4/8/92	3	ug/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	206-44-0	FLUORANTHENE	4/8/92	2	ug/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	86-73-7	FLUORENE	4/8/92	4	ug/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	118-74-1	HEXACHLOROBENZENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	87-68-3	HEXACHLOROBUTADIENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	77-47-4	HEXACHLOROCYCLOPENTADIENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	67-72-1	HEXACHLOROETHANE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	193-39-5	INDENO(1,2,3-CD)PYRENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7439-89-6	IRON	4/8/92	6.6	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7439-89-6	IRON	4/8/92	0.0778	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	78-59-1	ISOPHORONE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7439-92-1	LEAD	4/8/92	0.01	mg/L	Y	N	UJ	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7439-92-1	LEAD	4/8/92	0.0378	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7439-95-4	MAGNESIUM	4/8/92	29.2	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7439-95-4	MAGNESIUM	4/8/92	29.9	mg/L	Y	Y		1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7439-96-5	MANGANESE	4/8/92	0.137	mg/L	Y	Y		1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7439-96-5	MANGANESE	4/8/92	0.217	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7439-97-6	MERCURY	4/8/92	0.0026	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7439-97-6	MERCURY	4/8/92	0.0002	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	75-09-2	METHYLENE CHLORIDE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	91-20-3	NAPHTHALENE	4/8/92	230	ug/L	Y	Y		1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-02-0	NICKEL	4/8/92	0.01	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-02-0	NICKEL	4/8/92	0.01	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	98-95-3	NITROBENZENE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	86-30-6	N-NITROSODIPHENYLAMINE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	87-86-5	PENTACHLOROPHENOL	4/8/92	50	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	85-01-8	PHENANTHRENE	4/8/92	6	ug/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	108-95-2	PHENOL	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-09-7	POTASSIUM	4/8/92	5.12	mg/L	Y	Y		1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-09-7	POTASSIUM	4/8/92	3.43	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	129-00-0	PYRENE	4/8/92	1	ug/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7782-49-2	SELENIUM	4/8/92	0.002	mg/L	Y	N	UJ	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7782-49-2	SELENIUM	4/8/92	0.02	mg/L	Y	N	UJ	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-22-4	SILVER	4/8/92	0.003	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-22-4	SILVER	4/8/92	0.0055	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-23-5	SODIUM	4/8/92	109	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-23-5	SODIUM	4/8/92	136	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	100-42-5	STYRENE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	127-18-4	TETRACHLOROETHENE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-28-0	THALLIUM	4/8/92	0.002	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-28-0	THALLIUM	4/8/92	0.002	mg/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	108-88-3	TOLUENE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	10061-02-6	TRANS-1,3-DICHLOROPROPENE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	79-01-6	TRICHLOROETHENE	4/8/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-62-2	VANADIUM	4/8/92	0.0247	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-62-2	VANADIUM	4/8/92	0.013	mg/L	Y	Y		1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	75-01-4	VINYL CHLORIDE	4/8/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	1330-20-7	XYLENES, TOTAL	4/8/92	41	ug/L	Y	Y		1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161F	7440-66-6	ZINC	4/8/92	0.0046	mg/L	Y	Y		1117024.4	921573.1	4	14	MW	WATER	WATER	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9161	7440-66-6	ZINC	4/8/92	0.0781	mg/L	Y	Y	J	1117024.4	921573.1	4	14	MW	WATER	Water	METALS
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	71-55-6	1,1,1-TRICHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	79-00-5	1,1,2-TRICHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	75-34-3	1,1-DICHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	75-35-4	1,1-DICHLOROETHENE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	95-50-1	1,2-DICHLOROBENZENE	10/2/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	107-06-2	1,2-DICHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	78-87-5	1,2-DICHLOROPROPANE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	541-73-1	1,3-DICHLOROBENZENE	10/2/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	106-46-7	1,4-DICHLOROBENZENE	10/2/92	5	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	E601/602
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	110-75-8	2-CHLOROETHYL VINYL ETHER	10/2/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	71-43-2	BENZENE	10/2/92	4	ug/L	Y	Y		1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	75-27-4	BROMODICHLOROMETHANE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	75-25-2	BROMOFORM	10/2/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	74-83-9	BROMOMETHANE	10/2/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	56-23-5	CARBON TETRACHLORIDE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	108-90-7	CHLOROBENZENE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	124-48-1	CHLORODIBROMOMETHANE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	75-00-3	CHLOROETHANE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	67-66-3	CHLOROFORM	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	74-87-3	CHLOROMETHANE	10/2/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	75-71-8	DICHLORODIFLUOROMETHANE	10/2/92	10	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	100-41-4	ETHYLBENZENE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	75-09-2	METHYLENE CHLORIDE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	127-18-4	TETRACHLOROETHENE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	108-88-3	TOLUENE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	79-01-6	TRICHLOROETHENE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	75-69-4	TRICHLOROFLUOROMETHANE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	75-01-4	VINYL CHLORIDE	10/2/92	1	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Ground Water	WA-PS-3S	WA9162	1330-20-7	XYLENES, TOTAL	10/2/92	3	ug/L	Y	N	U	1117024.4	921573.1	4	14	MW	WATER	Water	VOA
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	71-55-6	1,1,1-TRICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	79-00-5	1,1,2-TRICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	75-34-3	1,1-DICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	75-35-4	1,1-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	120-82-1	1,2,4-TRICHLOROBENZENE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	95-50-1	1,2-DICHLOROBENZENE	9/29/98	350	ug/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	107-06-2	1,2-DICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	78-87-5	1,2-DICHLOROPROPANE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	541-73-1	1,3-DICHLOROBENZENE	9/29/98	350	ug/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	106-46-7	1,4-DICHLOROBENZENE	9/29/98	36	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	95-95-4	2,4,5-TRICHLOROPHENOL	9/29/98	890	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	88-06-2	2,4,6-TRICHLOROPHENOL	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	120-83-2	2,4-DICHLOROPHENOL	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	105-67-9	2,4-DIMETHYLPHENOL	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	51-28-5	2,4-DINITROPHENOL	9/29/98	890	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	121-14-2	2,4-DINITROTOLUENE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	606-20-2	2,6-DINITROTOLUENE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	78-93-3	2-BUTANONE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	91-58-7	2-CHLORONAPHTHALENE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	95-57-8	2-CHLOROPHENOL	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	591-78-6	2-HEXANONE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	91-57-6	2-METHYLNAPHTHALENE	9/29/98	390	ug/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	95-48-7	2-METHYLPHENOL	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	88-74-4	2-NITROANILINE	9/29/98	890	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	88-75-5	2-NITROPHENOL	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	91-94-1	3,3'-DICHLOROBENZIDINE	9/29/98	350	ug/Kg	Y	N	R	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	99-09-2	3-NITROANILINE	9/29/98	890	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	72-54-8	4,4'-DDD	9/29/98	35	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	72-55-9	4,4'-DDE	9/29/98	35	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	50-29-3	4,4'-DDT	9/29/98	35	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/29/98	890	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	59-50-7	4-CHLORO-3-METHYLPHENOL	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	106-47-8	4-CHLOROANILINE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	108-10-1	4-METHYL-2-PENTANONE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	106-44-5	4-METHYLPHENOL	9/29/98	48	ug/Kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	100-01-6	4-NITROANILINE	9/29/98	890	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	100-02-7	4-NITROPHENOL	9/29/98	890	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	83-32-9	ACENAPHTHENE	9/29/98	130	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	208-96-8	ACENAPHTHYLENE	9/29/98	690	ug/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	67-64-1	ACETONE	9/29/98	11	ug/Kg	Y	N	UJ	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	309-00-2	ALDRIN	9/29/98	18	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	319-84-6	ALPHA-BHC	9/29/98	18	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	5103-71-9	ALPHA-CHLORDANE	9/29/98	18	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7429-90-5	ALUMINUM	9/29/98	4210	mg/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	120-12-7	ANTHRACENE	9/29/98	990	ug/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-36-0	ANTIMONY	9/29/98	0.62	mg/kg	Y	N	UJ	1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	12674-11-2	AROCLOR-1016	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	11104-28-2	AROCLOR-1221	9/29/98	710	ug/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	11141-16-5	AROCLOR-1232	9/29/98	350	ug/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	53469-21-9	AROCLOR-1242	9/29/98	350	ug/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	12672-29-6	AROCLOR-1248	9/29/98	350	ug/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	11097-69-1	AROCLOR-1254	9/29/98	350	ug/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	11096-82-5	AROCLOR-1260	9/29/98	720	ug/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-38-2	ARSENIC	9/29/98	7.4	mg/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-39-3	BARIUM	9/29/98	59.6	mg/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	71-43-2	BENZENE	9/29/98	7	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	56-55-3	BENZO(A)ANTHRACENE	9/29/98	7300	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	50-32-8	BENZO(A)PYRENE	9/29/98	7000	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	205-99-2	BENZO(B)FLUORANTHENE	9/29/98	10000	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	191-24-2	BENZO(G,H,I)PERYLENE	9/29/98	6700	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	207-08-9	BENZO(K)FLUORANTHENE	9/29/98	2800	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-41-7	BERYLLIUM	9/29/98	0.33	mg/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	319-85-7	BETA-BHC	9/29/98	18	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/29/98	7300	ug/Kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	75-27-4	BROMODICHLOROMETHANE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	75-25-2	BROMOFORM	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	74-83-9	BROMOMETHANE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	85-68-7	BUTYLBENZYL PHTHALATE	9/29/98	350	ug/Kg	Y	N	R	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-43-9	CADMIUM	9/29/98	0.68	mg/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-70-2	CALCIUM	9/29/98	128000	mg/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	86-74-8	CARBAZOLE	9/29/98	200	ug/Kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	75-15-0	CARBON DISULFIDE	9/29/98	11	ug/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	56-23-5	CARBON TETRACHLORIDE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	108-90-7	CHLOROBENZENE	9/29/98	11	ug/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	124-48-1	CHLORODIBROMOMETHANE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	75-00-3	CHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	67-66-3	CHLOROFORM	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	74-87-3	CHLOROMETHANE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-47-3	CHROMIUM	9/29/98	20.5	mg/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	218-01-9	CHRYSENE	9/29/98	8100	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	156-59-2	CIS-1,2-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-48-4	COBALT	9/29/98	6.6	mg/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-50-8	COPPER	9/29/98	94.6	mg/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	57-12-5	CYANIDE	9/29/98	6.3	mg/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	335.2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	319-86-8	DELTA-BHC	9/29/98	18	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	53-70-3	DIBENZO(A,H)ANTHRACENE	9/29/98	1700	ug/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	132-64-9	DIBENZOFURAN	9/29/98	430	ug/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	60-57-1	DIELDRIN	9/29/98	35	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	84-66-2	DIETHYL PHTHALATE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	131-11-3	DIMETHYL PHTHALATE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	84-74-2	DI-N-BUTYL PHTHALATE	9/29/98	100	ug/Kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	117-84-0	DI-N-OCTYL PHTHALATE	9/29/98	350	ug/Kg	Y	N	R	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	959-98-8	ENDOSULFAN I	9/29/98	18	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	33213-65-9	ENDOSULFAN II	9/29/98	37	ug/Kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	1031-07-8	ENDOSULFAN SULFATE	9/29/98	35	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	72-20-8	ENDRIN	9/29/98	35	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7421-93-4	ENDRIN ALDEHYDE	9/29/98	35	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	53494-70-5	ENDRIN KETONE	9/29/98	35	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	100-41-4	ETHYLBENZENE	9/29/98	11	ug/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	206-44-0	FLUORANTHENE	9/29/98	9900	ug/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	86-73-7	FLUORENE	9/29/98	300	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	58-89-9	GAMMA-BHC (LINDANE)	9/29/98	18	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	5566-34-7	GAMMA-CHLORDANE	9/29/98	18	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	76-44-8	HEPTACHLOR	9/29/98	18	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	1024-57-3	HEPTACHLOR EPOXIDE	9/29/98	18	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	118-74-1	HEXACHLOROBENZENE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	87-68-3	HEXACHLOROBUTADIENE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	67-72-1	HEXACHLOROETHANE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	193-39-5	INDENO(1,2,3-CD)PYRENE	9/29/98	6100	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7439-89-6	IRON	9/29/98	22700	mg/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	78-59-1	ISOPHORONE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7439-92-1	LEAD	9/29/98	156	mg/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7439-95-4	MAGNESIUM	9/29/98	8730	mg/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7439-96-5	MANGANESE	9/29/98	486	mg/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7439-97-6	MERCURY	9/29/98	7.4	mg/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	245.1M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	72-43-5	METHOXYCHLOR	9/29/98	180	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	75-09-2	METHYLENE CHLORIDE	9/29/98	11	ug/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	91-20-3	NAPHTHALENE	9/29/98	940	ug/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-02-0	NICKEL	9/29/98	16.3	mg/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	98-95-3	NITROBENZENE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	86-30-6	N-NITROSODIPHENYLAMINE	9/29/98	350	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	87-86-5	PENTACHLOROPHENOL	9/29/98	890	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	85-01-8	PHENANTHRENE	9/29/98	4100	ug/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	108-95-2	PHENOL	9/29/98	48	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-09-7	POTASSIUM	9/29/98	397	mg/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	129-00-0	PYRENE	9/29/98	14000	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7782-49-2	SELENIUM	9/29/98	1	mg/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-22-4	SILVER	9/29/98	0.23	mg/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-23-5	SODIUM	9/29/98	196	mg/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	100-42-5	STYRENE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	127-18-4	TETRACHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-28-0	THALLIUM	9/29/98	1.6	mg/kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	108-88-3	TOLUENE	9/29/98	5	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	TSO	TOTAL SOLIDS	9/29/98	93.9	%	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	2540-G
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	8001-35-2	TOXAPHENE	9/29/98	1800	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	156-60-5	TRANS-1,2-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	79-01-6	TRICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-62-2	VANADIUM	9/29/98	17.2	mg/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	75-01-4	VINYL CHLORIDE	9/29/98	11	ug/Kg	Y	N	U	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	1330-20-7	XYLENES, TOTAL	9/29/98	4	ug/kg	Y	Y	J	1116951.7	921138	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9166	7440-66-6	ZINC	9/29/98	125	mg/kg	Y	Y		1116951.7	921138	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	71-55-6	1,1,1-TRICHLOROETHANE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	79-00-5	1,1,2-TRICHLOROETHANE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	75-34-3	1,1-DICHLOROETHANE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	75-35-4	1,1-DICHLOROETHENE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	120-82-1	1,2,4-TRICHLOROBENZENE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	95-50-1	1,2-DICHLOROBENZENE	9/29/98	170	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	107-06-2	1,2-DICHLOROETHANE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	78-87-5	1,2-DICHLOROPROPANE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	541-73-1	1,3-DICHLOROBENZENE	9/29/98	390	ug/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	106-46-7	1,4-DICHLOROBENZENE	9/29/98	88	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	95-95-4	2,4,5-TRICHLOROPHENOL	9/29/98	970	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	88-06-2	2,4,6-TRICHLOROPHENOL	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	120-83-2	2,4-DICHLOROPHENOL	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	105-67-9	2,4-DIMETHYLPHENOL	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	51-28-5	2,4-DINITROPHENOL	9/29/98	970	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	121-14-2	2,4-DINITROTOLUENE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	606-20-2	2,6-DINITROTOLUENE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	78-93-3	2-BUTANONE	9/29/98	18	ug/Kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	91-58-7	2-CHLORONAPHTHALENE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	95-57-8	2-CHLOROPHENOL	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	591-78-6	2-HEXANONE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	91-57-6	2-METHYLNAPHTHALENE	9/29/98	600	ug/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	95-48-7	2-METHYLPHENOL	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	88-74-4	2-NITROANILINE	9/29/98	970	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	88-75-5	2-NITROPHENOL	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	91-94-1	3,3'-DICHLOROBENZIDINE	9/29/98	390	ug/Kg	Y	N	UJ	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	99-09-2	3-NITROANILINE	9/29/98	970	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	72-54-8	4,4'-DDD	9/29/98	3.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	72-55-9	4,4'-DDE	9/29/98	3.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	50-29-3	4,4'-DDT	9/29/98	3.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/29/98	970	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	59-50-7	4-CHLORO-3-METHYLPHENOL	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	106-47-8	4-CHLOROANILINE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	108-10-1	4-METHYL-2-PENTANONE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	106-44-5	4-METHYLPHENOL	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	100-01-6	4-NITROANILINE	9/29/98	970	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	100-02-7	4-NITROPHENOL	9/29/98	970	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	83-32-9	ACENAPHTHENE	9/29/98	390	ug/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	208-96-8	ACENAPHTHYLENE	9/29/98	82	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	67-64-1	ACETONE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	309-00-2	ALDRIN	9/29/98	1.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	319-84-6	ALPHA-BHC	9/29/98	1.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	5103-71-9	ALPHA-CHLORDANE	9/29/98	1.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7429-90-5	ALUMINUM	9/29/98	4880	mg/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	120-12-7	ANTHRACENE	9/29/98	84	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-36-0	ANTIMONY	9/29/98	0.68	mg/kg	Y	N	UJ	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	12674-11-2	AROCLOR-1016	9/29/98	39	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	11104-28-2	AROCLOR-1221	9/29/98	78	ug/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	11141-16-5	AROCLOR-1232	9/29/98	39	ug/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	53469-21-9	AROCLOR-1242	9/29/98	39	ug/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	12672-29-6	AROCLOR-1248	9/29/98	39	ug/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	11097-69-1	AROCLOR-1254	9/29/98	39	ug/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	11096-82-5	AROCLOR-1260	9/29/98	11	ug/kg	Y	Y	JN	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-38-2	ARSENIC	9/29/98	3.5	mg/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-39-3	BARIUM	9/29/98	43.1	mg/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	71-43-2	BENZENE	9/29/98	140	ug/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	56-55-3	BENZO(A)ANTHRACENE	9/29/98	340	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	50-32-8	BENZO(A)PYRENE	9/29/98	290	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	205-99-2	BENZO(B)FLUORANTHENE	9/29/98	450	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	191-24-2	BENZO(G,H,I)PERYLENE	9/29/98	190	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	207-08-9	BENZO(K)FLUORANTHENE	9/29/98	180	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-41-7	BERYLLIUM	9/29/98	0.31	mg/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	319-85-7	BETA-BHC	9/29/98	1.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/29/98	19000	ug/Kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	75-27-4	BROMODICHLOROMETHANE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	75-25-2	BROMOFORM	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	74-83-9	BROMOMETHANE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	85-68-7	BUTYLBENZYL PHTHALATE	9/29/98	390	ug/Kg	Y	N	UJ	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-43-9	CADMIUM	9/29/98	0.32	mg/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-70-2	CALCIUM	9/29/98	151000	mg/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	86-74-8	CARBAZOLE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	75-15-0	CARBON DISULFIDE	9/29/98	120	ug/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	56-23-5	CARBON TETRACHLORIDE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	108-90-7	CHLOROBENZENE	9/29/98	120	ug/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	124-48-1	CHLORODIBROMOMETHANE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	75-00-3	CHLOROETHANE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	67-66-3	CHLOROFORM	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	74-87-3	CHLOROMETHANE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-47-3	CHROMIUM	9/29/98	10.9	mg/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	218-01-9	CHRYSENE	9/29/98	370	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	156-59-2	CIS-1,2-DICHLOROETHENE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-48-4	COBALT	9/29/98	4.3	mg/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-50-8	COPPER	9/29/98	23.9	mg/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	57-12-5	CYANIDE	9/29/98	0.58	mg/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	335.2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	319-86-8	DELTA-BHC	9/29/98	1.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	53-70-3	DIBENZO(A,H)ANTHRACENE	9/29/98	63	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	132-64-9	DIBENZOFURAN	9/29/98	80	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	60-57-1	DIELDRIN	9/29/98	3.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	84-66-2	DIETHYL PHTHALATE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	131-11-3	DIMETHYL PHTHALATE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	84-74-2	DI-N-BUTYL PHTHALATE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	117-84-0	DI-N-OCTYL PHTHALATE	9/29/98	390	ug/Kg	Y	N	R	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	959-98-8	ENDOSULFAN I	9/29/98	1.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	33213-65-9	ENDOSULFAN II	9/29/98	3.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	1031-07-8	ENDOSULFAN SULFATE	9/29/98	3.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	72-20-8	ENDRIN	9/29/98	3.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7421-93-4	ENDRIN ALDEHYDE	9/29/98	3.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	53494-70-5	ENDRIN KETONE	9/29/98	3.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	100-41-4	ETHYLBENZENE	9/29/98	75	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	206-44-0	FLUORANTHENE	9/29/98	510	ug/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	86-73-7	FLUORENE	9/29/98	69	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	58-89-9	GAMMA-BHC (LINDANE)	9/29/98	1.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	5566-34-7	GAMMA-CHLORDANE	9/29/98	1.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	76-44-8	HEPTACHLOR	9/29/98	1.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	1024-57-3	HEPTACHLOR EPOXIDE	9/29/98	1.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	118-74-1	HEXACHLOROBENZENE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	87-68-3	HEXACHLOROBUTADIENE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	67-72-1	HEXACHLOROETHANE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	193-39-5	INDENO(1,2,3-CD)PYRENE	9/29/98	170	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7439-89-6	IRON	9/29/98	11300	mg/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	78-59-1	ISOPHORONE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7439-92-1	LEAD	9/29/98	32.9	mg/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7439-95-4	MAGNESIUM	9/29/98	10400	mg/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7439-96-5	MANGANESE	9/29/98	360	mg/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7439-97-6	MERCURY	9/29/98	0.55	mg/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	245.1M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	72-43-5	METHOXYCHLOR	9/29/98	3.9	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	75-09-2	METHYLENE CHLORIDE	9/29/98	120	ug/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	91-20-3	NAPHTHALENE	9/29/98	30000	ug/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-02-0	NICKEL	9/29/98	11.2	mg/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	98-95-3	NITROBENZENE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	86-30-6	N-NITROSODIPHENYLAMINE	9/29/98	390	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	87-86-5	PENTACHLOROPHENOL	9/29/98	970	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	85-01-8	PHENANTHRENE	9/29/98	340	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	108-95-2	PHENOL	9/29/98	62	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-09-7	POTASSIUM	9/29/98	641	mg/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	129-00-0	PYRENE	9/29/98	780	ug/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7782-49-2	SELENIUM	9/29/98	1.1	mg/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-22-4	SILVER	9/29/98	0.26	mg/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-23-5	SODIUM	9/29/98	397	mg/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	100-42-5	STYRENE	9/29/98	46	ug/Kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	127-18-4	TETRACHLOROETHENE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-28-0	THALLIUM	9/29/98	1.7	mg/kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	108-88-3	TOLUENE	9/29/98	200	ug/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	TSO	TOTAL SOLIDS	9/29/98	85.9	%	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	2540-G
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	8001-35-2	TOXAPHENE	9/29/98	190	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	156-60-5	TRANS-1,2-DICHLOROETHENE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	79-01-6	TRICHLOROETHENE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-62-2	VANADIUM	9/29/98	10.7	mg/kg	Y	Y	J	1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	75-01-4	VINYL CHLORIDE	9/29/98	120	ug/Kg	Y	N	U	1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	1330-20-7	XYLENES, TOTAL	9/29/98	1400	ug/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-1	WA9167	7440-66-6	ZINC	9/29/98	48	mg/kg	Y	Y		1116951.7	921138	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	71-55-6	1,1,1-TRICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/29/98	11	ug/Kg	Y	N	UJ	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	79-00-5	1,1,2-TRICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	75-34-3	1,1-DICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	75-35-4	1,1-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	120-82-1	1,2,4-TRICHLOROBENZENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	95-50-1	1,2-DICHLOROBENZENE	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	107-06-2	1,2-DICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	78-87-5	1,2-DICHLOROPROPANE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	541-73-1	1,3-DICHLOROBENZENE	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	106-46-7	1,4-DICHLOROBENZENE	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	95-95-4	2,4,5-TRICHLOROPHENOL	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	88-06-2	2,4,6-TRICHLOROPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	120-83-2	2,4-DICHLOROPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	105-67-9	2,4-DIMETHYLPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	51-28-5	2,4-DINITROPHENOL	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	121-14-2	2,4-DINITROTOLUENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	606-20-2	2,6-DINITROTOLUENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	78-93-3	2-BUTANONE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	91-58-7	2-CHLORONAPHTHALENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	95-57-8	2-CHLOROPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	591-78-6	2-HEXANONE	9/29/98	11	ug/Kg	Y	N	UJ	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	91-57-6	2-METHYLNAPHTHALENE	9/29/98	210	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	95-48-7	2-METHYLPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	88-74-4	2-NITROANILINE	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	88-75-5	2-NITROPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	91-94-1	3,3'-DICHLOROBENZIDINE	9/29/98	360	ug/Kg	Y	N	R	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	99-09-2	3-NITROANILINE	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	72-54-8	4,4'-DDD	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	72-55-9	4,4'-DDE	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	50-29-3	4,4'-DDT	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	59-50-7	4-CHLORO-3-METHYLPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	106-47-8	4-CHLOROANILINE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	108-10-1	4-METHYL-2-PENTANONE	9/29/98	11	ug/Kg	Y	N	UJ	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	106-44-5	4-METHYLPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	100-01-6	4-NITROANILINE	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	100-02-7	4-NITROPHENOL	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	83-32-9	ACENAPHTHENE	9/29/98	260	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	208-96-8	ACENAPHTHYLENE	9/29/98	180	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	67-64-1	ACETONE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	309-00-2	ALDRIN	9/29/98	1.8	ug/Kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	319-84-6	ALPHA-BHC	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	5103-71-9	ALPHA-CHLORDANE	9/29/98	21	ug/Kg	Y	Y	JN	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7429-90-5	ALUMINUM	9/29/98	6030	mg/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	120-12-7	ANTHRACENE	9/29/98	910	ug/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-36-0	ANTIMONY	9/29/98	0.62	mg/kg	Y	N	UJ	1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	12674-11-2	AROCLOR-1016	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	11104-28-2	AROCLOR-1221	9/29/98	710	ug/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	11141-16-5	AROCLOR-1232	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	53469-21-9	AROCLOR-1242	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	12672-29-6	AROCLOR-1248	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	11097-69-1	AROCLOR-1254	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	11096-82-5	AROCLOR-1260	9/29/98	410	ug/kg	Y	Y	JN	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-38-2	ARSENIC	9/29/98	27.3	mg/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-39-3	BARIUM	9/29/98	61.4	mg/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	71-43-2	BENZENE	9/29/98	3	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	56-55-3	BENZO(A)ANTHRACENE	9/29/98	4500	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	50-32-8	BENZO(A)PYRENE	9/29/98	4000	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	205-99-2	BENZO(B)FLUORANTHENE	9/29/98	6100	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	191-24-2	BENZO(G,H,I)PERYLENE	9/29/98	3300	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	207-08-9	BENZO(K)FLUORANTHENE	9/29/98	2200	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-41-7	BERYLLIUM	9/29/98	0.41	mg/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	319-85-7	BETA-BHC	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/29/98	2900	ug/Kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	75-27-4	BROMODICHLOROMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	75-25-2	BROMOFORM	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	74-83-9	BROMOMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	85-68-7	BUTYLBENZYL PHTHALATE	9/29/98	360	ug/Kg	Y	N	R	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-43-9	CADMIUM	9/29/98	0.27	mg/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-70-2	CALCIUM	9/29/98	85400	mg/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	86-74-8	CARBAZOLE	9/29/98	450	ug/Kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	75-15-0	CARBON DISULFIDE	9/29/98	11	ug/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	56-23-5	CARBON TETRACHLORIDE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	108-90-7	CHLOROBENZENE	9/29/98	11	ug/kg	Y	N	UJ	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	124-48-1	CHLORODIBROMOMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	75-00-3	CHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	67-66-3	CHLOROFORM	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	74-87-3	CHLOROMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-47-3	CHROMIUM	9/29/98	17.8	mg/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	218-01-9	CHRYSENE	9/29/98	5100	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	156-59-2	CIS-1,2-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-48-4	COBALT	9/29/98	7.4	mg/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-50-8	COPPER	9/29/98	53.3	mg/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	57-12-5	CYANIDE	9/29/98	19.8	mg/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	335.2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	319-86-8	DELTA-BHC	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	53-70-3	DIBENZO(A,H)ANTHRACENE	9/29/98	930	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	132-64-9	DIBENZOFURAN	9/29/98	270	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	60-57-1	DIELDRIN	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	84-66-2	DIETHYL PHTHALATE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	131-11-3	DIMETHYL PHTHALATE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	84-74-2	DI-N-BUTYL PHTHALATE	9/29/98	110	ug/Kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	117-84-0	DI-N-OCTYL PHTHALATE	9/29/98	360	ug/Kg	Y	N	R	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	959-98-8	ENDOSULFAN I	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	33213-65-9	ENDOSULFAN II	9/29/98	22	ug/Kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	1031-07-8	ENDOSULFAN SULFATE	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	72-20-8	ENDRIN	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7421-93-4	ENDRIN ALDEHYDE	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	53494-70-5	ENDRIN KETONE	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	100-41-4	ETHYLBENZENE	9/29/98	11	ug/kg	Y	N	UJ	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	206-44-0	FLUORANTHENE	9/29/98	7200	ug/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	86-73-7	FLUORENE	9/29/98	330	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	58-89-9	GAMMA-BHC (LINDANE)	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	5566-34-7	GAMMA-CHLORDANE	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	76-44-8	HEPTACHLOR	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	1024-57-3	HEPTACHLOR EPOXIDE	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	118-74-1	HEXACHLOROBENZENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	87-68-3	HEXACHLOROBUTADIENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	67-72-1	HEXACHLOROETHANE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	193-39-5	INDENO(1,2,3-CD)PYRENE	9/29/98	2800	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7439-89-6	IRON	9/29/98	21900	mg/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	78-59-1	ISOPHORONE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7439-92-1	LEAD	9/29/98	52.1	mg/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7439-95-4	MAGNESIUM	9/29/98	14000	mg/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7439-96-5	MANGANESE	9/29/98	412	mg/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7439-97-6	MERCURY	9/29/98	0.82	mg/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	245.1M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	72-43-5	METHOXYCHLOR	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	75-09-2	METHYLENE CHLORIDE	9/29/98	11	ug/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	91-20-3	NAPHTHALENE	9/29/98	590	ug/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-02-0	NICKEL	9/29/98	16.6	mg/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	98-95-3	NITROBENZENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	86-30-6	N-NITROSODIPHENYLAMINE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	87-86-5	PENTACHLOROPHENOL	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	85-01-8	PHENANTHRENE	9/29/98	4400	ug/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	108-95-2	PHENOL	9/29/98	82	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-09-7	POTASSIUM	9/29/98	625	mg/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	129-00-0	PYRENE	9/29/98	9600	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7782-49-2	SELENIUM	9/29/98	1	mg/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-22-4	SILVER	9/29/98	0.23	mg/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-23-5	SODIUM	9/29/98	228	mg/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	100-42-5	STYRENE	9/29/98	11	ug/Kg	Y	N	UJ	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	127-18-4	TETRACHLOROETHENE	9/29/98	11	ug/Kg	Y	N	UJ	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-28-0	THALLIUM	9/29/98	1.6	mg/kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	108-88-3	TOLUENE	9/29/98	3	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	TSO	TOTAL SOLIDS	9/29/98	93.8	%	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	2540-G
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	8001-35-2	TOXAPHENE	9/29/98	1800	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	156-60-5	TRANS-1,2-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	79-01-6	TRICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-62-2	VANADIUM	9/29/98	15.1	mg/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	75-01-4	VINYL CHLORIDE	9/29/98	11	ug/Kg	Y	N	U	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	1330-20-7	XYLENES, TOTAL	9/29/98	4	ug/kg	Y	Y	J	1117089.3	921158.5	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9168	7440-66-6	ZINC	9/29/98	89.5	mg/kg	Y	Y		1117089.3	921158.5	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	71-55-6	1,1,1-TRICHLOROETHANE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	79-00-5	1,1,2-TRICHLOROETHANE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	75-34-3	1,1-DICHLOROETHANE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	75-35-4	1,1-DICHLOROETHENE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	120-82-1	1,2,4-TRICHLOROBENZENE	9/29/98	49	ug/Kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	95-50-1	1,2-DICHLOROBENZENE	9/29/98	350	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	107-06-2	1,2-DICHLOROETHANE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	78-87-5	1,2-DICHLOROPROPANE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	541-73-1	1,3-DICHLOROBENZENE	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	106-46-7	1,4-DICHLOROBENZENE	9/29/98	150	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	95-95-4	2,4,5-TRICHLOROPHENOL	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	88-06-2	2,4,6-TRICHLOROPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	120-83-2	2,4-DICHLOROPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	105-67-9	2,4-DIMETHYLPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	51-28-5	2,4-DINITROPHENOL	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	121-14-2	2,4-DINITROTOLUENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	606-20-2	2,6-DINITROTOLUENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	78-93-3	2-BUTANONE	9/29/98	5	ug/Kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	91-58-7	2-CHLORONAPHTHALENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	95-57-8	2-CHLOROPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	591-78-6	2-HEXANONE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	91-57-6	2-METHYLNAPHTHALENE	9/29/98	290	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	95-48-7	2-METHYLPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	88-74-4	2-NITROANILINE	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	88-75-5	2-NITROPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	91-94-1	3,3'-DICHLOROBENZIDINE	9/29/98	360	ug/Kg	Y	N	R	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	99-09-2	3-NITROANILINE	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	72-54-8	4,4'-DDD	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	72-55-9	4,4'-DDE	9/29/98	36	ug/Kg	Y	N	UJ	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	50-29-3	4,4'-DDT	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	59-50-7	4-CHLORO-3-METHYLPHENOL	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	106-47-8	4-CHLOROANILINE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	108-10-1	4-METHYL-2-PENTANONE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	106-44-5	4-METHYLPHENOL	9/29/98	49	ug/Kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	100-01-6	4-NITROANILINE	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	100-02-7	4-NITROPHENOL	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	83-32-9	ACENAPHTHENE	9/29/98	590	ug/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	208-96-8	ACENAPHTHYLENE	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	67-64-1	ACETONE	9/29/98	23	ug/Kg	Y	N	UJ	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	309-00-2	ALDRIN	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	319-84-6	ALPHA-BHC	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	5103-71-9	ALPHA-CHLORDANE	9/29/98	9.1	ug/Kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7429-90-5	ALUMINUM	9/29/98	6360	mg/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	120-12-7	ANTHRACENE	9/29/98	670	ug/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-36-0	ANTIMONY	9/29/98	0.62	mg/kg	Y	N	UJ	1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	12674-11-2	AROCLOR-1016	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	11104-28-2	AROCLOR-1221	9/29/98	710	ug/kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	11141-16-5	AROCLOR-1232	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	53469-21-9	AROCLOR-1242	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	12672-29-6	AROCLOR-1248	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	11097-69-1	AROCLOR-1254	9/29/98	360	ug/kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	11096-82-5	AROCLOR-1260	9/29/98	1100	ug/kg	Y	Y	JN	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-38-2	ARSENIC	9/29/98	15	mg/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-39-3	BARIUM	9/29/98	65.6	mg/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	71-43-2	BENZENE	9/29/98	140	ug/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	56-55-3	BENZO(A)ANTHRACENE	9/29/98	1600	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	50-32-8	BENZO(A)PYRENE	9/29/98	1300	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	205-99-2	BENZO(B)FLUORANTHENE	9/29/98	2200	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	191-24-2	BENZO(G,H,I)PERYLENE	9/29/98	1300	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	207-08-9	BENZO(K)FLUORANTHENE	9/29/98	700	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-41-7	BERYLLIUM	9/29/98	0.38	mg/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	319-85-7	BETA-BHC	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/29/98	7900	ug/Kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	75-27-4	BROMODICHLOROMETHANE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	75-25-2	BROMOFORM	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	74-83-9	BROMOMETHANE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	85-68-7	BUTYLBENZYL PHTHALATE	9/29/98	360	ug/Kg	Y	N	R	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-43-9	CADMIUM	9/29/98	0.19	mg/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-70-2	CALCIUM	9/29/98	78800	mg/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	86-74-8	CARBAZOLE	9/29/98	440	ug/Kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	75-15-0	CARBON DISULFIDE	9/29/98	8	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	56-23-5	CARBON TETRACHLORIDE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	108-90-7	CHLOROBENZENE	9/29/98	27	ug/kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	124-48-1	CHLORODIBROMOMETHANE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	75-00-3	CHLOROETHANE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	67-66-3	CHLOROFORM	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	74-87-3	CHLOROMETHANE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-47-3	CHROMIUM	9/29/98	18.7	mg/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	218-01-9	CHRYSENE	9/29/98	2100	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	156-59-2	CIS-1,2-DICHLOROETHENE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-48-4	COBALT	9/29/98	6.8	mg/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-50-8	COPPER	9/29/98	37.8	mg/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	57-12-5	CYANIDE	9/29/98	61	mg/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	335.2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	319-86-8	DELTA-BHC	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	53-70-3	DIBENZO(A,H)ANTHRACENE	9/29/98	360	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	132-64-9	DIBENZOFURAN	9/29/98	440	ug/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	60-57-1	DIELDRIN	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	84-66-2	DIETHYL PHTHALATE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	131-11-3	DIMETHYL PHTHALATE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	84-74-2	DI-N-BUTYL PHTHALATE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	117-84-0	DI-N-OCTYL PHTHALATE	9/29/98	360	ug/Kg	Y	N	R	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	959-98-8	ENDOSULFAN I	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	33213-65-9	ENDOSULFAN II	9/29/98	46	ug/Kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	1031-07-8	ENDOSULFAN SULFATE	9/29/98	23	ug/Kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	72-20-8	ENDRIN	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7421-93-4	ENDRIN ALDEHYDE	9/29/98	62	ug/Kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	53494-70-5	ENDRIN KETONE	9/29/98	36	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	100-41-4	ETHYLBENZENE	9/29/98	24	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	206-44-0	FLUORANTHENE	9/29/98	2700	ug/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	86-73-7	FLUORENE	9/29/98	610	ug/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	58-89-9	GAMMA-BHC (LINDANE)	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	5566-34-7	GAMMA-CHLORDANE	9/29/98	17	ug/Kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	76-44-8	HEPTACHLOR	9/29/98	18	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	1024-57-3	HEPTACHLOR EPOXIDE	9/29/98	3.2	ug/Kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	118-74-1	HEXACHLOROBENZENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	87-68-3	HEXACHLOROBUTADIENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	67-72-1	HEXACHLOROETHANE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	193-39-5	INDENO(1,2,3-CD)PYRENE	9/29/98	1100	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7439-89-6	IRON	9/29/98	19400	mg/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	78-59-1	ISOPHORONE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7439-92-1	LEAD	9/29/98	35.1	mg/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7439-95-4	MAGNESIUM	9/29/98	19000	mg/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7439-96-5	MANGANESE	9/29/98	387	mg/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7439-97-6	MERCURY	9/29/98	0.29	mg/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	245.1M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	72-43-5	METHOXYCHLOR	9/29/98	180	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	75-09-2	METHYLENE CHLORIDE	9/29/98	27	ug/kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	91-20-3	NAPHTHALENE	9/29/98	1600	ug/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-02-0	NICKEL	9/29/98	17.6	mg/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	98-95-3	NITROBENZENE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	86-30-6	N-NITROSODIPHENYLAMINE	9/29/98	360	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	87-86-5	PENTACHLOROPHENOL	9/29/98	890	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	85-01-8	PHENANTHRENE	9/29/98	4100	ug/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	108-95-2	PHENOL	9/29/98	64	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-09-7	POTASSIUM	9/29/98	840	mg/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	129-00-0	PYRENE	9/29/98	4300	ug/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7782-49-2	SELENIUM	9/29/98	1	mg/kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-22-4	SILVER	9/29/98	0.24	mg/kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-23-5	SODIUM	9/29/98	393	mg/kg	Y	Y	J	1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	100-42-5	STYRENE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	127-18-4	TETRACHLOROETHENE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-28-0	THALLIUM	9/29/98	1.6	mg/kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	108-88-3	TOLUENE	9/29/98	81	ug/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	TSO	TOTAL SOLIDS	9/29/98	93.3	%	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	2540-G
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	8001-35-2	TOXAPHENE	9/29/98	1800	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	156-60-5	TRANS-1,2-DICHLOROETHENE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	79-01-6	TRICHLOROETHENE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-62-2	VANADIUM	9/29/98	12.3	mg/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	75-01-4	VINYL CHLORIDE	9/29/98	27	ug/Kg	Y	N	U	1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	1330-20-7	XYLENES, TOTAL	9/29/98	43	ug/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-2	WA9169	7440-66-6	ZINC	9/29/98	77.8	mg/kg	Y	Y		1117089.3	921158.5	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	11	ug/Kg	Y	N	R	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	75-34-3	1,1-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	75-35-4	1,1-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	95-50-1	1,2-DICHLOROBENZENE	9/30/98	370	ug/kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	107-06-2	1,2-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	78-87-5	1,2-DICHLOROPROPANE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	541-73-1	1,3-DICHLOROBENZENE	9/30/98	370	ug/kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	106-46-7	1,4-DICHLOROBENZENE	9/30/98	57	ug/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	930	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	120-83-2	2,4-DICHLOROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	51-28-5	2,4-DINITROPHENOL	9/30/98	920	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	121-14-2	2,4-DINITROTOLUENE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	606-20-2	2,6-DINITROTOLUENE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	78-93-3	2-BUTANONE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	91-58-7	2-CHLORONAPHTHALENE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	95-57-8	2-CHLOROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	591-78-6	2-HEXANONE	9/30/98	11	ug/Kg	Y	N	R	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	91-57-6	2-METHYLNAPHTHALENE	9/30/98	540	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	95-48-7	2-METHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	88-74-4	2-NITROANILINE	9/30/98	930	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	88-75-5	2-NITROPHENOL	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	99-09-2	3-NITROANILINE	9/30/98	930	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	72-54-8	4,4'-DDD	9/30/98	37	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	72-55-9	4,4'-DDE	9/30/98	37	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	50-29-3	4,4'-DDT	9/30/98	37	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	930	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	106-47-8	4-CHLOROANILINE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	108-10-1	4-METHYL-2-PENTANONE	9/30/98	11	ug/Kg	Y	N	R	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	106-44-5	4-METHYLPHENOL	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	100-01-6	4-NITROANILINE	9/30/98	930	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	100-02-7	4-NITROPHENOL	9/30/98	930	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	83-32-9	ACENAPHTHENE	9/30/98	70	ug/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	208-96-8	ACENAPHTHYLENE	9/30/98	220	ug/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	67-64-1	ACETONE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	309-00-2	ALDRIN	9/30/98	18	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	319-84-6	ALPHA-BHC	9/30/98	18	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	5103-71-9	ALPHA-CHLORDANE	9/30/98	18	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7429-90-5	ALUMINUM	9/30/98	5950	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	120-12-7	ANTHRACENE	9/30/98	450	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-36-0	ANTIMONY	9/30/98	0.93	mg/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	12674-11-2	AROCLOR-1016	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	11104-28-2	AROCLOR-1221	9/30/98	740	ug/kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	11141-16-5	AROCLOR-1232	9/30/98	370	ug/kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	53469-21-9	AROCLOR-1242	9/30/98	370	ug/kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	12672-29-6	AROCLOR-1248	9/30/98	370	ug/kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	11097-69-1	AROCLOR-1254	9/30/98	140	ug/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	11096-82-5	AROCLOR-1260	9/30/98	370	ug/kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-38-2	ARSENIC	9/30/98	67.6	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-39-3	BARIUM	9/30/98	115	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	71-43-2	BENZENE	9/30/98	86	ug/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	56-55-3	BENZO(A)ANTHRACENE	9/30/98	2400	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	50-32-8	BENZO(A)PYRENE	9/30/98	2500	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	4400	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	2700	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	1200	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-41-7	BERYLLIUM	9/30/98	0.77	mg/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	319-85-7	BETA-BHC	9/30/98	18	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	860	ug/Kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	75-27-4	BROMODICHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	75-25-2	BROMOFORM	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	74-83-9	BROMOMETHANE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-43-9	CADMIUM	9/30/98	0.71	mg/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-70-2	CALCIUM	9/30/98	132000	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	86-74-8	CARBAZOLE	9/30/98	160	ug/Kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	75-15-0	CARBON DISULFIDE	9/30/98	2	ug/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	56-23-5	CARBON TETRACHLORIDE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	108-90-7	CHLOROBENZENE	9/30/98	1	ug/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	124-48-1	CHLORODIBROMOMETHANE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	75-00-3	CHLOROETHANE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	67-66-3	CHLOROFORM	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	74-87-3	CHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-47-3	CHROMIUM	9/30/98	15.1	mg/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	218-01-9	CHRYSENE	9/30/98	3500	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-48-4	COBALT	9/30/98	8.5	mg/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-50-8	COPPER	9/30/98	48.1	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	57-12-5	CYANIDE	9/30/98	0.7	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	335.2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	319-86-8	DELTA-BHC	9/30/98	1.2	ug/Kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	590	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	132-64-9	DIBENZOFURAN	9/30/98	250	ug/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	60-57-1	DIELDRIN	9/30/98	37	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	84-66-2	DIETHYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	131-11-3	DIMETHYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	959-98-8	ENDOSULFAN I	9/30/98	18	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	33213-65-9	ENDOSULFAN II	9/30/98	37	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	1031-07-8	ENDOSULFAN SULFATE	9/30/98	37	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	72-20-8	ENDRIN	9/30/98	37	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7421-93-4	ENDRIN ALDEHYDE	9/30/98	37	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	53494-70-5	ENDRIN KETONE	9/30/98	32	ug/Kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	100-41-4	ETHYLBENZENE	9/30/98	11	ug/kg	Y	N	R	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	206-44-0	FLUORANTHENE	9/30/98	2300	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	86-73-7	FLUORENE	9/30/98	75	ug/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	18	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	5566-34-7	GAMMA-CHLORDANE	9/30/98	18	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	76-44-8	HEPTACHLOR	9/30/98	18	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	18	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	118-74-1	HEXACHLOROBENZENE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	87-68-3	HEXACHLOROBUTADIENE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	370	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	67-72-1	HEXACHLOROETHANE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	1600	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7439-89-6	IRON	9/30/98	28600	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	78-59-1	ISOPHORONE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7439-92-1	LEAD	9/30/98	85.8	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7439-95-4	MAGNESIUM	9/30/98	9050	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7439-96-5	MANGANESE	9/30/98	325	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7439-97-6	MERCURY	9/30/98	0.95	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	245.1M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	72-43-5	METHOXYCHLOR	9/30/98	180	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	75-09-2	METHYLENE CHLORIDE	9/30/98	11	ug/kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	91-20-3	NAPHTHALENE	9/30/98	2200	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-02-0	NICKEL	9/30/98	17.9	mg/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	98-95-3	NITROBENZENE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	370	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	87-86-5	PENTACHLOROPHENOL	9/30/98	930	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	85-01-8	PHENANTHRENE	9/30/98	1100	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	108-95-2	PHENOL	9/30/98	60	ug/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-09-7	POTASSIUM	9/30/98	648	mg/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	129-00-0	PYRENE	9/30/98	5600	ug/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7782-49-2	SELENIUM	9/30/98	1.7	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-22-4	SILVER	9/30/98	0.24	mg/kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-23-5	SODIUM	9/30/98	236	mg/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	100-42-5	STYRENE	9/30/98	11	ug/Kg	Y	N	R	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	127-18-4	TETRACHLOROETHENE	9/30/98	11	ug/Kg	Y	N	R	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-28-0	THALLIUM	9/30/98	1.6	mg/kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	108-88-3	TOLUENE	9/30/98	83	ug/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	TSO	TOTAL SOLIDS	9/30/98	90.2	%	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	2540-G
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	8001-35-2	TOXAPHENE	9/30/98	1800	ug/Kg	Y	N	U	1117023.5	921525.4	0	2	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	79-01-6	TRICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-62-2	VANADIUM	9/30/98	19.5	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	75-01-4	VINYL CHLORIDE	9/30/98	11	ug/Kg	Y	N	UJ	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	1330-20-7	XYLENES, TOTAL	9/30/98	24	ug/kg	Y	Y	J	1117023.5	921525.4	0	2	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9170	7440-66-6	ZINC	9/30/98	122	mg/kg	Y	Y		1117023.5	921525.4	0	2	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	75-34-3	1,1-DICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	75-35-4	1,1-DICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	860	ug/Kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	95-50-1	1,2-DICHLOROBENZENE	9/30/98	96	ug/Kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	107-06-2	1,2-DICHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	78-87-5	1,2-DICHLOROPROPANE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	541-73-1	1,3-DICHLOROBENZENE	9/30/98	400	ug/kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	106-46-7	1,4-DICHLOROBENZENE	9/30/98	170	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	400	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	990	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	120-83-2	2,4-DICHLOROPHENOL	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	51-28-5	2,4-DINITROPHENOL	9/30/98	990	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	121-14-2	2,4-DINITROTOLUENE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	606-20-2	2,6-DINITROTOLUENE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	78-93-3	2-BUTANONE	9/30/98	10	ug/Kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	91-58-7	2-CHLORONAPHTHALENE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	95-57-8	2-CHLOROPHENOL	9/30/98	400	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	591-78-6	2-HEXANONE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	91-57-6	2-METHYLNAPHTHALENE	9/30/98	2100	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	95-48-7	2-METHYLPHENOL	9/30/98	400	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	88-74-4	2-NITROANILINE	9/30/98	990	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	88-75-5	2-NITROPHENOL	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	99-09-2	3-NITROANILINE	9/30/98	990	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	72-54-8	4,4'-DDD	9/30/98	40	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	72-55-9	4,4'-DDE	9/30/98	40	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	50-29-3	4,4'-DDT	9/30/98	40	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	990	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	106-47-8	4-CHLOROANILINE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	108-10-1	4-METHYL-2-PENTANONE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	106-44-5	4-METHYLPHENOL	9/30/98	400	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	100-01-6	4-NITROANILINE	9/30/98	990	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	100-02-7	4-NITROPHENOL	9/30/98	990	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	83-32-9	ACENAPHTHENE	9/30/98	180	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	208-96-8	ACENAPHTHYLENE	9/30/98	400	ug/kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	67-64-1	ACETONE	9/30/98	40	ug/Kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	309-00-2	ALDRIN	9/30/98	20	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	319-84-6	ALPHA-BHC	9/30/98	20	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	5103-71-9	ALPHA-CHLORDANE	9/30/98	20	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7429-90-5	ALUMINUM	9/30/98	15200	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	120-12-7	ANTHRACENE	9/30/98	400	ug/kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-36-0	ANTIMONY	9/30/98	0.69	mg/kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	12674-11-2	AROCLOR-1016	9/30/98	400	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	11104-28-2	AROCLOR-1221	9/30/98	790	ug/kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	11141-16-5	AROCLOR-1232	9/30/98	400	ug/kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	53469-21-9	AROCLOR-1242	9/30/98	400	ug/kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	12672-29-6	AROCLOR-1248	9/30/98	400	ug/kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	11097-69-1	AROCLOR-1254	9/30/98	140	ug/kg	Y	Y	JN	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	11096-82-5	AROCLOR-1260	9/30/98	400	ug/kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-38-2	ARSENIC	9/30/98	22.9	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-39-3	BARIUM	9/30/98	361	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	71-43-2	BENZENE	9/30/98	90	ug/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	56-55-3	BENZO(A)ANTHRACENE	9/30/98	1200	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	50-32-8	BENZO(A)PYRENE	9/30/98	470	ug/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	1000	ug/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	890	ug/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	320	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-41-7	BERYLLIUM	9/30/98	2.2	mg/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	319-85-7	BETA-BHC	9/30/98	20	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	400	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	75-27-4	BROMODICHLOROMETHANE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	75-25-2	BROMOFORM	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	74-83-9	BROMOMETHANE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-43-9	CADMIUM	9/30/98	1.1	mg/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-70-2	CALCIUM	9/30/98	125000	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	86-74-8	CARBAZOLE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	75-15-0	CARBON DISULFIDE	9/30/98	9	ug/Kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	56-23-5	CARBON TETRACHLORIDE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	108-90-7	CHLOROBENZENE	9/30/98	6	ug/Kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	124-48-1	CHLORODIBROMOMETHANE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	75-00-3	CHLOROETHANE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	67-66-3	CHLOROFORM	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	74-87-3	CHLOROMETHANE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-47-3	CHROMIUM	9/30/98	11.6	mg/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	218-01-9	CHRYSENE	9/30/98	1600	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-48-4	COBALT	9/30/98	25.2	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-50-8	COPPER	9/30/98	30.6	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	57-12-5	CYANIDE	9/30/98	0.59	mg/kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	335.2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	319-86-8	DELTA-BHC	9/30/98	20	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	400	ug/kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	132-64-9	DIBENZOFURAN	9/30/98	690	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	60-57-1	DIELDRIN	9/30/98	40	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	84-66-2	DIETHYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	131-11-3	DIMETHYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	400	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	959-98-8	ENDOSULFAN I	9/30/98	20	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	33213-65-9	ENDOSULFAN II	9/30/98	40	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	1031-07-8	ENDOSULFAN SULFATE	9/30/98	40	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	72-20-8	ENDRIN	9/30/98	40	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7421-93-4	ENDRIN ALDEHYDE	9/30/98	40	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	53494-70-5	ENDRIN KETONE	9/30/98	40	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	100-41-4	ETHYLBENZENE	9/30/98	10	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	206-44-0	FLUORANTHENE	9/30/98	2400	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	86-73-7	FLUORENE	9/30/98	400	ug/kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	20	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	5566-34-7	GAMMA-CHLORDANE	9/30/98	20	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	76-44-8	HEPTACHLOR	9/30/98	20	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	20	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	118-74-1	HEXACHLOROBENZENE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	87-68-3	HEXACHLOROBUTADIENE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	67-72-1	HEXACHLOROETHANE	9/30/98	400	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	420	ug/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7439-89-6	IRON	9/30/98	24100	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	78-59-1	ISOPHORONE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7439-92-1	LEAD	9/30/98	64.8	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7439-95-4	MAGNESIUM	9/30/98	14100	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7439-96-5	MANGANESE	9/30/98	479	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7439-97-6	MERCURY	9/30/98	1	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	245.1M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	72-43-5	METHOXYCHLOR	9/30/98	14	ug/Kg	Y	Y	JN	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	75-09-2	METHYLENE CHLORIDE	9/30/98	12	ug/kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	91-20-3	NAPHTHALENE	9/30/98	25000	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-02-0	NICKEL	9/30/98	28	mg/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	98-95-3	NITROBENZENE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	400	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	400	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	87-86-5	PENTACHLOROPHENOL	9/30/98	990	ug/Kg	Y	N	UJ	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	85-01-8	PHENANTHRENE	9/30/98	1700	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	108-95-2	PHENOL	9/30/98	74	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-09-7	POTASSIUM	9/30/98	1380	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	129-00-0	PYRENE	9/30/98	1500	ug/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7782-49-2	SELENIUM	9/30/98	2.2	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-22-4	SILVER	9/30/98	0.26	mg/kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-23-5	SODIUM	9/30/98	596	mg/kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	100-42-5	STYRENE	9/30/98	2	ug/Kg	Y	Y	J	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	127-18-4	TETRACHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-28-0	THALLIUM	9/30/98	1.8	mg/kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	108-88-3	TOLUENE	9/30/98	52	ug/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	TSO	TOTAL SOLIDS	9/30/98	84.2	%	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	2540-G
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	8001-35-2	TOXAPHENE	9/30/98	2000	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	79-01-6	TRICHLOROETHENE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-62-2	VANADIUM	9/30/98	13	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	75-01-4	VINYL CHLORIDE	9/30/98	12	ug/Kg	Y	N	U	1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	1330-20-7	XYLENES, TOTAL	9/30/98	45	ug/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9172	7440-66-6	ZINC	9/30/98	131	mg/kg	Y	Y		1117023.5	921525.4	6	8	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	71-55-6	1,1,1-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	79-00-5	1,1,2-TRICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	75-34-3	1,1-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	75-35-4	1,1-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	120-82-1	1,2,4-TRICHLOROBENZENE	9/30/98	85	ug/Kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	95-50-1	1,2-DICHLOROBENZENE	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	107-06-2	1,2-DICHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	78-87-5	1,2-DICHLOROPROPANE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	541-73-1	1,3-DICHLOROBENZENE	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	106-46-7	1,4-DICHLOROBENZENE	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	95-95-4	2,4,5-TRICHLOROPHENOL	9/30/98	910	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	88-06-2	2,4,6-TRICHLOROPHENOL	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	120-83-2	2,4-DICHLOROPHENOL	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	105-67-9	2,4-DIMETHYLPHENOL	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	51-28-5	2,4-DINITROPHENOL	9/30/98	910	ug/Kg	Y	N	UJ	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	121-14-2	2,4-DINITROTOLUENE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	606-20-2	2,6-DINITROTOLUENE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	78-93-3	2-BUTANONE	9/30/98	2	ug/Kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	91-58-7	2-CHLORONAPHTHALENE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	95-57-8	2-CHLOROPHENOL	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	591-78-6	2-HEXANONE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	91-57-6	2-METHYLNAPHTHALENE	9/30/98	100	ug/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	95-48-7	2-METHYLPHENOL	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	88-74-4	2-NITROANILINE	9/30/98	910	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	88-75-5	2-NITROPHENOL	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	91-94-1	3,3'-DICHLOROBENZIDINE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	99-09-2	3-NITROANILINE	9/30/98	910	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	72-54-8	4,4'-DDD	9/30/98	3.6	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	72-55-9	4,4'-DDE	9/30/98	3.6	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	50-29-3	4,4'-DDT	9/30/98	3.6	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/30/98	910	ug/Kg	Y	N	UJ	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	59-50-7	4-CHLORO-3-METHYLPHENOL	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	106-47-8	4-CHLOROANILINE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	108-10-1	4-METHYL-2-PENTANONE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	106-44-5	4-METHYLPHENOL	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	100-01-6	4-NITROANILINE	9/30/98	910	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	100-02-7	4-NITROPHENOL	9/30/98	910	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	83-32-9	ACENAPHTHENE	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	208-96-8	ACENAPHTHYLENE	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	67-64-1	ACETONE	9/30/98	13	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	309-00-2	ALDRIN	9/30/98	1.8	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	319-84-6	ALPHA-BHC	9/30/98	1.8	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	5103-71-9	ALPHA-CHLORDANE	9/30/98	1.8	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7429-90-5	ALUMINUM	9/30/98	5900	mg/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	120-12-7	ANTHRACENE	9/30/98	48	ug/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-36-0	ANTIMONY	9/30/98	0.63	mg/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	12674-11-2	AROCLOR-1016	9/30/98	36	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	11104-28-2	AROCLOR-1221	9/30/98	72	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	11141-16-5	AROCLOR-1232	9/30/98	36	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	53469-21-9	AROCLOR-1242	9/30/98	36	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	12672-29-6	AROCLOR-1248	9/30/98	36	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	11097-69-1	AROCLOR-1254	9/30/98	36	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	11096-82-5	AROCLOR-1260	9/30/98	36	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-38-2	ARSENIC	9/30/98	4.5	mg/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-39-3	BARIUM	9/30/98	87	mg/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	71-43-2	BENZENE	9/30/98	18	ug/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	56-55-3	BENZO(A)ANTHRACENE	9/30/98	51	ug/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	50-32-8	BENZO(A)PYRENE	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	205-99-2	BENZO(B)FLUORANTHENE	9/30/98	62	ug/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	191-24-2	BENZO(G,H,I)PERYLENE	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	207-08-9	BENZO(K)FLUORANTHENE	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-41-7	BERYLLIUM	9/30/98	0.34	mg/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	319-85-7	BETA-BHC	9/30/98	1.8	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/30/98	100	ug/Kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	75-27-4	BROMODICHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	75-25-2	BROMOFORM	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	74-83-9	BROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	85-68-7	BUTYLBENZYL PHTHALATE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-43-9	CADMIUM	9/30/98	0.25	mg/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-70-2	CALCIUM	9/30/98	88700	mg/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	86-74-8	CARBAZOLE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	75-15-0	CARBON DISULFIDE	9/30/98	3	ug/Kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	56-23-5	CARBON TETRACHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	108-90-7	CHLOROBENZENE	9/30/98	2	ug/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	124-48-1	CHLORODIBROMOMETHANE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	75-00-3	CHLOROETHANE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	67-66-3	CHLOROFORM	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	74-87-3	CHLOROMETHANE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-47-3	CHROMIUM	9/30/98	10.2	mg/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	218-01-9	CHRYSENE	9/30/98	79	ug/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	156-59-2	CIS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-48-4	COBALT	9/30/98	7.3	mg/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-50-8	COPPER	9/30/98	39.7	mg/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	57-12-5	CYANIDE	9/30/98	0.54	mg/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	335.2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	319-86-8	DELTA-BHC	9/30/98	1.8	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	53-70-3	DIBENZO(A,H)ANTHRACENE	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	132-64-9	DIBENZOFURAN	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	60-57-1	DIELDRIN	9/30/98	3.6	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	84-66-2	DIETHYL PHTHALATE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	131-11-3	DIMETHYL PHTHALATE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	84-74-2	DI-N-BUTYL PHTHALATE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	117-84-0	DI-N-OCTYL PHTHALATE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	959-98-8	ENDOSULFAN I	9/30/98	1.8	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	33213-65-9	ENDOSULFAN II	9/30/98	3.6	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	1031-07-8	ENDOSULFAN SULFATE	9/30/98	3.6	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	72-20-8	ENDRIN	9/30/98	3.6	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7421-93-4	ENDRIN ALDEHYDE	9/30/98	3.6	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	53494-70-5	ENDRIN KETONE	9/30/98	3.6	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	100-41-4	ETHYLBENZENE	9/30/98	2	ug/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	206-44-0	FLUORANTHENE	9/30/98	100	ug/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	86-73-7	FLUORENE	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	58-89-9	GAMMA-BHC (LINDANE)	9/30/98	1.8	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	5566-34-7	GAMMA-CHLORDANE	9/30/98	1.8	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	76-44-8	HEPTACHLOR	9/30/98	1.8	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	1024-57-3	HEPTACHLOR EPOXIDE	9/30/98	1.8	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	118-74-1	HEXACHLOROBENZENE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	87-68-3	HEXACHLOROBUTADIENE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/30/98	360	ug/Kg	Y	N	UJ	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	67-72-1	HEXACHLOROETHANE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	193-39-5	INDENO(1,2,3-CD)PYRENE	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7439-89-6	IRON	9/30/98	14300	mg/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	78-59-1	ISOPHORONE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7439-92-1	LEAD	9/30/98	6	mg/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7439-95-4	MAGNESIUM	9/30/98	18100	mg/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7439-96-5	MANGANESE	9/30/98	446	mg/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7439-97-6	MERCURY	9/30/98	0.1	mg/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	245.1M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	72-43-5	METHOXYCHLOR	9/30/98	18	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	75-09-2	METHYLENE CHLORIDE	9/30/98	11	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	91-20-3	NAPHTHALENE	9/30/98	1200	ug/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-02-0	NICKEL	9/30/98	14.9	mg/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	98-95-3	NITROBENZENE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	86-30-6	N-NITROSODIPHENYLAMINE	9/30/98	360	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	87-86-5	PENTACHLOROPHENOL	9/30/98	910	ug/Kg	Y	N	UJ	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	85-01-8	PHENANTHRENE	9/30/98	80	ug/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	108-95-2	PHENOL	9/30/98	360	ug/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-09-7	POTASSIUM	9/30/98	1320	mg/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	129-00-0	PYRENE	9/30/98	64	ug/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7782-49-2	SELENIUM	9/30/98	1	mg/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-22-4	SILVER	9/30/98	0.24	mg/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-23-5	SODIUM	9/30/98	139	mg/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	100-42-5	STYRENE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	127-18-4	TETRACHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-28-0	THALLIUM	9/30/98	1.6	mg/kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	108-88-3	TOLUENE	9/30/98	10	ug/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	TSO	TOTAL SOLIDS	9/30/98	92	%	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	2540-G
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	8001-35-2	TOXAPHENE	9/30/98	180	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	PCB
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	156-60-5	TRANS-1,2-DICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	79-01-6	TRICHLOROETHENE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-62-2	VANADIUM	9/30/98	10	mg/kg	Y	Y	J	1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	75-01-4	VINYL CHLORIDE	9/30/98	11	ug/Kg	Y	N	U	1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	1330-20-7	XYLENES, TOTAL	9/30/98	12	ug/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-3	WA9171	7440-66-6	ZINC	9/30/98	33	mg/kg	Y	Y		1117023.5	921525.4	2	10	SB	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	71-55-6	1,1,1-TRICHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/26/99	11	ug/Kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	79-00-5	1,1,2-TRICHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	75-34-3	1,1-DICHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	75-35-4	1,1-DICHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	120-82-1	1,2,4-TRICHLOROBENZENE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	95-50-1	1,2-DICHLOROBENZENE	10/26/99	380	ug/kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	107-06-2	1,2-DICHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	78-87-5	1,2-DICHLOROPROPANE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	541-73-1	1,3-DICHLOROBENZENE	10/26/99	380	ug/kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	106-46-7	1,4-DICHLOROBENZENE	10/26/99	61	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	95-95-4	2,4,5-TRICHLOROPHENOL	10/26/99	950	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	88-06-2	2,4,6-TRICHLOROPHENOL	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	120-83-2	2,4-DICHLOROPHENOL	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	105-67-9	2,4-DIMETHYLPHENOL	10/26/99	43	ug/Kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	51-28-5	2,4-DINITROPHENOL	10/26/99	950	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	121-14-2	2,4-DINITROTOLUENE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	606-20-2	2,6-DINITROTOLUENE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	78-93-3	2-BUTANONE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	91-58-7	2-CHLORONAPHTHALENE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	95-57-8	2-CHLOROPHENOL	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	591-78-6	2-HEXANONE	10/26/99	11	ug/Kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	91-57-6	2-METHYLNAPHTHALENE	10/26/99	730	ug/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	95-48-7	2-METHYLPHENOL	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	88-74-4	2-NITROANILINE	10/26/99	950	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	88-75-5	2-NITROPHENOL	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	91-94-1	3,3'-DICHLOROBENZIDINE	10/26/99	380	ug/Kg	Y	N	R	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	99-09-2	3-NITROANILINE	10/26/99	950	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	72-54-8	4,4'-DDD	10/26/99	3.8	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	72-55-9	4,4'-DDE	10/26/99	1.3	ug/Kg	Y	Y	JN	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	50-29-3	4,4'-DDT	10/26/99	3.8	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/26/99	950	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	59-50-7	4-CHLORO-3-METHYLPHENOL	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	106-47-8	4-CHLOROANILINE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	108-10-1	4-METHYL-2-PENTANONE	10/26/99	11	ug/Kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	106-44-5	4-METHYLPHENOL	10/26/99	44	ug/Kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	100-01-6	4-NITROANILINE	10/26/99	950	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	100-02-7	4-NITROPHENOL	10/26/99	950	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	83-32-9	ACENAPHTHENE	10/26/99	72	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	208-96-8	ACENAPHTHYLENE	10/26/99	220	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	67-64-1	ACETONE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	309-00-2	ALDRIN	10/26/99	1.9	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	319-84-6	ALPHA-BHC	10/26/99	1.9	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	5103-71-9	ALPHA-CHLORDANE	10/26/99	1.9	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7429-90-5	ALUMINUM	10/26/99	5940	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	120-12-7	ANTHRACENE	10/26/99	290	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-36-0	ANTIMONY	10/26/99	0.57	mg/kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	12674-11-2	AROCLOR-1016	10/26/99	38	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	11104-28-2	AROCLOR-1221	10/26/99	76	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	11141-16-5	AROCLOR-1232	10/26/99	38	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	53469-21-9	AROCLOR-1242	10/26/99	38	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	12672-29-6	AROCLOR-1248	10/26/99	39	ug/Kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	11097-69-1	AROCLOR-1254	10/26/99	38	ug/kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	11096-82-5	AROCLOR-1260	10/26/99	270	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	11100-14-4	AROCLOR-1268	10/26/99	76	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-38-2	ARSENIC	10/26/99	42	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-39-3	BARIUM	10/26/99	96.1	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	71-43-2	BENZENE	10/26/99	11	ug/kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	56-55-3	BENZO(A)ANTHRACENE	10/26/99	1600	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	50-32-8	BENZO(A)PYRENE	10/26/99	1700	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	205-99-2	BENZO(B)FLUORANTHENE	10/26/99	2700	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	191-24-2	BENZO(G,H,I)PERYLENE	10/26/99	2400	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	207-08-9	BENZO(K)FLUORANTHENE	10/26/99	960	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-41-7	BERYLLIUM	10/26/99	0.58	mg/kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	319-85-7	BETA-BHC	10/26/99	1.9	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/26/99	380	ug/Kg	Y	N	R	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	75-27-4	BROMODICHLOROMETHANE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	75-25-2	BROMOFORM	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	74-83-9	BROMOMETHANE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	85-68-7	BUTYLBENZYL PHTHALATE	10/26/99	380	ug/Kg	Y	N	R	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-43-9	CADMIUM	10/26/99	0.2	mg/kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-70-2	CALCIUM	10/26/99	134000	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	86-74-8	CARBAZOLE	10/26/99	130	ug/Kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	75-15-0	CARBON DISULFIDE	10/26/99	11	ug/kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	56-23-5	CARBON TETRACHLORIDE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	108-90-7	CHLOROBENZENE	10/26/99	11	ug/kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	124-48-1	CHLORODIBROMOMETHANE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	75-00-3	CHLOROETHANE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	67-66-3	CHLOROFORM	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	74-87-3	CHLOROMETHANE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-47-3	CHROMIUM	10/26/99	28	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	218-01-9	CHRYSENE	10/26/99	2200	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	156-59-2	CIS-1,2-DICHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-48-4	COBALT	10/26/99	8.1	mg/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-50-8	COPPER	10/26/99	42.7	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	57-12-5	CYANIDE	10/26/99	3.6	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	EPA 335.2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	319-86-8	DELTA-BHC	10/26/99	1.9	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	53-70-3	DIBENZO(A,H)ANTHRACENE	10/26/99	660	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	132-64-9	DIBENZOFURAN	10/26/99	280	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	60-57-1	DIELDRIN	10/26/99	3.8	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	84-66-2	DIETHYL PHTHALATE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	131-11-3	DIMETHYL PHTHALATE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	84-74-2	DI-N-BUTYL PHTHALATE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	117-84-0	DI-N-OCTYL PHTHALATE	10/26/99	380	ug/Kg	Y	N	R	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	959-98-8	ENDOSULFAN I	10/26/99	1.9	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	33213-65-9	ENDOSULFAN II	10/26/99	7.1	ug/Kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	1031-07-8	ENDOSULFAN SULFATE	10/26/99	3.8	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	72-20-8	ENDRIN	10/26/99	13	ug/Kg	Y	Y	JN	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7421-93-4	ENDRIN ALDEHYDE	10/26/99	7.5	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	53494-70-5	ENDRIN KETONE	10/26/99	21	ug/Kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	100-41-4	ETHYLBENZENE	10/26/99	11	ug/kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	206-44-0	FLUORANTHENE	10/26/99	1300	ug/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	86-73-7	FLUORENE	10/26/99	84	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	58-89-9	GAMMA-BHC (LINDANE)	10/26/99	1.9	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	5566-34-7	GAMMA-CHLORDANE	10/26/99	1.9	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	76-44-8	HEPTACHLOR	10/26/99	1.9	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	1024-57-3	HEPTACHLOR EPOXIDE	10/26/99	1.9	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	118-74-1	HEXACHLOROBENZENE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	87-68-3	HEXACHLOROBUTADIENE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	67-72-1	HEXACHLOROETHANE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	193-39-5	INDENO(1,2,3-CD)PYRENE	10/26/99	2100	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7439-89-6	IRON	10/26/99	24500	mg/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	78-59-1	ISOPHORONE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7439-92-1	LEAD	10/26/99	108	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7439-95-4	MAGNESIUM	10/26/99	14700	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7439-96-5	MANGANESE	10/26/99	257	mg/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7439-97-6	MERCURY	10/26/99	14.2	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	245.5M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	72-43-5	METHOXYCHLOR	10/26/99	19	ug/Kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	22967-92-6	METHYL MERCURY	10/26/99	3.44	ng/g	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	1630/NONE
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	75-09-2	METHYLENE CHLORIDE	10/26/99	17	ug/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	91-20-3	NAPHTHALENE	10/26/99	2700	ug/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-02-0	NICKEL	10/26/99	20.7	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	98-95-3	NITROBENZENE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	86-30-6	N-NITROSODIPHENYLAMINE	10/26/99	380	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	87-86-5	PENTACHLOROPHENOL	10/26/99	950	ug/Kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	85-01-8	PHENANTHRENE	10/26/99	1700	ug/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	108-95-2	PHENOL	10/26/99	70	ug/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-09-7	POTASSIUM	10/26/99	1460	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	129-00-0	PYRENE	10/26/99	3400	ug/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-2
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7782-49-2	SELENIUM	10/26/99	1.9	mg/kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-22-4	SILVER	10/26/99	0.18	mg/kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-23-5	SODIUM	10/26/99	228	mg/kg	Y	Y	J	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	100-42-5	STYRENE	10/26/99	11	ug/Kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	127-18-4	TETRACHLOROETHENE	10/26/99	11	ug/Kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-28-0	THALLIUM	10/26/99	1.2	mg/kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	108-88-3	TOLUENE	10/26/99	11	ug/kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	TOC	TOTAL ORGANIC CARBON	10/26/99	85600	mg/Kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	SW9060
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	TSO	TOTAL SOLIDS	10/26/99	88.1	%	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	2540-G
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	8001-35-2	TOXAPHENE	10/26/99	190	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-3
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	156-60-5	TRANS-1,2-DICHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	79-01-6	TRICHLOROETHENE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-62-2	VANADIUM	10/26/99	20.1	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	75-01-4	VINYL CHLORIDE	10/26/99	11	ug/Kg	Y	N	U	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	1330-20-7	XYLENES, TOTAL	10/26/99	11	ug/kg	Y	N	UJ	1117065.4	921379.5	0	0.5	SS	SOIL	Soil	ASP 95-1
Petroleum Storage Area	Soil	WA-PSA-SS	WA9173	7440-66-6	ZINC	10/26/99	87.9	mg/kg	Y	Y		1117065.4	921379.5	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Ground Water	WA-WA-04D	WA9265	71-55-6	1,1,1-TRICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	79-34-5	1,1,2,2-TETRACHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	79-00-5	1,1,2-TRICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	75-34-3	1,1-DICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	75-35-4	1,1-DICHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	120-82-1	1,2,4-TRICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	95-50-1	1,2-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	107-06-2	1,2-DICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	540-59-0	1,2-DICHLOROETHENE (TOTAL)	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	78-87-5	1,2-DICHLOROPROPANE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	541-73-1	1,3-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	106-46-7	1,4-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	95-95-4	2,4,5-TRICHLOROPHENOL	3/30/92	52	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	88-06-2	2,4,6-TRICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	120-83-2	2,4-DICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	105-67-9	2,4-DIMETHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	51-28-5	2,4-DINITROPHENOL	3/30/92	52	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	121-14-2	2,4-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	606-20-2	2,6-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	78-93-3	2-BUTANONE	3/30/92	25	ug/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	91-58-7	2-CHLORONAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	95-57-8	2-CHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	591-78-6	2-HEXANONE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	91-57-6	2-METHYLNAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	95-48-7	2-METHYLPHENOL	3/30/92	6	ug/L	Y	Y	J	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	88-74-4	2-NITROANILINE	3/30/92	52	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	88-75-5	2-NITROPHENOL	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	99-09-2	3-NITROANILINE	3/30/92	52	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3/30/92	52	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	101-55-3	4-BROMOPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	59-50-7	4-CHLORO-3-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	106-47-8	4-CHLOROANILINE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	108-10-1	4-METHYL-2-PENTANONE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	106-44-5	4-METHYLPHENOL	3/30/92	260	ug/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	100-01-6	4-NITROANILINE	3/30/92	52	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	100-02-7	4-NITROPHENOL	3/30/92	52	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	83-32-9	ACENAPHTHENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	208-96-8	ACENAPHTHYLENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	67-64-1	ACETONE	3/30/92	75	ug/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265F	7429-90-5	ALUMINUM	3/30/92	0.0493	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7429-90-5	ALUMINUM	3/30/92	287	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	120-12-7	ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-36-0	ANTIMONY	3/30/92	0.157	mg/L	Y	N	UJ	1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-36-0	ANTIMONY	3/30/92	0.0597	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-38-2	ARSENIC	3/30/92	0.001	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-38-2	ARSENIC	3/30/92	0.01	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-39-3	BARIUM	3/30/92	1.67	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-39-3	BARIUM	3/30/92	0.218	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	71-43-2	BENZENE	3/30/92	2	ug/L	Y	Y	J	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	56-55-3	BENZO(A)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	50-32-8	BENZO(A)PYRENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	205-99-2	BENZO(B)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	191-24-2	BENZO(G,H,I)PERYLENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-04D	WA9265	207-08-9	BENZO(K)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	65-85-0	BENZOIC ACID	3/30/92	16	ug/L	Y	Y	J	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	100-51-6	BENZYL ALCOHOL	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-41-7	BERYLLIUM	3/30/92	0.0029	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-41-7	BERYLLIUM	3/30/92	0.0346	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	111-91-1	BIS(2-CHLOROETHOXY)METHANE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	111-44-4	BIS(2-CHLOROETHYL)ETHER	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	75-27-4	BROMODICHLOROMETHANE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	75-25-2	BROMOFORM	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	74-83-9	BROMOMETHANE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	85-68-7	BUTYLBENZYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-43-9	CADMIUM	3/30/92	0.02	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-43-9	CADMIUM	3/30/92	0.002	mg/L	Y	N	UJ	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-70-2	CALCIUM	3/30/92	7370	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-70-2	CALCIUM	3/30/92	1460	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	75-15-0	CARBON DISULFIDE	3/30/92	33	ug/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	56-23-5	CARBON TETRACHLORIDE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	108-90-7	CHLOROBENZENE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	124-48-1	CHLORODIBROMOMETHANE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	75-00-3	CHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	67-66-3	CHLOROFORM	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	74-87-3	CHLOROMETHANE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-47-3	CHROMIUM	3/30/92	0.0052	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-47-3	CHROMIUM	3/30/92	2.7	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	218-01-9	CHRYSENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	10061-01-5	CIS-1,3-DICHLOROPROPENE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-48-4	COBALT	3/30/92	0.367	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-48-4	COBALT	3/30/92	0.003	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-50-8	COPPER	3/30/92	0.0037	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-50-8	COPPER	3/30/92	0.651	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	57-12-5	CYANIDE	3/30/92	0.01	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	53-70-3	DIBENZO(A,H)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	132-64-9	DIBENZOFURAN	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	84-66-2	DIETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	131-11-3	DIMETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	84-74-2	DI-N-BUTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	117-84-0	DI-N-OCTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	100-41-4	ETHYLBENZENE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	206-44-0	FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	86-73-7	FLUORENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	118-74-1	HEXACHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	87-68-3	HEXACHLOROBUTADIENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	77-47-4	HEXACHLOROCYCLOPENTADIENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	67-72-1	HEXACHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	193-39-5	INDENO(1,2,3-CD)PYRENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	7439-89-6	IRON	3/30/92	621	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7439-89-6	IRON	3/30/92	0.0317	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	78-59-1	ISOPHORONE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265F	7439-92-1	LEAD	3/30/92	0.001	mg/L	Y	N	UJ	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7439-92-1	LEAD	3/30/92	0.01	mg/L	Y	N	UJ	1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7439-95-4	MAGNESIUM	3/30/92	1270	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7439-95-4	MAGNESIUM	3/30/92	0.016	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7439-96-5	MANGANESE	3/30/92	0.0129	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7439-96-5	MANGANESE	3/30/92	20.4	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7439-97-6	MERCURY	3/30/92	0.0074	mg/L	Y	Y	J	1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7439-97-6	MERCURY	3/30/92	0.004	mg/L	Y	N	UJ	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	75-09-2	METHYLENE CHLORIDE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	91-20-3	NAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-02-0	NICKEL	3/30/92	0.0115	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-02-0	NICKEL	3/30/92	1.73	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	98-95-3	NITROBENZENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	86-30-6	N-NITROSODIPHENYLAMINE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	87-86-5	PENTACHLOROPHENOL	3/30/92	52	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	85-01-8	PHENANTHRENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265	108-95-2	PHENOL	3/30/92	3	ug/L	Y	Y	J	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-09-7	POTASSIUM	3/30/92	456	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-09-7	POTASSIUM	3/30/92	239	mg/L	Y	Y	J	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	129-00-0	PYRENE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9265F	7782-49-2	SELENIUM	3/30/92	0.002	mg/L	Y	N	UJ	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7782-49-2	SELENIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-22-4	SILVER	3/30/92	0.003	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-22-4	SILVER	3/30/92	0.0354	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-23-5	SODIUM	3/30/92	8870	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-23-5	SODIUM	3/30/92	1020	mg/L	Y	Y	J	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	100-42-5	STYRENE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	127-18-4	TETRACHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-28-0	THALLIUM	3/30/92	0.02	mg/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-28-0	THALLIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	108-88-3	TOLUENE	3/30/92	1	ug/L	Y	Y	J	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	10061-02-6	TRANS-1,3-DICHLOROPROPENE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	79-01-6	TRICHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-62-2	VANADIUM	3/30/92	0.715	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-62-2	VANADIUM	3/30/92	0.0203	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	75-01-4	VINYL CHLORIDE	3/30/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265	1330-20-7	XYLENES, TOTAL	3/30/92	4	ug/L	Y	Y	J	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9265F	7440-66-6	ZINC	3/30/92	0.0059	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04D	WA9265	7440-66-6	ZINC	3/30/92	1.94	mg/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04D	WA9266	71-55-6	1,1,1-TRICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	79-00-5	1,1,2-TRICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	75-34-3	1,1-DICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	75-35-4	1,1-DICHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	95-50-1	1,2-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9266	107-06-2	1,2-DICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	78-87-5	1,2-DICHLOROPROPANE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	541-73-1	1,3-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9266	106-46-7	1,4-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04D	WA9266	110-75-8	2-CHLOROETHYL VINYL ETHER	10/9/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	71-43-2	BENZENE	10/9/92	2	ug/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	75-27-4	BROMODICHLOROMETHANE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	75-25-2	BROMOFORM	10/9/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	74-83-9	BROMOMETHANE	10/9/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	56-23-5	CARBON TETRACHLORIDE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	108-90-7	CHLOROBENZENE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	124-48-1	CHLORODIBROMOMETHANE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	75-00-3	CHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	67-66-3	CHLOROFORM	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	74-87-3	CHLOROMETHANE	10/9/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	75-71-8	DICHLORODIFLUOROMETHANE	10/9/92	10	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	100-41-4	ETHYLBENZENE	10/9/92	3	ug/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	75-09-2	METHYLENE CHLORIDE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	127-18-4	TETRACHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	108-88-3	TOLUENE	10/9/92	1	ug/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	79-01-6	TRICHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	75-69-4	TRICHLOROFLUOROMETHANE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	75-01-4	VINYL CHLORIDE	10/9/92	1	ug/L	Y	N	U	1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04D	WA9266	1330-20-7	XYLENES, TOTAL	10/9/92	16	ug/L	Y	Y		1117269.1	922858.1	60	70	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	71-55-6	1,1,1-TRICHLOROETHANE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	79-34-5	1,1,2,2-TETRACHLOROETHANE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	79-00-5	1,1,2-TRICHLOROETHANE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	75-34-3	1,1-DICHLOROETHANE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	75-35-4	1,1-DICHLOROETHENE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	120-82-1	1,2,4-TRICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	95-50-1	1,2-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	107-06-2	1,2-DICHLOROETHANE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	540-59-0	1,2-DICHLOROETHENE (TOTAL)	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	78-87-5	1,2-DICHLOROPROPANE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	541-73-1	1,3-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	106-46-7	1,4-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-04I	WA9267	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	95-95-4	2,4,5-TRICHLOROPHENOL	3/30/92	52	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	88-06-2	2,4,6-TRICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	120-83-2	2,4-DICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	105-67-9	2,4-DIMETHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	51-28-5	2,4-DINITROPHENOL	3/30/92	52	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	121-14-2	2,4-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	606-20-2	2,6-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	78-93-3	2-BUTANONE	3/30/92	190	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	91-58-7	2-CHLORONAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	95-57-8	2-CHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	591-78-6	2-HEXANONE	3/30/92	100	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	91-57-6	2-METHYLNAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	95-48-7	2-METHYLPHENOL	3/30/92	8	ug/L	Y	Y	J	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	88-74-4	2-NITROANILINE	3/30/92	52	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	88-75-5	2-NITROPHENOL	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	99-09-2	3-NITROANILINE	3/30/92	52	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3/30/92	52	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	101-55-3	4-BROMOPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	59-50-7	4-CHLORO-3-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	106-47-8	4-CHLOROANILINE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	108-10-1	4-METHYL-2-PENTANONE	3/30/92	100	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	106-44-5	4-METHYLPHENOL	3/30/92	500	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	100-01-6	4-NITROANILINE	3/30/92	52	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	100-02-7	4-NITROPHENOL	3/30/92	52	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	83-32-9	ACENAPHTHENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	208-96-8	ACENAPHTHYLENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	67-64-1	ACETONE	3/30/92	940	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267F	7429-90-5	ALUMINUM	3/30/92	0.489	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7429-90-5	ALUMINUM	3/30/92	11.2	mg/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	120-12-7	ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-36-0	ANTIMONY	3/30/92	0.259	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-36-0	ANTIMONY	3/30/92	0.0269	mg/L	Y	N	UJ	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-38-2	ARSENIC	3/30/92	0.0132	mg/L	Y	Y	J	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-38-2	ARSENIC	3/30/92	0.0235	mg/L	Y	Y		1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-39-3	BARIUM	3/30/92	0.447	mg/L	Y	Y	J	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-39-3	BARIUM	3/30/92	0.229	mg/L	Y	Y	J	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	71-43-2	BENZENE	3/30/92	64	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	56-55-3	BENZO(A)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	50-32-8	BENZO(A)PYRENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	205-99-2	BENZO(B)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	191-24-2	BENZO(G,H,I)PERYLENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	207-08-9	BENZO(K)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	65-85-0	BENZOIC ACID	3/30/92	52	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	100-51-6	BENZYL ALCOHOL	3/30/92	12	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-41-7	BERYLLIUM	3/30/92	0.0036	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-41-7	BERYLLIUM	3/30/92	0.0142	mg/L	Y	Y		1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	111-91-1	BIS(2-CHLOROETHOXY)METHANE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	111-44-4	BIS(2-CHLOROETHYL)ETHER	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	75-27-4	BROMODICHLOROMETHANE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	75-25-2	BROMOFORM	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	74-83-9	BROMOMETHANE	3/30/92	100	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	85-68-7	BUTYLBENZYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-43-9	CADMIUM	3/30/92	0.01	mg/L	Y	N	UJ	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-43-9	CADMIUM	3/30/92	0.002	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-70-2	CALCIUM	3/30/92	0.095	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-70-2	CALCIUM	3/30/92	1570	mg/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	75-15-0	CARBON DISULFIDE	3/30/92	200	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	56-23-5	CARBON TETRACHLORIDE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	108-90-7	CHLOROBENZENE	3/30/92	27	ug/L	Y	Y	J	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	124-48-1	CHLORODIBROMOMETHANE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	75-00-3	CHLOROETHANE	3/30/92	100	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	67-66-3	CHLOROFORM	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	74-87-3	CHLOROMETHANE	3/30/92	100	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-47-3	CHROMIUM	3/30/92	0.0369	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-47-3	CHROMIUM	3/30/92	0.0229	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	218-01-9	CHRYSENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	10061-01-5	CIS-1,3-DICHLOROPROPENE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-48-4	COBALT	3/30/92	0.015	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-48-4	COBALT	3/30/92	0.0092	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-50-8	COPPER	3/30/92	0.0291	mg/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-50-8	COPPER	3/30/92	0.01	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	57-12-5	CYANIDE	3/30/92	0.01	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	53-70-3	DIBENZO(A,H)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	132-64-9	DIBENZOFURAN	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	84-66-2	DIETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	131-11-3	DIMETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	84-74-2	DI-N-BUTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	117-84-0	DI-N-OCTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	100-41-4	ETHYLBENZENE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	206-44-0	FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	86-73-7	FLUORENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	118-74-1	HEXACHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	87-68-3	HEXACHLOROBUTADIENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	77-47-4	HEXACHLOROCYCLOPENTADIENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	67-72-1	HEXACHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	193-39-5	INDENO(1,2,3-CD)PYRENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	7439-89-6	IRON	3/30/92	15.3	mg/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7439-89-6	IRON	3/30/92	0.0679	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	78-59-1	ISOPHORONE	3/30/92	5	ug/L	Y	Y	J	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267F	7439-92-1	LEAD	3/30/92	0.01	mg/L	Y	N	UJ	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7439-92-1	LEAD	3/30/92	0.0097	mg/L	Y	Y	J	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7439-95-4	MAGNESIUM	3/30/92	31.3	mg/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7439-95-4	MAGNESIUM	3/30/92	20	mg/L	Y	Y		1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7439-96-5	MANGANESE	3/30/92	0.0466	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7439-96-5	MANGANESE	3/30/92	0.427	mg/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7439-97-6	MERCURY	3/30/92	0.0028	mg/L	Y	Y	J	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7439-97-6	MERCURY	3/30/92	0.0002	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	75-09-2	METHYLENE CHLORIDE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	91-20-3	NAPHTHALENE	3/30/92	2	ug/L	Y	Y	J	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-02-0	NICKEL	3/30/92	0.05	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-02-0	NICKEL	3/30/92	0.0318	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	98-95-3	NITROBENZENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	86-30-6	N-NITROSODIPHENYLAMINE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	87-86-5	PENTACHLOROPHENOL	3/30/92	52	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	85-01-8	PHENANTHRENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	108-95-2	PHENOL	3/30/92	740	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-09-7	POTASSIUM	3/30/92	248	mg/L	Y	Y	J	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-09-7	POTASSIUM	3/30/92	452	mg/L	Y	Y	J	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	129-00-0	PYRENE	3/30/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9267	7782-49-2	SELENIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7782-49-2	SELENIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-22-4	SILVER	3/30/92	0.0311	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-22-4	SILVER	3/30/92	0.003	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-23-5	SODIUM	3/30/92	980	mg/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-23-5	SODIUM	3/30/92	0.135	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	100-42-5	STYRENE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	127-18-4	TETRACHLOROETHENE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-28-0	THALLIUM	3/30/92	0.02	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-28-0	THALLIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	108-88-3	TOLUENE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	10061-02-6	TRANS-1,3-DICHLOROPROPENE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	79-01-6	TRICHLOROETHENE	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-62-2	VANADIUM	3/30/92	0.0569	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-62-2	VANADIUM	3/30/92	0.038	mg/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267	75-01-4	VINYL CHLORIDE	3/30/92	100	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	1330-20-7	XYLENES, TOTAL	3/30/92	50	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9267	7440-66-6	ZINC	3/30/92	0.0887	mg/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04I	WA9267F	7440-66-6	ZINC	3/30/92	0.015	mg/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04I	WA9268	71-55-6	1,1,1-TRICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-04I	WA9268	79-00-5	1,1,2-TRICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	75-34-3	1,1-DICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	75-35-4	1,1-DICHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	95-50-1	1,2-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9268	107-06-2	1,2-DICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	78-87-5	1,2-DICHLOROPROPANE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	541-73-1	1,3-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9268	106-46-7	1,4-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04I	WA9268	110-75-8	2-CHLOROETHYL VINYL ETHER	10/9/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	71-43-2	BENZENE	10/9/92	56	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	75-27-4	BROMODICHLOROMETHANE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	75-25-2	BROMOFORM	10/9/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	74-83-9	BROMOMETHANE	10/9/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	56-23-5	CARBON TETRACHLORIDE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	108-90-7	CHLOROBENZENE	10/9/92	63	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	124-48-1	CHLORODIBROMOMETHANE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	75-00-3	CHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	67-66-3	CHLOROFORM	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	74-87-3	CHLOROMETHANE	10/9/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	75-71-8	DICHLORODIFLUOROMETHANE	10/9/92	10	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	100-41-4	ETHYLBENZENE	10/9/92	9	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	75-09-2	METHYLENE CHLORIDE	10/9/92	2	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	127-18-4	TETRACHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	108-88-3	TOLUENE	10/9/92	2	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	79-01-6	TRICHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	75-69-4	TRICHLOROFLUOROMETHANE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	75-01-4	VINYL CHLORIDE	10/9/92	1	ug/L	Y	N	U	1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04I	WA9268	1330-20-7	XYLENES, TOTAL	10/9/92	4	ug/L	Y	Y		1117263.1	922839	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	71-55-6	1,1,1-TRICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	79-34-5	1,1,2,2-TETRACHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	79-00-5	1,1,2-TRICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	75-34-3	1,1-DICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	75-35-4	1,1-DICHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	120-82-1	1,2,4-TRICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	95-50-1	1,2-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	107-06-2	1,2-DICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	540-59-0	1,2-DICHLOROETHENE (TOTAL)	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	78-87-5	1,2-DICHLOROPROPANE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	541-73-1	1,3-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	106-46-7	1,4-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	95-95-4	2,4,5-TRICHLOROPHENOL	3/30/92	50	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	88-06-2	2,4,6-TRICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	120-83-2	2,4-DICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	105-67-9	2,4-DIMETHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	51-28-5	2,4-DINITROPHENOL	3/30/92	50	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	121-14-2	2,4-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	606-20-2	2,6-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	78-93-3	2-BUTANONE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	91-58-7	2-CHLORONAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	95-57-8	2-CHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	591-78-6	2-HEXANONE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	91-57-6	2-METHYLNAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	95-48-7	2-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	88-74-4	2-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	88-75-5	2-NITROPHENOL	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	99-09-2	3-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3/30/92	50	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	101-55-3	4-BROMOPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	59-50-7	4-CHLORO-3-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	106-47-8	4-CHLOROANILINE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	108-10-1	4-METHYL-2-PENTANONE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	106-44-5	4-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-04S	WA9269	100-01-6	4-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	100-02-7	4-NITROPHENOL	3/30/92	50	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	83-32-9	ACENAPHTHENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	208-96-8	ACENAPHTHYLENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	67-64-1	ACETONE	3/30/92	120	ug/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269F	7429-90-5	ALUMINUM	3/30/92	0.0321	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7429-90-5	ALUMINUM	3/30/92	10.7	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	120-12-7	ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-36-0	ANTIMONY	3/30/92	0.02	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-36-0	ANTIMONY	3/30/92	0.014	mg/L	Y	N	UJ	1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-38-2	ARSENIC	3/30/92	0.0098	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-38-2	ARSENIC	3/30/92	0.001	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-39-3	BARIUM	3/30/92	0.0272	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-39-3	BARIUM	3/30/92	0.153	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	71-43-2	BENZENE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	56-55-3	BENZO(A)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	50-32-8	BENZO(A)PYRENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	205-99-2	BENZO(B)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	191-24-2	BENZO(G,H,I)PERYLENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	207-08-9	BENZO(K)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	65-85-0	BENZOIC ACID	3/30/92	50	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	100-51-6	BENZYL ALCOHOL	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-41-7	BERYLLIUM	3/30/92	0.0026	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-41-7	BERYLLIUM	3/30/92	0.001	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	111-91-1	BIS(2-CHLOROETHOXY)METHANE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	111-44-4	BIS(2-CHLOROETHYL)ETHER	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	3/30/92	39	ug/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	75-27-4	BROMODICHLOROMETHANE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	75-25-2	BROMOFORM	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	74-83-9	BROMOMETHANE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	85-68-7	BUTYLBENZYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-43-9	CADMIUM	3/30/92	0.002	mg/L	Y	N	UJ	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-43-9	CADMIUM	3/30/92	0.002	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-70-2	CALCIUM	3/30/92	108	mg/L	Y	N	UJ	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-70-2	CALCIUM	3/30/92	255	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	75-15-0	CARBON DISULFIDE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	56-23-5	CARBON TETRACHLORIDE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	108-90-7	CHLOROBENZENE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	124-48-1	CHLORODIBROMOMETHANE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	75-00-3	CHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	67-66-3	CHLOROFORM	3/30/92	4	ug/L	Y	Y	J	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	74-87-3	CHLOROMETHANE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-47-3	CHROMIUM	3/30/92	0.0528	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-47-3	CHROMIUM	3/30/92	0.0341	mg/L	Y	N	UJ	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	218-01-9	CHRYSENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	10061-01-5	CIS-1,3-DICHLOROPROPENE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-48-4	COBALT	3/30/92	0.003	mg/L	Y	N	UJ	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-48-4	COBALT	3/30/92	0.0061	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-50-8	COPPER	3/30/92	0.0315	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-50-8	COPPER	3/30/92	0.0034	mg/L	Y	N	UJ	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	57-12-5	CYANIDE	3/30/92	0.01	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	53-70-3	DIBENZO(A,H)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	132-64-9	DIBENZOFURAN	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	84-66-2	DIETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	131-11-3	DIMETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	84-74-2	DI-N-BUTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	117-84-0	DI-N-OCTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	100-41-4	ETHYLBENZENE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	206-44-0	FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	86-73-7	FLUORENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	118-74-1	HEXACHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	87-68-3	HEXACHLOROBUTADIENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	77-47-4	HEXACHLOROCYCLOPENTADIENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	67-72-1	HEXACHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	193-39-5	INDENO(1,2,3-CD)PYRENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	7439-89-6	IRON	3/30/92	5.35	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7439-89-6	IRON	3/30/92	0.0564	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	WATER	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-04S	WA9269	78-59-1	ISOPHORONE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269F	7439-92-1	LEAD	3/30/92	0.01	mg/L	Y	N	UJ	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7439-92-1	LEAD	3/30/92	0.0265	mg/L	Y	Y	J	1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7439-95-4	MAGNESIUM	3/30/92	28.4	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7439-95-4	MAGNESIUM	3/30/92	3.12	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7439-96-5	MANGANESE	3/30/92	0.0032	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7439-96-5	MANGANESE	3/30/92	0.247	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7439-97-6	MERCURY	3/30/92	0.0085	mg/L	Y	Y	J	1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7439-97-6	MERCURY	3/30/92	0.0002	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	75-09-2	METHYLENE CHLORIDE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	91-20-3	NAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-02-0	NICKEL	3/30/92	0.01	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-02-0	NICKEL	3/30/92	0.015	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	98-95-3	NITROBENZENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	86-30-6	N-NITROSODIPHENYLAMINE	3/30/92	3	ug/L	Y	Y	J	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	87-86-5	PENTACHLOROPHENOL	3/30/92	50	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	85-01-8	PHENANTHRENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	108-95-2	PHENOL	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-09-7	POTASSIUM	3/30/92	21.7	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-09-7	POTASSIUM	3/30/92	20.2	mg/L	Y	Y	J	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	129-00-0	PYRENE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9269	7782-49-2	SELENIUM	3/30/92	0.0031	mg/L	Y	N	R	1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7782-49-2	SELENIUM	3/30/92	0.0341	mg/L	Y	N	UJ	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-22-4	SILVER	3/30/92	0.003	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-22-4	SILVER	3/30/92	0.003	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-23-5	SODIUM	3/30/92	106	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-23-5	SODIUM	3/30/92	97.6	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	100-42-5	STYRENE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	127-18-4	TETRACHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-28-0	THALLIUM	3/30/92	0.002	mg/L	Y	N	UJ	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-28-0	THALLIUM	3/30/92	0.002	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	108-88-3	TOLUENE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	10061-02-6	TRANS-1,3-DICHLOROPROPENE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	79-01-6	TRICHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-62-2	VANADIUM	3/30/92	0.231	mg/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-62-2	VANADIUM	3/30/92	0.056	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269	75-01-4	VINYL CHLORIDE	3/30/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	1330-20-7	XYLENES, TOTAL	3/30/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9269	7440-66-6	ZINC	3/30/92	0.0723	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-04S	WA9269F	7440-66-6	ZINC	3/30/92	0.0081	mg/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-04S	WA9270	71-55-6	1,1,1-TRICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	79-00-5	1,1,2-TRICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	75-34-3	1,1-DICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	75-35-4	1,1-DICHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	95-50-1	1,2-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9270	107-06-2	1,2-DICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	78-87-5	1,2-DICHLOROPROPANE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	541-73-1	1,3-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9270	106-46-7	1,4-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-04S	WA9270	110-75-8	2-CHLOROETHYL VINYL ETHER	10/9/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	71-43-2	BENZENE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	75-27-4	BROMODICHLOROMETHANE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	75-25-2	BROMOFORM	10/9/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	74-83-9	BROMOMETHANE	10/9/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	56-23-5	CARBON TETRACHLORIDE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	108-90-7	CHLOROBENZENE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	124-48-1	CHLORODIBROMOMETHANE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	75-00-3	CHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	67-66-3	CHLOROFORM	10/9/92	3	ug/L	Y	Y		1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	74-87-3	CHLOROMETHANE	10/9/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	75-71-8	DICHLORODIFLUOROMETHANE	10/9/92	10	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	100-41-4	ETHYLBENZENE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	75-09-2	METHYLENE CHLORIDE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-04S	WA9270	127-18-4	TETRACHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	108-88-3	TOLUENE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	79-01-6	TRICHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	75-69-4	TRICHLOROFLUOROMETHANE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	75-01-4	VINYL CHLORIDE	10/9/92	1	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-04S	WA9270	1330-20-7	XYLENES, TOTAL	10/9/92	3	ug/L	Y	N	U	1117279.3	922877.4	23	33	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	71-55-6	1,1,1-TRICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	79-34-5	1,1,2,2-TETRACHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	79-00-5	1,1,2-TRICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	75-34-3	1,1-DICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	75-35-4	1,1-DICHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	120-82-1	1,2,4-TRICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	95-50-1	1,2-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	107-06-2	1,2-DICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	540-59-0	1,2-DICHLOROETHENE (TOTAL)	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	78-87-5	1,2-DICHLOROPROPANE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	541-73-1	1,3-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	106-46-7	1,4-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	95-95-4	2,4,5-TRICHLOROPHENOL	3/30/92	50	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	88-06-2	2,4,6-TRICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	120-83-2	2,4-DICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	105-67-9	2,4-DIMETHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	51-28-5	2,4-DINITROPHENOL	3/30/92	50	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	121-14-2	2,4-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	606-20-2	2,6-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	78-93-3	2-BUTANONE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	91-58-7	2-CHLORONAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	95-57-8	2-CHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	591-78-6	2-HEXANONE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	91-57-6	2-METHYLNAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	95-48-7	2-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	88-74-4	2-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	88-75-5	2-NITROPHENOL	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	99-09-2	3-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3/30/92	50	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	101-55-3	4-BROMOPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	59-50-7	4-CHLORO-3-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	106-47-8	4-CHLOROANILINE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	108-10-1	4-METHYL-2-PENTANONE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	106-44-5	4-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	100-01-6	4-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	100-02-7	4-NITROPHENOL	3/30/92	50	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	83-32-9	ACENAPHTHENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	208-96-8	ACENAPHTHYLENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	67-64-1	ACETONE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271F	7429-90-5	ALUMINUM	3/30/92	0.055	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7429-90-5	ALUMINUM	3/30/92	5.75	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	120-12-7	ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-36-0	ANTIMONY	3/30/92	0.171	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-36-0	ANTIMONY	3/30/92	0.14	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-38-2	ARSENIC	3/30/92	0.01	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-38-2	ARSENIC	3/30/92	0.01	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-39-3	BARIUM	3/30/92	10.9	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-39-3	BARIUM	3/30/92	1.17	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	71-43-2	BENZENE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	56-55-3	BENZO(A)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	50-32-8	BENZO(A)PYRENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	205-99-2	BENZO(B)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	191-24-2	BENZO(G,H,I)PERYLENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	207-08-9	BENZO(K)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	65-85-0	BENZOIC ACID	3/30/92	50	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	100-51-6	BENZYL ALCOHOL	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-41-7	BERYLLIUM	3/30/92	0.01	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-41-7	BERYLLIUM	3/30/92	0.0145	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	WATER	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-05D	WA9271	111-91-1	BIS(2-CHLOROETHOXY)METHANE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	111-44-4	BIS(2-CHLOROETHYL)ETHER	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	75-27-4	BROMODICHLOROMETHANE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	75-25-2	BROMOFORM	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	74-83-9	BROMOMETHANE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	85-68-7	BUTYLBENZYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-43-9	CADMIUM	3/30/92	0.01	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-43-9	CADMIUM	3/30/92	0.02	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-70-2	CALCIUM	3/30/92	0.095	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-70-2	CALCIUM	3/30/92	6160	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	75-15-0	CARBON DISULFIDE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	56-23-5	CARBON TETRACHLORIDE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	108-90-7	CHLOROBENZENE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	124-48-1	CHLORODIBROMOMETHANE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	75-00-3	CHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	67-66-3	CHLOROFORM	3/30/92	1	ug/L	Y	Y	J	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	74-87-3	CHLOROMETHANE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-47-3	CHROMIUM	3/30/92	0.03	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-47-3	CHROMIUM	3/30/92	0.015	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	218-01-9	CHRYSENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	10061-01-5	CIS-1,3-DICHLOROPROPENE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-48-4	COBALT	3/30/92	0.015	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-48-4	COBALT	3/30/92	0.03	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-50-8	COPPER	3/30/92	0.02	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-50-8	COPPER	3/30/92	0.01	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	57-12-5	CYANIDE	3/30/92	0.038	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	53-70-3	DIBENZO(A,H)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	132-64-9	DIBENZOFURAN	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	84-66-2	DIETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	131-11-3	DIMETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	84-74-2	DI-N-BUTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	117-84-0	DI-N-OCTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	100-41-4	ETHYLBENZENE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	206-44-0	FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	86-73-7	FLUORENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	118-74-1	HEXACHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	87-68-3	HEXACHLOROBUTADIENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	77-47-4	HEXACHLOROCYCLOPENTADIENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	67-72-1	HEXACHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	193-39-5	INDENO(1,2,3-CD)PYRENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	7439-89-6	IRON	3/30/92	34.7	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7439-89-6	IRON	3/30/92	23.1	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	78-59-1	ISOPHORONE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271F	7439-92-1	LEAD	3/30/92	0.01	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7439-92-1	LEAD	3/30/92	0.0167	mg/L	Y	Y	J	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7439-95-4	MAGNESIUM	3/30/92	250	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7439-95-4	MAGNESIUM	3/30/92	225	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7439-96-5	MANGANESE	3/30/92	0.966	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7439-96-5	MANGANESE	3/30/92	1.29	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7439-97-6	MERCURY	3/30/92	0.0002	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7439-97-6	MERCURY	3/30/92	0.0002	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	75-09-2	METHYLENE CHLORIDE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	91-20-3	NAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-02-0	NICKEL	3/30/92	0.05	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-02-0	NICKEL	3/30/92	0.123	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	98-95-3	NITROBENZENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	86-30-6	N-NITROSODIPHENYLAMINE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	87-86-5	PENTACHLOROPHENOL	3/30/92	50	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	85-01-8	PHENANTHRENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	108-95-2	PHENOL	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-09-7	POTASSIUM	3/30/92	94.1	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-09-7	POTASSIUM	3/30/92	101	mg/L	Y	Y	J	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	129-00-0	PYRENE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9271F	7782-49-2	SELENIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7782-49-2	SELENIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-22-4	SILVER	3/30/92	0.015	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-22-4	SILVER	3/30/92	0.03	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-23-5	SODIUM	3/30/92	5070	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-23-5	SODIUM	3/30/92	0.135	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	100-42-5	STYRENE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	127-18-4	TETRACHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-28-0	THALLIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-28-0	THALLIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	108-88-3	TOLUENE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	10061-02-6	TRANS-1,3-DICHLOROPROPENE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	79-01-6	TRICHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-62-2	VANADIUM	3/30/92	0.015	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-62-2	VANADIUM	3/30/92	0.0463	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271	75-01-4	VINYL CHLORIDE	3/30/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	1330-20-7	XYLENES, TOTAL	3/30/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9271	7440-66-6	ZINC	3/30/92	0.0612	mg/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05D	WA9271F	7440-66-6	ZINC	3/30/92	0.0373	mg/L	Y	Y		1117081.4	922448.9	40	50	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05D	WA9272	71-55-6	1,1,1-TRICHLOROETHANE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	79-00-5	1,1,2-TRICHLOROETHANE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	75-34-3	1,1-DICHLOROETHANE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	75-35-4	1,1-DICHLOROETHENE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	95-50-1	1,2-DICHLOROBENZENE	10/12/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9272	107-06-2	1,2-DICHLOROETHANE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	78-87-5	1,2-DICHLOROPROPANE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	541-73-1	1,3-DICHLOROBENZENE	10/12/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9272	106-46-7	1,4-DICHLOROBENZENE	10/12/92	5	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05D	WA9272	110-75-8	2-CHLOROETHYL VINYL ETHER	10/12/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	71-43-2	BENZENE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	75-27-4	BROMODICHLOROMETHANE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	75-25-2	BROMOFORM	10/12/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	74-83-9	BROMOMETHANE	10/12/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	56-23-5	CARBON TETRACHLORIDE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	108-90-7	CHLOROBENZENE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	124-48-1	CHLORODIBROMOMETHANE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	75-00-3	CHLOROETHANE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	67-66-3	CHLOROFORM	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	74-87-3	CHLOROMETHANE	10/12/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	75-71-8	DICHLORODIFLUOROMETHANE	10/12/92	10	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	100-41-4	ETHYLBENZENE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	75-09-2	METHYLENE CHLORIDE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	127-18-4	TETRACHLOROETHENE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	108-88-3	TOLUENE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	79-01-6	TRICHLOROETHENE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	75-69-4	TRICHLOROFLUOROMETHANE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	75-01-4	VINYL CHLORIDE	10/12/92	1	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05D	WA9272	1330-20-7	XYLENES, TOTAL	10/12/92	3	ug/L	Y	N	U	1117081.4	922448.9	40	50	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	71-55-6	1,1,1-TRICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	79-34-5	1,1,2,2-TETRACHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	79-00-5	1,1,2-TRICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	75-34-3	1,1-DICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	75-35-4	1,1-DICHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	120-82-1	1,2,4-TRICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	95-50-1	1,2-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	107-06-2	1,2-DICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	540-59-0	1,2-DICHLOROETHENE (TOTAL)	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	78-87-5	1,2-DICHLOROPROPANE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	541-73-1	1,3-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	106-46-7	1,4-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	95-95-4	2,4,5-TRICHLOROPHENOL	3/30/92	52	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	88-06-2	2,4,6-TRICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	120-83-2	2,4-DICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	105-67-9	2,4-DIMETHYLPHENOL	3/30/92	3	ug/L	Y	Y	J	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-05I	WA9273	51-28-5	2,4-DINITROPHENOL	3/30/92	52	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	121-14-2	2,4-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	606-20-2	2,6-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	78-93-3	2-BUTANONE	3/30/92	33	ug/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	91-58-7	2-CHLORONAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	95-57-8	2-CHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	591-78-6	2-HEXANONE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	91-57-6	2-METHYLNAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	95-48-7	2-METHYLPHENOL	3/30/92	13	ug/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	88-74-4	2-NITROANILINE	3/30/92	52	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	88-75-5	2-NITROPHENOL	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	99-09-2	3-NITROANILINE	3/30/92	52	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3/30/92	52	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	101-55-3	4-BROMOPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	59-50-7	4-CHLORO-3-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	106-47-8	4-CHLOROANILINE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	108-10-1	4-METHYL-2-PENTANONE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	106-44-5	4-METHYLPHENOL	3/30/92	140	ug/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	100-01-6	4-NITROANILINE	3/30/92	52	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	100-02-7	4-NITROPHENOL	3/30/92	52	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	83-32-9	ACENAPHTHENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	208-96-8	ACENAPHTHYLENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	67-64-1	ACETONE	3/30/92	170	ug/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273F	7429-90-5	ALUMINUM	3/30/92	0.011	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7429-90-5	ALUMINUM	3/30/92	3.19	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	120-12-7	ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-36-0	ANTIMONY	3/30/92	0.0404	mg/L	Y	N	UJ	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-36-0	ANTIMONY	3/30/92	0.066	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-38-2	ARSENIC	3/30/92	0.001	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-38-2	ARSENIC	3/30/92	0.001	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-39-3	BARIUM	3/30/92	0.221	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-39-3	BARIUM	3/30/92	0.172	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	71-43-2	BENZENE	3/30/92	3	ug/L	Y	Y	J	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	56-55-3	BENZO(A)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	50-32-8	BENZO(A)PYRENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	205-99-2	BENZO(B)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	191-24-2	BENZO(G,H,I)PERYLENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	207-08-9	BENZO(K)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	65-85-0	BENZOIC ACID	3/30/92	49	ug/L	Y	Y	J	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	100-51-6	BENZYL ALCOHOL	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-41-7	BERYLLIUM	3/30/92	0.003	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-41-7	BERYLLIUM	3/30/92	0.0036	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-41-7	BERYLLIUM	3/30/92	0.003	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	111-91-1	BIS(2-CHLOROETHOXY)METHANE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	111-44-4	BIS(2-CHLOROETHYL)ETHER	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	75-27-4	BROMODICHLOROMETHANE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	75-25-2	BROMOFORM	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	74-83-9	BROMOMETHANE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	85-68-7	BUTYLBENZYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-43-9	CADMIUM	3/30/92	0.002	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-43-9	CADMIUM	3/30/92	0.002	mg/L	Y	N	UJ	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-70-2	CALCIUM	3/30/92	1760	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-70-2	CALCIUM	3/30/92	1580	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	75-15-0	CARBON DISULFIDE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	56-23-5	CARBON TETRACHLORIDE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	108-90-7	CHLOROBENZENE	3/30/92	9	ug/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	124-48-1	CHLORODIBROMOMETHANE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	75-00-3	CHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	67-66-3	CHLOROFORM	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	74-87-3	CHLOROMETHANE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-47-3	CHROMIUM	3/30/92	0.0053	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-47-3	CHROMIUM	3/30/92	0.0226	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	218-01-9	CHRYSENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	10061-01-5	CIS-1,3-DICHLOROPROPENE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-48-4	COBALT	3/30/92	0.0034	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-48-4	COBALT	3/30/92	0.003	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-50-8	COPPER	3/30/92	0.0042	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-50-8	COPPER	3/30/92	0.0114	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	57-12-5	CYANIDE	3/30/92	0.01	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	53-70-3	DIBENZO(A,H)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	132-64-9	DIBENZOFURAN	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	84-66-2	DIETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	131-11-3	DIMETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	84-74-2	DI-N-BUTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	117-84-0	DI-N-OCTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	100-41-4	ETHYLBENZENE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	206-44-0	FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	86-73-7	FLUORENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	118-74-1	HEXACHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	87-68-3	HEXACHLOROBUTADIENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	77-47-4	HEXACHLOROCYCLOPENTADIENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	67-72-1	HEXACHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	193-39-5	INDENO(1,2,3-CD)PYRENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	7439-89-6	IRON	3/30/92	4.65	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7439-89-6	IRON	3/30/92	0.0143	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	78-59-1	ISOPHORONE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273F	7439-92-1	LEAD	3/30/92	0.001	mg/L	Y	N	UJ	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7439-92-1	LEAD	3/30/92	0.0038	mg/L	Y	Y	J	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7439-95-4	MAGNESIUM	3/30/92	8.76	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7439-95-4	MAGNESIUM	3/30/92	0.016	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7439-96-5	MANGANESE	3/30/92	0.0119	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7439-96-5	MANGANESE	3/30/92	0.158	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7439-97-6	MERCURY	3/30/92	0.00027	mg/L	Y	Y	J	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7439-97-6	MERCURY	3/30/92	0.00047	mg/L	Y	Y	J	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	75-09-2	METHYLENE CHLORIDE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	91-20-3	NAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-02-0	NICKEL	3/30/92	0.01	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-02-0	NICKEL	3/30/92	0.01	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	98-95-3	NITROBENZENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	86-30-6	N-NITROSODIPHENYLAMINE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	87-86-5	PENTACHLOROPHENOL	3/30/92	52	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	85-01-8	PHENANTHRENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273	108-95-2	PHENOL	3/30/92	140	ug/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-09-7	POTASSIUM	3/30/92	21.5	mg/L	Y	Y	J	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-09-7	POTASSIUM	3/30/92	21	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	129-00-0	PYRENE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9273F	7782-49-2	SELENIUM	3/30/92	0.0118	mg/L	Y	Y	J	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7782-49-2	SELENIUM	3/30/92	0.002	mg/L	Y	N	R	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-22-4	SILVER	3/30/92	0.003	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-22-4	SILVER	3/30/92	0.003	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-23-5	SODIUM	3/30/92	485	mg/L	Y	Y	J	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-23-5	SODIUM	3/30/92	497	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	100-42-5	STYRENE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	127-18-4	TETRACHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-28-0	THALLIUM	3/30/92	0.002	mg/L	Y	N	UJ	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-28-0	THALLIUM	3/30/92	0.02	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	108-88-3	TOLUENE	3/30/92	0.6	ug/L	Y	Y	J	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	10061-02-6	TRANS-1,3-DICHLOROPROPENE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	79-01-6	TRICHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-62-2	VANADIUM	3/30/92	0.003	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-62-2	VANADIUM	3/30/92	0.003	mg/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	75-01-4	VINYL CHLORIDE	3/30/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273	1330-20-7	XYLENES, TOTAL	3/30/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9273F	7440-66-6	ZINC	3/30/92	0.0034	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05I	WA9273	7440-66-6	ZINC	3/30/92	0.0551	mg/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05I	WA9274	71-55-6	1,1,1-TRICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	79-00-5	1,1,2-TRICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	75-34-3	1,1-DICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	75-35-4	1,1-DICHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	95-50-1	1,2-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-05I	WA9274	107-06-2	1,2-DICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	78-87-5	1,2-DICHLOROPROPANE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	541-73-1	1,3-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9274	106-46-7	1,4-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05I	WA9274	110-75-8	2-CHLOROETHYL VINYL ETHER	10/9/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	71-43-2	BENZENE	10/9/92	3	ug/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	75-27-4	BROMODICHLOROMETHANE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	75-25-2	BROMOFORM	10/9/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	74-83-9	BROMOMETHANE	10/9/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	56-23-5	CARBON TETRACHLORIDE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	108-90-7	CHLOROBENZENE	10/9/92	9	ug/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	124-48-1	CHLORODIBROMOMETHANE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	75-00-3	CHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	67-66-3	CHLOROFORM	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	74-87-3	CHLOROMETHANE	10/9/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	75-71-8	DICHLORODIFLUOROMETHANE	10/9/92	10	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	100-41-4	ETHYLBENZENE	10/9/92	2	ug/L	Y	Y		1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	75-09-2	METHYLENE CHLORIDE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	127-18-4	TETRACHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	108-88-3	TOLUENE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	79-01-6	TRICHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	75-69-4	TRICHLOROFLUOROMETHANE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	75-01-4	VINYL CHLORIDE	10/9/92	1	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05I	WA9274	1330-20-7	XYLENES, TOTAL	10/9/92	3	ug/L	Y	N	U	1117088.1	922440.7	26	36	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	71-55-6	1,1,1-TRICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	79-34-5	1,1,2,2-TETRACHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	79-00-5	1,1,2-TRICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	75-34-3	1,1-DICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	75-35-4	1,1-DICHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	120-82-1	1,2,4-TRICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	95-50-1	1,2-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	107-06-2	1,2-DICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	540-59-0	1,2-DICHLOROETHENE (TOTAL)	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	78-87-5	1,2-DICHLOROPROPANE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	541-73-1	1,3-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	106-46-7	1,4-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	95-95-4	2,4,5-TRICHLOROPHENOL	3/30/92	50	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	88-06-2	2,4,6-TRICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	120-83-2	2,4-DICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	105-67-9	2,4-DIMETHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	51-28-5	2,4-DINITROPHENOL	3/30/92	50	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	121-14-2	2,4-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	606-20-2	2,6-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	78-93-3	2-BUTANONE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	91-58-7	2-CHLORONAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	95-57-8	2-CHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	591-78-6	2-HEXANONE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	91-57-6	2-METHYLNAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	95-48-7	2-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	88-74-4	2-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	88-75-5	2-NITROPHENOL	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	99-09-2	3-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3/30/92	50	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	101-55-3	4-BROMOPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	59-50-7	4-CHLORO-3-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	106-47-8	4-CHLOROANILINE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	108-10-1	4-METHYL-2-PENTANONE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	106-44-5	4-METHYLPHENOL	3/30/92	7	ug/L	Y	Y	J	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	100-01-6	4-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	100-02-7	4-NITROPHENOL	3/30/92	50	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	83-32-9	ACENAPHTHENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	208-96-8	ACENAPHTHYLENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-05S	WA9275	67-64-1	ACETONE	3/30/92	35	ug/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275F	7429-90-5	ALUMINUM	3/30/92	0.0213	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7429-90-5	ALUMINUM	3/30/92	3.97	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	120-12-7	ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-36-0	ANTIMONY	3/30/92	0.019	mg/L	Y	N	UJ	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-36-0	ANTIMONY	3/30/92	0.06	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-38-2	ARSENIC	3/30/92	0.001	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-38-2	ARSENIC	3/30/92	0.0039	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-39-3	BARIUM	3/30/92	0.0721	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-39-3	BARIUM	3/30/92	0.0705	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	71-43-2	BENZENE	3/30/92	1	ug/L	Y	Y	J	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	56-55-3	BENZO(A)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	50-32-8	BENZO(A)PYRENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	205-99-2	BENZO(B)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	191-24-2	BENZO(G,H,I)PERYLENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	207-08-9	BENZO(K)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	65-85-0	BENZOIC ACID	3/30/92	3	ug/L	Y	Y	J	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	100-51-6	BENZYL ALCOHOL	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-41-7	BERYLLIUM	3/30/92	0.0029	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-41-7	BERYLLIUM	3/30/92	0.0029	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	111-91-1	BIS(2-CHLOROETHOXY)METHANE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	111-44-4	BIS(2-CHLOROETHYL)ETHER	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	75-27-4	BROMODICHLOROMETHANE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	75-25-2	BROMOFORM	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	74-83-9	BROMOMETHANE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	85-68-7	BUTYLBENZYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-43-9	CADMIUM	3/30/92	0.002	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-43-9	CADMIUM	3/30/92	0.002	mg/L	Y	N	UJ	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-70-2	CALCIUM	3/30/92	1060	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-70-2	CALCIUM	3/30/92	1010	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	75-15-0	CARBON DISULFIDE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	56-23-5	CARBON TETRACHLORIDE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	108-90-7	CHLOROBENZENE	3/30/92	11	ug/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	124-48-1	CHLORODIBROMOMETHANE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	75-00-3	CHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	67-66-3	CHLOROFORM	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	74-87-3	CHLOROMETHANE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-47-3	CHROMIUM	3/30/92	0.0214	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-47-3	CHROMIUM	3/30/92	0.0319	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	218-01-9	CHRYSENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	10061-01-5	CIS-1,3-DICHLOROPROPENE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-48-4	COBALT	3/30/92	0.003	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-48-4	COBALT	3/30/92	0.003	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-50-8	COPPER	3/30/92	0.0045	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-50-8	COPPER	3/30/92	0.0105	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	57-12-5	CYANIDE	3/30/92	0.01	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	53-70-3	DIBENZO(A,H)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	132-64-9	DIBENZOFURAN	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	84-66-2	DIETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	131-11-3	DIMETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	84-74-2	DI-N-BUTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	117-84-0	DI-N-OCTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	100-41-4	ETHYLBENZENE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	206-44-0	FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	86-73-7	FLUORENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	118-74-1	HEXACHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	87-68-3	HEXACHLOROBUTADIENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	77-47-4	HEXACHLOROCYCLOPENTADIENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	67-72-1	HEXACHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	193-39-5	INDENO(1,2,3-CD)PYRENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	7439-89-6	IRON	3/30/92	2.45	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7439-89-6	IRON	3/30/92	0.0282	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	78-59-1	ISOPHORONE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275F	7439-92-1	LEAD	3/30/92	0.001	mg/L	Y	N	UJ	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7439-92-1	LEAD	3/30/92	0.004	mg/L	Y	Y	J	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7439-95-4	MAGNESIUM	3/30/92	20.6	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-05S	WA9275F	7439-95-4	MAGNESIUM	3/30/92	0.016	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7439-96-5	MANGANESE	3/30/92	0.0095	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7439-96-5	MANGANESE	3/30/92	0.125	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7439-97-6	MERCURY	3/30/92	0.00055	mg/L	Y	Y	J	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7439-97-6	MERCURY	3/30/92	0.00047	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	75-09-2	METHYLENE CHLORIDE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	91-20-3	NAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-02-0	NICKEL	3/30/92	0.01	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-02-0	NICKEL	3/30/92	0.01	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	98-95-3	NITROBENZENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	86-30-6	N-NITROSODIPHENYLAMINE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	87-86-5	PENTACHLOROPHENOL	3/30/92	50	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	85-01-8	PHENANTHRENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	108-95-2	PHENOL	3/30/92	10	ug/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-09-7	POTASSIUM	3/30/92	7.09	mg/L	Y	Y	J	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-09-7	POTASSIUM	3/30/92	5.47	mg/L	Y	Y	J	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	129-00-0	PYRENE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-22-4	SILVER	3/30/92	0.003	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-22-4	SILVER	3/30/92	0.003	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-23-5	SODIUM	3/30/92	102	mg/L	Y	Y	J	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-23-5	SODIUM	3/30/92	86.8	mg/L	Y	Y	J	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	100-42-5	STYRENE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	127-18-4	TETRACHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-28-0	THALLIUM	3/30/92	0.002	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-28-0	THALLIUM	3/30/92	0.002	mg/L	Y	N	UJ	1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	108-88-3	TOLUENE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	10061-02-6	TRANS-1,3-DICHLOROPROPENE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	79-01-6	TRICHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-62-2	VANADIUM	3/30/92	0.0045	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-62-2	VANADIUM	3/30/92	0.003	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	75-01-4	VINYL CHLORIDE	3/30/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275	1330-20-7	XYLENES, TOTAL	3/30/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9275F	7440-66-6	ZINC	3/30/92	0.003	mg/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-05S	WA9275	7440-66-6	ZINC	3/30/92	0.0394	mg/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-05S	WA9276	71-55-6	1,1,1-TRICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	79-00-5	1,1,2-TRICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	75-34-3	1,1-DICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	75-35-4	1,1-DICHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	95-50-1	1,2-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9276	107-06-2	1,2-DICHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	78-87-5	1,2-DICHLOROPROPANE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	541-73-1	1,3-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9276	106-46-7	1,4-DICHLOROBENZENE	10/9/92	5	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-05S	WA9276	110-75-8	2-CHLOROETHYL VINYL ETHER	10/9/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	71-43-2	BENZENE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	75-27-4	BROMODICHLOROMETHANE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	75-25-2	BROMOFORM	10/9/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	74-83-9	BROMOMETHANE	10/9/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	56-23-5	CARBON TETRACHLORIDE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	108-90-7	CHLOROBENZENE	10/9/92	12	ug/L	Y	Y		1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	124-48-1	CHLORODIBROMOMETHANE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	75-00-3	CHLOROETHANE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	67-66-3	CHLOROFORM	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	74-87-3	CHLOROMETHANE	10/9/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	75-71-8	DICHLORODIFLUOROMETHANE	10/9/92	10	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	100-41-4	ETHYLBENZENE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	75-09-2	METHYLENE CHLORIDE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	127-18-4	TETRACHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	108-88-3	TOLUENE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	79-01-6	TRICHLOROETHENE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	75-69-4	TRICHLOROFLUOROMETHANE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-05S	WA9276	75-01-4	VINYL CHLORIDE	10/9/92	1	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-05S	WA9276	1330-20-7	XYLENES, TOTAL	10/9/92	3	ug/L	Y	N	U	1117090.6	922452.5	12	22	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	71-55-6	1,1,1-TRICHLOROETHANE	3/30/92	2	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	79-34-5	1,1,2,2-TETRACHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	79-00-5	1,1,2-TRICHLOROETHANE	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	75-34-3	1,1-DICHLOROETHANE	3/30/92	0.9	ug/L	Y	Y	J	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	75-35-4	1,1-DICHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	120-82-1	1,2,4-TRICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	95-50-1	1,2-DICHLOROBENZENE	3/30/92	7	ug/L	Y	Y	J	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	107-06-2	1,2-DICHLOROETHANE	3/30/92	3	ug/L	Y	Y	J	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	540-59-0	1,2-DICHLOROETHENE (TOTAL)	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	78-87-5	1,2-DICHLOROPROPANE	3/30/92	3	ug/L	Y	Y	J	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	541-73-1	1,3-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	106-46-7	1,4-DICHLOROBENZENE	3/30/92	16	ug/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	95-95-4	2,4,5-TRICHLOROPHENOL	3/30/92	50	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	88-06-2	2,4,6-TRICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	120-83-2	2,4-DICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	105-67-9	2,4-DIMETHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	51-28-5	2,4-DINITROPHENOL	3/30/92	50	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	121-14-2	2,4-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	606-20-2	2,6-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	78-93-3	2-BUTANONE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	91-58-7	2-CHLORONAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	95-57-8	2-CHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	591-78-6	2-HEXANONE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	91-57-6	2-METHYLNAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	95-48-7	2-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	88-74-4	2-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	88-75-5	2-NITROPHENOL	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	99-09-2	3-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3/30/92	50	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	101-55-3	4-BROMOPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	59-50-7	4-CHLORO-3-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	106-47-8	4-CHLOROANILINE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	108-10-1	4-METHYL-2-PENTANONE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	106-44-5	4-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	100-01-6	4-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	100-02-7	4-NITROPHENOL	3/30/92	50	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	83-32-9	ACENAPHTHENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	208-96-8	ACENAPHTHYLENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	67-64-1	ACETONE	3/30/92	8	ug/L	Y	Y	J	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283F	7429-90-5	ALUMINUM	3/30/92	0.254	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7429-90-5	ALUMINUM	3/30/92	18.1	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	120-12-7	ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-36-0	ANTIMONY	3/30/92	0.07	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-36-0	ANTIMONY	3/30/92	0.028	mg/L	Y	N	UJ	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-38-2	ARSENIC	3/30/92	0.0078	mg/L	Y	Y	J	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-38-2	ARSENIC	3/30/92	0.0042	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-39-3	BARIUM	3/30/92	0.116	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-39-3	BARIUM	3/30/92	0.197	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	71-43-2	BENZENE	3/30/92	7	ug/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	56-55-3	BENZO(A)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	50-32-8	BENZO(A)PYRENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	205-99-2	BENZO(B)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	191-24-2	BENZO(G,H,I)PERYLENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	207-08-9	BENZO(K)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	65-85-0	BENZOIC ACID	3/30/92	50	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	100-51-6	BENZYL ALCOHOL	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-41-7	BERYLLIUM	3/30/92	0.002	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-41-7	BERYLLIUM	3/30/92	0.005	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	111-91-1	BIS(2-CHLOROETHOXY)METHANE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	111-44-4	BIS(2-CHLOROETHYL)ETHER	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	75-27-4	BROMODICHLOROMETHANE	3/30/92	2	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	75-25-2	BROMOFORM	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	74-83-9	BROMOMETHANE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-07D	WA9283	85-68-7	BUTYLBENZYL PHTHALATE	3/30/92	2	ug/L	Y	Y	J	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-43-9	CADMIUM	3/30/92	0.01	mg/L	Y	N	UJ	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-43-9	CADMIUM	3/30/92	0.004	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-70-2	CALCIUM	3/30/92	965	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-70-2	CALCIUM	3/30/92	1160	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	75-15-0	CARBON DISULFIDE	3/30/92	43	ug/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	56-23-5	CARBON TETRACHLORIDE	3/30/92	2	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	108-90-7	CHLOROBENZENE	3/30/92	48	ug/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	124-48-1	CHLORODIBROMOMETHANE	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	75-00-3	CHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	67-66-3	CHLOROFORM	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	74-87-3	CHLOROMETHANE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-47-3	CHROMIUM	3/30/92	0.117	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-47-3	CHROMIUM	3/30/92	0.015	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	218-01-9	CHRYSENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	10061-01-5	CIS-1,3-DICHLOROPROPENE	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-48-4	COBALT	3/30/92	0.015	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-48-4	COBALT	3/30/92	0.011	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-50-8	COPPER	3/30/92	0.037	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-50-8	COPPER	3/30/92	0.01	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	57-12-5	CYANIDE	3/30/92	0.01	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	53-70-3	DIBENZO(A,H)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	132-64-9	DIBENZOFURAN	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	84-66-2	DIETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	131-11-3	DIMETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	84-74-2	DI-N-BUTYL PHTHALATE	3/30/92	1	ug/L	Y	Y	J	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	117-84-0	DI-N-OCTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	100-41-4	ETHYLBENZENE	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	206-44-0	FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	86-73-7	FLUORENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	118-74-1	HEXACHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	87-68-3	HEXACHLOROBUTADIENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	77-47-4	HEXACHLOROCYCLOPENTADIENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	67-72-1	HEXACHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	193-39-5	INDENO(1,2,3-CD)PYRENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	7439-89-6	IRON	3/30/92	34.6	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7439-89-6	IRON	3/30/92	4.43	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	78-59-1	ISOPHORONE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283F	7439-92-1	LEAD	3/30/92	0.01	mg/L	Y	N	UJ	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7439-92-1	LEAD	3/30/92	0.01	mg/L	Y	N	UJ	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7439-95-4	MAGNESIUM	3/30/92	128	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7439-95-4	MAGNESIUM	3/30/92	91.2	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7439-96-5	MANGANESE	3/30/92	0.389	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7439-96-5	MANGANESE	3/30/92	1.12	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7439-97-6	MERCURY	3/30/92	0.0002	mg/L	Y	N	UJ	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7439-97-6	MERCURY	3/30/92	0.0002	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	75-09-2	METHYLENE CHLORIDE	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	91-20-3	NAPHTHALENE	3/30/92	2	ug/L	Y	Y	J	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-02-0	NICKEL	3/30/92	0.05	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-02-0	NICKEL	3/30/92	0.0981	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	98-95-3	NITROBENZENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	86-30-6	N-NITROSODIPHENYLAMINE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	87-86-5	PENTACHLOROPHENOL	3/30/92	50	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	85-01-8	PHENANTHRENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	108-95-2	PHENOL	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-09-7	POTASSIUM	3/30/92	59.3	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-09-7	POTASSIUM	3/30/92	52.7	mg/L	Y	Y	J	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	129-00-0	PYRENE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9283F	7782-49-2	SELENIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7782-49-2	SELENIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-22-4	SILVER	3/30/92	0.015	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-22-4	SILVER	3/30/92	0.006	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-23-5	SODIUM	3/30/92	2230	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-23-5	SODIUM	3/30/92	0.135	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	100-42-5	STYRENE	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	127-18-4	TETRACHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-28-0	THALLIUM	3/30/92	0.02	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-28-0	THALLIUM	3/30/92	0.02	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	108-88-3	TOLUENE	3/30/92	0.8	ug/L	Y	Y	J	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	10061-02-6	TRANS-1,3-DICHLOROPROPENE	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	79-01-6	TRICHLOROETHENE	3/30/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-62-2	VANADIUM	3/30/92	0.0312	mg/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-62-2	VANADIUM	3/30/92	0.0436	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283	75-01-4	VINYL CHLORIDE	3/30/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	1330-20-7	XYLENES, TOTAL	3/30/92	0.7	ug/L	Y	Y	J	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9283	7440-66-6	ZINC	3/30/92	0.143	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07D	WA9283F	7440-66-6	ZINC	3/30/92	0.0742	mg/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07D	WA9284	71-55-6	1,1,1-TRICHLOROETHANE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	79-00-5	1,1,2-TRICHLOROETHANE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	75-34-3	1,1-DICHLOROETHANE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	75-35-4	1,1-DICHLOROETHENE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	95-50-1	1,2-DICHLOROBENZENE	10/12/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9284	107-06-2	1,2-DICHLOROETHANE	10/12/92	3	ug/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	78-87-5	1,2-DICHLOROPROPANE	10/12/92	2	ug/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	541-73-1	1,3-DICHLOROBENZENE	10/12/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9284	106-46-7	1,4-DICHLOROBENZENE	10/12/92	5	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07D	WA9284	110-75-8	2-CHLOROETHYL VINYL ETHER	10/12/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	71-43-2	BENZENE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	75-27-4	BROMODICHLOROMETHANE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	75-25-2	BROMOFORM	10/12/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	74-83-9	BROMOMETHANE	10/12/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	56-23-5	CARBON TETRACHLORIDE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	108-90-7	CHLOROBENZENE	10/12/92	12	ug/L	Y	Y		1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	124-48-1	CHLORODIBROMOMETHANE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	75-00-3	CHLOROETHANE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	67-66-3	CHLOROFORM	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	74-87-3	CHLOROMETHANE	10/12/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	75-71-8	DICHLORODIFLUOROMETHANE	10/12/92	10	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	100-41-4	ETHYLBENZENE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	75-09-2	METHYLENE CHLORIDE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	127-18-4	TETRACHLOROETHENE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	108-88-3	TOLUENE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	79-01-6	TRICHLOROETHENE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	75-69-4	TRICHLOROFLUOROMETHANE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	75-01-4	VINYL CHLORIDE	10/12/92	1	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07D	WA9284	1330-20-7	XYLENES, TOTAL	10/12/92	3	ug/L	Y	N	U	1117641.4	922534.2	70	80	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	71-55-6	1,1,1-TRICHLOROETHANE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	79-34-5	1,1,2,2-TETRACHLOROETHANE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	79-00-5	1,1,2-TRICHLOROETHANE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	75-34-3	1,1-DICHLOROETHANE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	75-35-4	1,1-DICHLOROETHENE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	120-82-1	1,2,4-TRICHLOROBENZENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	95-50-1	1,2-DICHLOROBENZENE	3/30/92	46	ug/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	107-06-2	1,2-DICHLOROETHANE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	540-59-0	1,2-DICHLOROETHENE (TOTAL)	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	78-87-5	1,2-DICHLOROPROPANE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	541-73-1	1,3-DICHLOROBENZENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	106-46-7	1,4-DICHLOROBENZENE	3/30/92	69	ug/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	95-95-4	2,4,5-TRICHLOROPHENOL	3/30/92	53	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	88-06-2	2,4,6-TRICHLOROPHENOL	3/30/92	11	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	120-83-2	2,4-DICHLOROPHENOL	3/30/92	11	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	105-67-9	2,4-DIMETHYLPHENOL	3/30/92	11	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	51-28-5	2,4-DINITROPHENOL	3/30/92	53	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	121-14-2	2,4-DINITROTOLUENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	606-20-2	2,6-DINITROTOLUENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	78-93-3	2-BUTANONE	3/30/92	1000	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	91-58-7	2-CHLORONAPHTHALENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	95-57-8	2-CHLOROPHENOL	3/30/92	11	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-07I	WA9285	591-78-6	2-HEXANONE	3/30/92	1000	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	91-57-6	2-METHYLNAPHTHALENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	95-48-7	2-METHYLPHENOL	3/30/92	30	ug/L	Y	Y	J	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	88-74-4	2-NITROANILINE	3/30/92	53	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	88-75-5	2-NITROPHENOL	3/30/92	11	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	99-09-2	3-NITROANILINE	3/30/92	53	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3/30/92	53	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	101-55-3	4-BROMOPHENYL PHENYL ETHER	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	59-50-7	4-CHLORO-3-METHYLPHENOL	3/30/92	11	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	106-47-8	4-CHLOROANILINE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	108-10-1	4-METHYL-2-PENTANONE	3/30/92	1000	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	106-44-5	4-METHYLPHENOL	3/30/92	11	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	100-01-6	4-NITROANILINE	3/30/92	53	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	100-02-7	4-NITROPHENOL	3/30/92	53	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	83-32-9	ACENAPHTHENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	208-96-8	ACENAPHTHYLENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	67-64-1	ACETONE	3/30/92	2800	ug/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285F	7429-90-5	ALUMINUM	3/30/92	13	mg/L	Y	Y		1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7429-90-5	ALUMINUM	3/30/92	21.5	mg/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	120-12-7	ANTHRACENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-36-0	ANTIMONY	3/30/92	0.28	mg/L	Y	N	UJ	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-36-0	ANTIMONY	3/30/92	0.481	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-38-2	ARSENIC	3/30/92	0.313	mg/L	Y	Y		1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-38-2	ARSENIC	3/30/92	0.956	mg/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-39-3	BARIUM	3/30/92	0.194	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-39-3	BARIUM	3/30/92	0.118	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	71-43-2	BENZENE	3/30/92	3600	ug/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	56-55-3	BENZO(A)ANTHRACENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	50-32-8	BENZO(A)PYRENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	205-99-2	BENZO(B)FLUORANTHENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	191-24-2	BENZO(G,H,I)PERYLENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	207-08-9	BENZO(K)FLUORANTHENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	65-85-0	BENZOIC ACID	3/30/92	53	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	100-51-6	BENZYL ALCOHOL	3/30/92	37	ug/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-41-7	BERYLLIUM	3/30/92	0.02	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-41-7	BERYLLIUM	3/30/92	0.02	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	111-91-1	BIS(2-CHLOROETHOXY)METHANE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	111-44-4	BIS(2-CHLOROETHYL)ETHER	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	75-27-4	BROMODICHLOROMETHANE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	75-25-2	BROMOFORM	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	74-83-9	BROMOMETHANE	3/30/92	1000	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	85-68-7	BUTYLBENZYL PHTHALATE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-43-9	CADMIUM	3/30/92	0.04	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-43-9	CADMIUM	3/30/92	0.04	mg/L	Y	N	UJ	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-70-2	CALCIUM	3/30/92	168	mg/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-70-2	CALCIUM	3/30/92	14.4	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	75-15-0	CARBON DISULFIDE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	56-23-5	CARBON TETRACHLORIDE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	108-90-7	CHLOROBENZENE	3/30/92	6400	ug/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	124-48-1	CHLORODIBROMOMETHANE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	75-00-3	CHLOROETHANE	3/30/92	1000	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	67-66-3	CHLOROFORM	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	74-87-3	CHLOROMETHANE	3/30/92	1000	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-47-3	CHROMIUM	3/30/92	0.06	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-47-3	CHROMIUM	3/30/92	0.06	mg/L	Y	N	UJ	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	218-01-9	CHRYSENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	10061-01-5	CIS-1,3-DICHLOROPROPENE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-48-4	COBALT	3/30/92	0.06	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-48-4	COBALT	3/30/92	0.06	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-50-8	COPPER	3/30/92	0.04	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-50-8	COPPER	3/30/92	0.04	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	57-12-5	CYANIDE	3/30/92	0.064	mg/L	Y	Y	J	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	53-70-3	DIBENZO(A,H)ANTHRACENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	132-64-9	DIBENZOFURAN	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	84-66-2	DIETHYL PHTHALATE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-07I	WA9285	131-11-3	DIMETHYL PHTHALATE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	84-74-2	DI-N-BUTYL PHTHALATE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	117-84-0	DI-N-OCTYL PHTHALATE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	100-41-4	ETHYLBENZENE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	206-44-0	FLUORANTHENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	86-73-7	FLUORENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	118-74-1	HEXACHLOROBENZENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	87-68-3	HEXACHLOROBUTADIENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	77-47-4	HEXACHLOROCYCLOPENTADIENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	67-72-1	HEXACHLOROETHANE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	193-39-5	INDENO(1,2,3-CD)PYRENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285F	7439-89-6	IRON	3/30/92	7.07	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7439-89-6	IRON	3/30/92	22.9	mg/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	78-59-1	ISOPHORONE	3/30/92	9	ug/L	Y	Y	J	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	7439-92-1	LEAD	3/30/92	0.01	mg/L	Y	N	UJ	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7439-92-1	LEAD	3/30/92	0.01	mg/L	Y	N	UJ	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7439-95-4	MAGNESIUM	3/30/92	0.792	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7439-95-4	MAGNESIUM	3/30/92	12	mg/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7439-96-5	MANGANESE	3/30/92	0.328	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7439-96-5	MANGANESE	3/30/92	0.0227	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7439-97-6	MERCURY	3/30/92	0.166	mg/L	Y	Y	J	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7439-97-6	MERCURY	3/30/92	0.115	mg/L	Y	Y	J	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	75-09-2	METHYLENE CHLORIDE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	91-20-3	NAPHTHALENE	3/30/92	8	ug/L	Y	Y	J	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-02-0	NICKEL	3/30/92	0.411	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-02-0	NICKEL	3/30/92	0.294	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	98-95-3	NITROBENZENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	86-30-6	N-NITROSODIPHENYLAMINE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	87-86-5	PENTACHLOROPHENOL	3/30/92	53	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	85-01-8	PHENANTHRENE	3/30/92	3	ug/L	Y	Y	J	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	108-95-2	PHENOL	3/30/92	11	ug/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-09-7	POTASSIUM	3/30/92	12.6	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-09-7	POTASSIUM	3/30/92	7760	mg/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	129-00-0	PYRENE	3/30/92	11	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9285	7782-49-2	SELENIUM	3/30/92	0.01	mg/L	Y	N	R	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7782-49-2	SELENIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-22-4	SILVER	3/30/92	0.06	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-22-4	SILVER	3/30/92	0.0671	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-23-5	SODIUM	3/30/92	0.54	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-23-5	SODIUM	3/30/92	24600	mg/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	100-42-5	STYRENE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	127-18-4	TETRACHLOROETHENE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-28-0	THALLIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-28-0	THALLIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	108-88-3	TOLUENE	3/30/92	67	ug/L	Y	Y	J	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	10061-02-6	TRANS-1,3-DICHLOROPROPENE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	79-01-6	TRICHLOROETHENE	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-62-2	VANADIUM	3/30/92	2.63	mg/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-62-2	VANADIUM	3/30/92	2.63	mg/L	Y	Y		1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	75-01-4	VINYL CHLORIDE	3/30/92	1000	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285	1330-20-7	XYLENES, TOTAL	3/30/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9285F	7440-66-6	ZINC	3/30/92	0.133	mg/L	Y	Y		1117649	922550.5	30	40	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07I	WA9285	7440-66-6	ZINC	3/30/92	0.118	mg/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07I	WA9286	71-55-6	1,1,1-TRICHLOROETHANE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	79-00-5	1,1,2-TRICHLOROETHANE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	75-34-3	1,1-DICHLOROETHANE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	75-35-4	1,1-DICHLOROETHENE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	95-50-1	1,2-DICHLOROBENZENE	10/12/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9286	107-06-2	1,2-DICHLOROETHANE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	78-87-5	1,2-DICHLOROPROPANE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	541-73-1	1,3-DICHLOROBENZENE	10/12/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9286	106-46-7	1,4-DICHLOROBENZENE	10/12/92	500	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07I	WA9286	110-75-8	2-CHLOROETHYL VINYL ETHER	10/12/92	1000	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	71-43-2	BENZENE	10/12/92	3900	ug/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-07I	WA9286	75-27-4	BROMODICHLOROMETHANE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	75-25-2	BROMOFORM	10/12/92	1000	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	74-83-9	BROMOMETHANE	10/12/92	1000	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	56-23-5	CARBON TETRACHLORIDE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	108-90-7	CHLOROBENZENE	10/12/92	7300	ug/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	124-48-1	CHLORODIBROMOMETHANE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	75-00-3	CHLOROETHANE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	67-66-3	CHLOROFORM	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	74-87-3	CHLOROMETHANE	10/12/92	1000	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	75-71-8	DICHLORODIFLUOROMETHANE	10/12/92	1000	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	100-41-4	ETHYLBENZENE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	75-09-2	METHYLENE CHLORIDE	10/12/92	120	ug/L	Y	Y		1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	127-18-4	TETRACHLOROETHENE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	108-88-3	TOLUENE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	79-01-6	TRICHLOROETHENE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	75-69-4	TRICHLOROFLUOROMETHANE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	75-01-4	VINYL CHLORIDE	10/12/92	100	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07I	WA9286	1330-20-7	XYLENES, TOTAL	10/12/92	300	ug/L	Y	N	U	1117649	922550.5	30	40	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	71-55-6	1,1,1-TRICHLOROETHANE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	79-34-5	1,1,2,2-TETRACHLOROETHANE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	79-00-5	1,1,2-TRICHLOROETHANE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	75-34-3	1,1-DICHLOROETHANE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	75-35-4	1,1-DICHLOROETHENE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	120-82-1	1,2,4-TRICHLOROBENZENE	3/30/92	19	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	95-50-1	1,2-DICHLOROBENZENE	3/30/92	260	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	107-06-2	1,2-DICHLOROETHANE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	540-59-0	1,2-DICHLOROETHENE (TOTAL)	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	78-87-5	1,2-DICHLOROPROPANE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	541-73-1	1,3-DICHLOROBENZENE	3/30/92	17	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	106-46-7	1,4-DICHLOROBENZENE	3/30/92	650	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	95-95-4	2,4,5-TRICHLOROPHENOL	3/30/92	19	ug/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	88-06-2	2,4,6-TRICHLOROPHENOL	3/30/92	3	ug/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	120-83-2	2,4-DICHLOROPHENOL	3/30/92	18	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	105-67-9	2,4-DIMETHYLPHENOL	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	51-28-5	2,4-DINITROPHENOL	3/30/92	53	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	121-14-2	2,4-DINITROTOLUENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	606-20-2	2,6-DINITROTOLUENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	78-93-3	2-BUTANONE	3/30/92	500	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	91-58-7	2-CHLORONAPHTHALENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	95-57-8	2-CHLOROPHENOL	3/30/92	4	ug/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	591-78-6	2-HEXANONE	3/30/92	500	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	91-57-6	2-METHYLNAPHTHALENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	95-48-7	2-METHYLPHENOL	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	88-74-4	2-NITROANILINE	3/30/92	53	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	88-75-5	2-NITROPHENOL	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	99-09-2	3-NITROANILINE	3/30/92	53	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3/30/92	53	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	101-55-3	4-BROMOPHENYL PHENYL ETHER	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	59-50-7	4-CHLORO-3-METHYLPHENOL	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	106-47-8	4-CHLOROANILINE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	108-10-1	4-METHYL-2-PENTANONE	3/30/92	500	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	106-44-5	4-METHYLPHENOL	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	100-01-6	4-NITROANILINE	3/30/92	53	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	100-02-7	4-NITROPHENOL	3/30/92	53	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	83-32-9	ACENAPHTHENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	208-96-8	ACENAPHTHYLENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	67-64-1	ACETONE	3/30/92	500	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287F	7429-90-5	ALUMINUM	3/30/92	0.84	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7429-90-5	ALUMINUM	3/30/92	49.9	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	120-12-7	ANTHRACENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-36-0	ANTIMONY	3/30/92	0.089	mg/L	Y	N	UJ	1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-36-0	ANTIMONY	3/30/92	0.081	mg/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-38-2	ARSENIC	3/30/92	0.0519	mg/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-38-2	ARSENIC	3/30/92	0.105	mg/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-39-3	BARIUM	3/30/92	1.82	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-39-3	BARIUM	3/30/92	0.0135	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	71-43-2	BENZENE	3/30/92	1700	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	56-55-3	BENZO(A)ANTHRACENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	50-32-8	BENZO(A)PYRENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	205-99-2	BENZO(B)FLUORANTHENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	191-24-2	BENZO(G,H,I)PERYLENE	3/30/92	1	ug/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	207-08-9	BENZO(K)FLUORANTHENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	65-85-0	BENZOIC ACID	3/30/92	69	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	100-51-6	BENZYL ALCOHOL	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-41-7	BERYLLIUM	3/30/92	0.0012	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-41-7	BERYLLIUM	3/30/92	0.0084	mg/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	111-91-1	BIS(2-CHLOROETHOXY)METHANE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	111-44-4	BIS(2-CHLOROETHYL)ETHER	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	75-27-4	BROMODICHLOROMETHANE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	75-25-2	BROMOFORM	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	74-83-9	BROMOMETHANE	3/30/92	500	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	85-68-7	BUTYLBENZYL PHTHALATE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-43-9	CADMIUM	3/30/92	0.002	mg/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-43-9	CADMIUM	3/30/92	0.002	mg/L	Y	N	UJ	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-70-2	CALCIUM	3/30/92	468	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-70-2	CALCIUM	3/30/92	4.84	mg/L	Y	N	UJ	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	75-15-0	CARBON DISULFIDE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	56-23-5	CARBON TETRACHLORIDE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	108-90-7	CHLOROBENZENE	3/30/92	5100	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	124-48-1	CHLORODIBROMOMETHANE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	75-00-3	CHLOROETHANE	3/30/92	500	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	67-66-3	CHLOROFORM	3/30/92	52	ug/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	74-87-3	CHLOROMETHANE	3/30/92	500	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-47-3	CHROMIUM	3/30/92	0.003	mg/L	Y	N	UJ	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-47-3	CHROMIUM	3/30/92	0.0772	mg/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	218-01-9	CHRYSENE	3/30/92	4	ug/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	10061-01-5	CIS-1,3-DICHLOROPROPENE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-48-4	COBALT	3/30/92	0.0293	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-48-4	COBALT	3/30/92	0.003	mg/L	Y	N	UJ	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-50-8	COPPER	3/30/92	0.0201	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-50-8	COPPER	3/30/92	0.384	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	57-12-5	CYANIDE	3/30/92	0.01	mg/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	53-70-3	DIBENZO(A,H)ANTHRACENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	132-64-9	DIBENZOFURAN	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	84-66-2	DIETHYL PHTHALATE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	131-11-3	DIMETHYL PHTHALATE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	84-74-2	DI-N-BUTYL PHTHALATE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	117-84-0	DI-N-OCTYL PHTHALATE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	100-41-4	ETHYLBENZENE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	206-44-0	FLUORANTHENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	86-73-7	FLUORENE	3/30/92	1	ug/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	118-74-1	HEXACHLOROBENZENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	87-68-3	HEXACHLOROBUTADIENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	77-47-4	HEXACHLOROCYCLOPENTADIENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	67-72-1	HEXACHLOROETHANE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	193-39-5	INDENO(1,2,3-CD)PYRENE	3/30/92	2	ug/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	7439-89-6	IRON	3/30/92	46.6	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7439-89-6	IRON	3/30/92	0.099	mg/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	78-59-1	ISOPHORONE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287F	7439-92-1	LEAD	3/30/92	0.0023	mg/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7439-92-1	LEAD	3/30/92	0.488	mg/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7439-92-1	LEAD	3/30/92	0.0023	mg/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7439-95-4	MAGNESIUM	3/30/92	42.9	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7439-95-4	MAGNESIUM	3/30/92	0.0756	mg/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7439-96-5	MANGANESE	3/30/92	0.001	mg/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7439-96-5	MANGANESE	3/30/92	0.423	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7439-97-6	MERCURY	3/30/92	0.0066	mg/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7439-97-6	MERCURY	3/30/92	0.0024	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	75-09-2	METHYLENE CHLORIDE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Ground Water	WA-WA-07S	WA9287	91-20-3	NAPHTHALENE	3/30/92	33	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-02-0	NICKEL	3/30/92	0.0121	mg/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-02-0	NICKEL	3/30/92	0.146	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	98-95-3	NITROBENZENE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	86-30-6	N-NITROSODIPHENYLAMINE	3/30/92	11	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	87-86-5	PENTACHLOROPHENOL	3/30/92	53	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	85-01-8	PHENANTHRENE	3/30/92	6	ug/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	108-95-2	PHENOL	3/30/92	4	ug/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-09-7	POTASSIUM	3/30/92	123	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-09-7	POTASSIUM	3/30/92	104	mg/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	129-00-0	PYRENE	3/30/92	4	ug/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9287F	7782-49-2	SELENIUM	3/30/92	0.02	mg/L	Y	N	UJ	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7782-49-2	SELENIUM	3/30/92	0.01	mg/L	Y	N	UJ	1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-22-4	SILVER	3/30/92	0.003	mg/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-22-4	SILVER	3/30/92	0.007	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-23-5	SODIUM	3/30/92	1170	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-23-5	SODIUM	3/30/92	1100	mg/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	100-42-5	STYRENE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	127-18-4	TETRACHLOROETHENE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-28-0	THALLIUM	3/30/92	0.002	mg/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-28-0	THALLIUM	3/30/92	0.002	mg/L	Y	N	UJ	1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	108-88-3	TOLUENE	3/30/92	59	ug/L	Y	Y	J	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	10061-02-6	TRANS-1,3-DICHLOROPROPENE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	79-01-6	TRICHLOROETHENE	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-62-2	VANADIUM	3/30/92	0.39	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-62-2	VANADIUM	3/30/92	0.296	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	75-01-4	VINYL CHLORIDE	3/30/92	500	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287	1330-20-7	XYLENES, TOTAL	3/30/92	250	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9287F	7440-66-6	ZINC	3/30/92	0.0099	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	WATER	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-66-6	ZINC	3/30/92	0.613	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9287	7440-66-6	ZINC	3/30/92	0.0099	mg/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	METALS
Plant Area	Ground Water	WA-WA-07S	WA9288	71-55-6	1,1,1-TRICHLOROETHANE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	79-00-5	1,1,2-TRICHLOROETHANE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	75-34-3	1,1-DICHLOROETHANE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	75-35-4	1,1-DICHLOROETHENE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	107-06-2	1,2-DICHLOROETHANE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	78-87-5	1,2-DICHLOROPROPANE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	541-73-1	1,3-DICHLOROBENZENE	10/12/92	500	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9288	106-46-7	1,4-DICHLOROBENZENE	10/12/92	580	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	E601/602
Plant Area	Ground Water	WA-WA-07S	WA9288	110-75-8	2-CHLOROETHYL VINYL ETHER	10/12/92	1000	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	71-43-2	BENZENE	10/12/92	960	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	75-27-4	BROMODICHLOROMETHANE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	75-25-2	BROMOFORM	10/12/92	1000	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	74-83-9	BROMOMETHANE	10/12/92	1000	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	56-23-5	CARBON TETRACHLORIDE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	108-90-7	CHLOROBENZENE	10/12/92	4500	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	124-48-1	CHLORODIBROMOMETHANE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	75-00-3	CHLOROETHANE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	67-66-3	CHLOROFORM	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	74-87-3	CHLOROMETHANE	10/12/92	1000	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	75-71-8	DICHLORODIFLUOROMETHANE	10/12/92	1000	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	100-41-4	ETHYLBENZENE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	75-09-2	METHYLENE CHLORIDE	10/12/92	150	ug/L	Y	Y		1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	127-18-4	TETRACHLOROETHENE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	108-88-3	TOLUENE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	79-01-6	TRICHLOROETHENE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	75-69-4	TRICHLOROFLUOROMETHANE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	75-01-4	VINYL CHLORIDE	10/12/92	100	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Ground Water	WA-WA-07S	WA9288	1330-20-7	XYLENES, TOTAL	10/12/92	30	ug/L	Y	N	U	1117660.3	922541.9	10	20	MW	WATER	Water	VOA
Plant Area	Soil	WA-MC-B1	WA9106	7439-97-6	MERCURY	9/29/97	0.2	mg/kg	Y	Y		1117628.4	921918.7	30	32	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B1	WA9106	TSO	TOTAL SOLIDS	9/29/97	63.3	%	Y	Y		1117628.4	921918.7	30	32	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B1	WA9108	7439-97-6	MERCURY	9/29/97	0.1	mg/kg	Y	N	U	1117628.4	921918.7	62	64	SB	SOIL	Soil	7471A/NONE

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-MC-B1	WA9108	TSO	TOTAL SOLIDS	9/29/97	82.9	%	Y	Y		1117628.4	921918.7	62	64	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B1	WA9107	7439-97-6	MERCURY	9/29/97	2.3	mg/kg	Y	Y	J	1117628.4	921918.7	4	6	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B1	WA9107	TSO	TOTAL SOLIDS	9/29/97	44.3	%	Y	Y		1117628.4	921918.7	4	6	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B10	WA9110	7439-97-6	MERCURY	10/8/97	0.1	mg/kg	Y	N	U	1117522.2	921996	34	36	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B10	WA9110	TSO	TOTAL SOLIDS	10/8/97	77.9	%	Y	Y		1117522.2	921996	34	36	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B10	WA9109	7439-97-6	MERCURY	10/8/97	0.3	mg/kg	Y	Y	J	1117522.2	921996	16	18	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B10	WA9109	TSO	TOTAL SOLIDS	10/8/97	35.5	%	Y	Y		1117522.2	921996	16	18	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B11	WA9112	7439-97-6	MERCURY	10/9/97	0.2	mg/kg	Y	N	U	1117575.2	922029.1	34	36	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B11	WA9112	TSO	TOTAL SOLIDS	10/9/97	69.4	%	Y	Y		1117575.2	922029.1	34	36	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B11	WA9111	7439-97-6	MERCURY	10/9/97	0.8	mg/kg	Y	Y		1117575.2	922029.1	16	18	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B11	WA9111	TSO	TOTAL SOLIDS	10/9/97	57.7	%	Y	Y		1117575.2	922029.1	16	18	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B13	WA9113	7439-97-6	MERCURY	10/10/97	1.6	mg/kg	Y	Y		1117522.7	922058.5	34	36	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B13	WA9113	TSO	TOTAL SOLIDS	10/10/97	68.4	%	Y	Y		1117522.7	922058.5	34	36	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B14	WA9115	7439-97-6	MERCURY	10/10/97	0.1	mg/kg	Y	N	U	1117503.4	922070.4	34	36	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B14	WA9115	TSO	TOTAL SOLIDS	10/10/97	69.3	%	Y	Y		1117503.4	922070.4	34	36	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B14	WA9114	7439-97-6	MERCURY	10/10/97	0.2	mg/kg	Y	N	UJ	1117503.4	922070.4	16	18	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B14	WA9114	TSO	TOTAL SOLIDS	10/10/97	41.9	%	Y	Y		1117503.4	922070.4	16	18	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B2	WA9116	7439-97-6	MERCURY	9/30/97	0.2	mg/kg	Y	Y	J	1117510.9	921983.1	28	30	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B2	WA9116	TSO	TOTAL SOLIDS	9/30/97	43	%	Y	Y		1117510.9	921983.1	28	30	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B2	WA9117	7439-97-6	MERCURY	9/30/97	0.1	mg/kg	Y	N	U	1117510.9	921983.1	58.5	60.5	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B2	WA9117	TSO	TOTAL SOLIDS	9/30/97	86	%	Y	Y		1117510.9	921983.1	58.5	60.5	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B2	WA9118	7439-97-6	MERCURY	9/30/97	1.8	mg/kg	Y	Y		1117510.9	921983.1	6	8	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B2	WA9118	TSO	TOTAL SOLIDS	9/30/97	53.4	%	Y	Y		1117510.9	921983.1	6	8	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B3	WA9119	7439-97-6	MERCURY	9/30/97	0.6	mg/kg	Y	Y		1117424.9	922031.3	24	26	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B3	WA9119	TSO	TOTAL SOLIDS	9/30/97	58	%	Y	Y		1117424.9	922031.3	24	26	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B3	WA9121	7439-97-6	MERCURY	10/1/97	0.1	mg/kg	Y	N	U	1117424.9	922031.3	34	36	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B3	WA9121	TSO	TOTAL SOLIDS	10/1/97	83.8	%	Y	Y		1117424.9	922031.3	34	36	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B3	WA9120	7439-97-6	MERCURY	9/30/97	4.6	mg/kg	Y	Y		1117424.9	922031.3	3	4	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B3	WA9120	TSO	TOTAL SOLIDS	9/30/97	51.9	%	Y	Y		1117424.9	922031.3	3	4	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B4A	WA9122	7439-97-6	MERCURY	10/1/97	160	mg/kg	Y	Y	J	1117592.4	922063	28	29	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B4A	WA9122	TSO	TOTAL SOLIDS	10/1/97	41.3	%	Y	Y		1117592.4	922063	28	29	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B4A	WA9123	7439-97-6	MERCURY	10/1/97	0.2	mg/kg	Y	Y		1117592.4	922063	31	32	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B4A	WA9123	TSO	TOTAL SOLIDS	10/1/97	65.8	%	Y	Y		1117592.4	922063	31	32	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B4A	WA9124	7439-97-6	MERCURY	10/1/97	1.7	mg/kg	Y	Y		1117592.4	922063	37	38	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B4A	WA9124	TSO	TOTAL SOLIDS	10/1/97	80.4	%	Y	Y		1117592.4	922063	37	38	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B4A	WA9125	7439-97-6	MERCURY	10/2/97	0.4	mg/kg	Y	Y		1117592.4	922063	66	68	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B4A	WA9125	TSO	TOTAL SOLIDS	10/2/97	92	%	Y	Y		1117592.4	922063	66	68	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B5	WA9127	7439-97-6	MERCURY	10/2/97	0.1	mg/kg	Y	N	U	1117456.2	922099.4	34	36	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B5	WA9127	TSO	TOTAL SOLIDS	10/2/97	69.2	%	Y	Y		1117456.2	922099.4	34	36	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B5	WA9128	7439-97-6	MERCURY	10/3/97	0.1	mg/kg	Y	N	U	1117456.2	922099.4	62	64	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B5	WA9128	TSO	TOTAL SOLIDS	10/3/97	86.6	%	Y	Y		1117456.2	922099.4	62	64	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B5	WA9126	7439-97-6	MERCURY	10/2/97	0.9	mg/kg	Y	Y		1117456.2	922099.4	18	20	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B5	WA9126	TSO	TOTAL SOLIDS	10/2/97	53.8	%	Y	Y		1117456.2	922099.4	18	20	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B6	WA9130	7439-97-6	MERCURY	10/6/97	0.2	mg/kg	Y	Y		1117672	921995.7	34	37.3	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B6	WA9130	TSO	TOTAL SOLIDS	10/6/97	65.3	%	Y	Y		1117672	921995.7	34	37.3	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B6	WA9131	7439-97-6	MERCURY	10/6/97	0.1	mg/kg	Y	N	U	1117672	921995.7	70	71	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B6	WA9131	TSO	TOTAL SOLIDS	10/6/97	84.2	%	Y	Y		1117672	921995.7	70	71	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B6	WA9129	7439-97-6	MERCURY	10/3/97	190	mg/kg	Y	Y	J	1117672	921995.7	6	8	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B6	WA9129	TSO	TOTAL SOLIDS	10/3/97	40.3	%	Y	Y		1117672	921995.7	6	8	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B7	WA9132	7439-97-6	MERCURY	10/7/97	66	mg/kg	Y	Y		1117557.6	922038.8	36	38	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B7	WA9132	TSO	TOTAL SOLIDS	10/7/97	82.5	%	Y	Y		1117557.6	922038.8	36	38	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B8	WA9134	7439-97-6	MERCURY	10/7/97	7.9	mg/kg	Y	Y		1117540.4	922029.2	36	37	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B8	WA9134	TSO	TOTAL SOLIDS	10/7/97	71	%	Y	Y		1117540.4	922029.2	36	37	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B8	WA9133	7439-97-6	MERCURY	10/7/97	1300	mg/kg	Y	Y		1117540.4	922029.2	16	18	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B8	WA9133	TSO	TOTAL SOLIDS	10/7/97	50.4	%	Y	Y		1117540.4	922029.2	16	18	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B9	WA9136	7439-97-6	MERCURY	10/8/97	7.1	mg/kg	Y	Y		1117531.2	922012	36	37	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B9	WA9136	TSO	TOTAL SOLIDS	10/8/97	85.5	%	Y	Y		1117531.2	922012	36	37	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MC-B9	WA9135	7439-97-6	MERCURY	10/8/97	26	mg/kg	Y	Y	J	1117531.2	922012	16	18	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-MC-B9	WA9135	TSO	TOTAL SOLIDS	10/8/97	37.4	%	Y	Y		1117531.2	922012	16	18	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-MPS-SS	WA9137	71-55-6	1,1,1-TRICHLOROETHANE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	79-00-5	1,1,2-TRICHLOROETHANE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	75-34-3	1,1-DICHLOROETHANE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	75-35-4	1,1-DICHLOROETHENE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/26/99	12.3	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/26/99	5.54	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/26/99	1.97	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-MPS-SS	WA9137	39227-28-6	1,2,3,4,7,8-HXCDD	10/26/99	0.36	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	70648-26-9	1,2,3,4,7,8-HXCDF	10/26/99	5.31	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	57653-85-7	1,2,3,6,7,8-HXCDD	10/26/99	0.67	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	57117-44-9	1,2,3,6,7,8-HXCDF	10/26/99	1.39	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	19408-74-3	1,2,3,7,8,9-HXCDD	10/26/99	0.67	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	72918-21-9	1,2,3,7,8,9-HXCDF	10/26/99	0.28	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	40321-76-4	1,2,3,7,8-PECDD	10/26/99	0.3	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	57117-41-6	1,2,3,7,8-PECDF	10/26/99	4.07	ng/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	120-82-1	1,2,4-TRICHLOROBENZENE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	95-50-1	1,2-DICHLOROBENZENE	10/26/99	420	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	107-06-2	1,2-DICHLOROETHANE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	78-87-5	1,2-DICHLOROPROPANE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	541-73-1	1,3-DICHLOROBENZENE	10/26/99	420	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	106-46-7	1,4-DICHLOROBENZENE	10/26/99	420	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	60851-34-5	2,3,4,6,7,8-HXCDF	10/26/99	0.78	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	57117-31-4	2,3,4,7,8-PECDF	10/26/99	2.63	ng/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	1746-01-6	2,3,7,8-TCDD	10/26/99	0.14	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	51207-31-9	2,3,7,8-TCDF	10/26/99	17.8	ng/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	95-95-4	2,4,5-TRICHLOROPHENOL	10/26/99	1000	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	88-06-2	2,4,6-TRICHLOROPHENOL	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	120-83-2	2,4-DICHLOROPHENOL	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	105-67-9	2,4-DIMETHYLPHENOL	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	51-28-5	2,4-DINITROPHENOL	10/26/99	1000	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	121-14-2	2,4-DINITROTOLUENE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	606-20-2	2,6-DINITROTOLUENE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	78-93-3	2-BUTANONE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	91-58-7	2-CHLORONAPHTHALENE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	95-57-8	2-CHLOROPHENOL	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	591-78-6	2-HEXANONE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	91-57-6	2-METHYLNAPHTHALENE	10/26/99	420	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	95-48-7	2-METHYLPHENOL	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	88-74-4	2-NITROANILINE	10/26/99	1000	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	88-75-5	2-NITROPHENOL	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	91-94-1	3,3'-DICHLOROBENZIDINE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	99-09-2	3-NITROANILINE	10/26/99	1000	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	72-54-8	4,4'-DDD	10/26/99	4.2	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	72-55-9	4,4'-DDE	10/26/99	4.2	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	50-29-3	4,4'-DDT	10/26/99	4.2	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/26/99	1000	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	59-50-7	4-CHLORO-3-METHYLPHENOL	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	106-47-8	4-CHLOROANILINE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	108-10-1	4-METHYL-2-PENTANONE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	106-44-5	4-METHYLPHENOL	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	100-01-6	4-NITROANILINE	10/26/99	1000	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	100-02-7	4-NITROPHENOL	10/26/99	1000	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	83-32-9	ACENAPHTHENE	10/26/99	420	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	208-96-8	ACENAPHTHYLENE	10/26/99	420	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	67-64-1	ACETONE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	309-00-2	ALDRIN	10/26/99	2.1	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	319-84-6	ALPHA-BHC	10/26/99	2.1	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	5103-71-9	ALPHA-CHLORDANE	10/26/99	2.1	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	7429-90-5	ALUMINUM	10/26/99	15600	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	120-12-7	ANTHRACENE	10/26/99	420	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	7440-36-0	ANTIMONY	10/26/99	0.63	mg/kg	Y	N	UJ	1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	12674-11-2	AROCLOR-1016	10/26/99	42	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	11104-28-2	AROCLOR-1221	10/26/99	83	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	11141-16-5	AROCLOR-1232	10/26/99	42	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	53469-21-9	AROCLOR-1242	10/26/99	42	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	12672-29-6	AROCLOR-1248	10/26/99	42	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	11097-69-1	AROCLOR-1254	10/26/99	42	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	11096-82-5	AROCLOR-1260	10/26/99	34	ug/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	11100-14-4	AROCLOR-1268	10/26/99	83	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	7440-38-2	ARSENIC	10/26/99	5.2	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-MPS-SS	WA9137	7440-39-3	BARIUM	10/26/99	77.3	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	71-43-2	BENZENE	10/26/99	13	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	56-55-3	BENZO(A)ANTHRACENE	10/26/99	120	ug/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	50-32-8	BENZO(A)PYRENE	10/26/99	120	ug/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	205-99-2	BENZO(B)FLUORANTHENE	10/26/99	190	ug/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	191-24-2	BENZO(G,H,I)PERYLENE	10/26/99	63	ug/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	207-08-9	BENZO(K)FLUORANTHENE	10/26/99	68	ug/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	7440-41-7	BERYLLIUM	10/26/99	0.67	mg/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	319-85-7	BETA-BHC	10/26/99	2.1	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	75-27-4	BROMODICHLOROMETHANE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	75-25-2	BROMOFORM	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	74-83-9	BROMOMETHANE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	85-68-7	BUTYLBENZYL PHTHALATE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	7440-43-9	CADMIUM	10/26/99	0.08	mg/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	7440-70-2	CALCIUM	10/26/99	7430	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	86-74-8	CARBAZOLE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	75-15-0	CARBON DISULFIDE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	56-23-5	CARBON TETRACHLORIDE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	108-90-7	CHLOROBENZENE	10/26/99	13	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	124-48-1	CHLORODIBROMOMETHANE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	75-00-3	CHLOROETHANE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	67-66-3	CHLOROFORM	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	74-87-3	CHLOROMETHANE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	7440-47-3	CHROMIUM	10/26/99	29	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	218-01-9	CHRYSENE	10/26/99	160	ug/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	156-59-2	CIS-1,2-DICHLOROETHENE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	7440-48-4	COBALT	10/26/99	9.7	mg/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	7440-50-8	COPPER	10/26/99	23.1	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	57-12-5	CYANIDE	10/26/99	0.63	mg/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	EPA 335.2
Plant Area	Soil	WA-MPS-SS	WA9137	319-86-8	DELTA-BHC	10/26/99	2.1	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	53-70-3	DIBENZO(A,H)ANTHRACENE	10/26/99	420	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	132-64-9	DIBENZOFURAN	10/26/99	420	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	60-57-1	DIELDRIN	10/26/99	4.2	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	84-66-2	DIETHYL PHTHALATE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	131-11-3	DIMETHYL PHTHALATE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	84-74-2	DI-N-BUTYL PHTHALATE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	117-84-0	DI-N-OCTYL PHTHALATE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	959-98-8	ENDOSULFAN I	10/26/99	2.1	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	33213-65-9	ENDOSULFAN II	10/26/99	4.2	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	1031-07-8	ENDOSULFAN SULFATE	10/26/99	4.2	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	72-20-8	ENDRIN	10/26/99	4.3	ug/Kg	Y	Y	JN	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	7421-93-4	ENDRIN ALDEHYDE	10/26/99	4.2	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	53494-70-5	ENDRIN KETONE	10/26/99	4.2	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	100-41-4	ETHYLBENZENE	10/26/99	13	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	206-44-0	FLUORANTHENE	10/26/99	230	ug/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	86-73-7	FLUORENE	10/26/99	420	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	58-89-9	GAMMA-BHC (LINDANE)	10/26/99	2.1	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	5566-34-7	GAMMA-CHLORDANE	10/26/99	2.1	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	76-44-8	HEPTACHLOR	10/26/99	2.1	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	1024-57-3	HEPTACHLOR EPOXIDE	10/26/99	2.1	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	118-74-1	HEXACHLOROBENZENE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	87-68-3	HEXACHLOROBUTADIENE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	67-72-1	HEXACHLOROETHANE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	193-39-5	INDENO(1,2,3-CD)PYRENE	10/26/99	57	ug/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	7439-89-6	IRON	10/26/99	22700	mg/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	78-59-1	ISOPHORONE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	7439-92-1	LEAD	10/26/99	13.9	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	7439-95-4	MAGNESIUM	10/26/99	5860	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	7439-96-5	MANGANESE	10/26/99	643	mg/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	7439-97-6	MERCURY	10/26/99	0.43	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	245.5M
Plant Area	Soil	WA-MPS-SS	WA9137	72-43-5	METHOXYCHLOR	10/26/99	21	ug/Kg	Y	N	UJ	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	22967-92-6	METHYL MERCURY	10/26/99	2.61	ng/g	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	1630/NONE

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-MPS-SS	WA9137	75-09-2	METHYLENE CHLORIDE	10/26/99	13	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	91-20-3	NAPHTHALENE	10/26/99	420	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	7440-02-0	NICKEL	10/26/99	21.1	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	98-95-3	NITROBENZENE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	86-30-6	N-NITROSODIPHENYLAMINE	10/26/99	420	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	3268-87-9	OCDD	10/26/99	87.8	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	39001-02-0	OCDF	10/26/99	15.8	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	87-86-5	PENTACHLOROPHENOL	10/26/99	1000	ug/Kg	Y	N	UJ	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	85-01-8	PHENANTHRENE	10/26/99	200	ug/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	108-95-2	PHENOL	10/26/99	420	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	7440-09-7	POTASSIUM	10/26/99	3190	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	129-00-0	PYRENE	10/26/99	260	ug/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-MPS-SS	WA9137	7782-49-2	SELENIUM	10/26/99	1.5	mg/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	7440-22-4	SILVER	10/26/99	0.2	mg/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	7440-23-5	SODIUM	10/26/99	83.9	mg/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	100-42-5	STYRENE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	127-18-4	TETRACHLOROETHENE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	7440-28-0	THALLIUM	10/26/99	1.3	mg/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	108-88-3	TOLUENE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	37871-00-4	TOTAL HPCDD	10/26/99	22.6	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	38998-75-3	TOTAL HPCDF	10/26/99	13.8	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	34465-46-8	TOTAL HXCDD	10/26/99	5.23	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	55684-94-1	TOTAL HXCDF	10/26/99	13.8	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	TOC	TOTAL ORGANIC CARBON	10/26/99	28300	mg/Kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	SW9060
Plant Area	Soil	WA-MPS-SS	WA9137	36088-22-9	TOTAL PECDD	10/26/99	1.25	ng/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	30402-15-4	TOTAL PECDF	10/26/99	16.2	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	TSO	TOTAL SOLIDS	10/26/99	79.9	%	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	2540-G
Plant Area	Soil	WA-MPS-SS	WA9137	41903-57-5	TOTAL TCDD	10/26/99	1.86	ng/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	55722-27-5	Total TCDF	10/26/99	35.8	ng/kg	Y	Y	J	1117342.9	922380	0	0.5	SS	SOIL	Soil	SW8290
Plant Area	Soil	WA-MPS-SS	WA9137	8001-35-2	TOXAPHENE	10/26/99	210	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-3
Plant Area	Soil	WA-MPS-SS	WA9137	156-60-5	TRANS-1,2-DICHLOROETHENE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	79-01-6	TRICHLOROETHENE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	7440-62-2	VANADIUM	10/26/99	31.6	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-MPS-SS	WA9137	75-01-4	VINYL CHLORIDE	10/26/99	13	ug/Kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	1330-20-7	XYLENES, TOTAL	10/26/99	13	ug/kg	Y	N	U	1117342.9	922380	0	0.5	SS	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-MPS-SS	WA9137	7440-66-6	ZINC	10/26/99	52.6	mg/kg	Y	Y		1117342.9	922380	0	0.5	SS	SOIL	Soil	200.7M
Plant Area	Soil	WA-NWMATP#1	WA9151	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	71-55-6	1,1,1-TRICHLOROETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	71-55-6	1,1,1-TRICHLOROETHANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	79-00-5	1,1,2-TRICHLOROETHANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	79-00-5	1,1,2-TRICHLOROETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	75-34-3	1,1-DICHLOROETHANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	75-34-3	1,1-DICHLOROETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	75-35-4	1,1-DICHLOROETHENE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	75-35-4	1,1-DICHLOROETHENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	563-58-6	1,1-DICHLOROPROPENE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	563-58-6	1,1-DICHLOROPROPENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	87-61-6	1,2,3-TRICHLOROBENZENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	87-61-6	1,2,3-TRICHLOROBENZENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	96-18-4	1,2,3-TRICHLOROPROPANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	96-18-4	1,2,3-TRICHLOROPROPANE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	120-82-1	1,2,4-TRICHLOROBENZENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	120-82-1	1,2,4-TRICHLOROBENZENE	9/16/97	1.3	ug/Kg	Y	Y	J	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	95-63-6	1,2,4-TRIMETHYLBENZENE	9/16/97	5.1	ug/Kg	Y	Y	J	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	95-63-6	1,2,4-TRIMETHYLBENZENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	106-93-4	1,2-DIBROMOETHANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	106-93-4	1,2-DIBROMOETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	95-50-1	1,2-DICHLOROBENZENE	9/16/97	14	ug/kg	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	95-50-1	1,2-DICHLOROBENZENE	9/16/97	6	ug/kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	107-06-2	1,2-DICHLOROETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-NWMATP#1	WA9151	107-06-2	1,2-DICHLOROETHANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	78-87-5	1,2-DICHLOROPROPANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	78-87-5	1,2-DICHLOROPROPANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	108-67-8	1,3,5-TRIMETHYLBENZENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	108-67-8	1,3,5-TRIMETHYLBENZENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	541-73-1	1,3-DICHLOROBENZENE	9/16/97	3	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	541-73-1	1,3-DICHLOROBENZENE	9/16/97	6	ug/kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	142-28-9	1,3-DICHLOROPROPANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	142-28-9	1,3-DICHLOROPROPANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	106-46-7	1,4-DICHLOROBENZENE	9/16/97	6	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	106-46-7	1,4-DICHLOROBENZENE	9/16/97	39	ug/kg	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	594-20-7	2,2-DICHLOROPROPANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	594-20-7	2,2-DICHLOROPROPANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	95-49-8	2-CHLOROTOLUENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	95-49-8	2-CHLOROTOLUENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	72-54-8	4,4'-DDD	9/16/97	40	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	72-55-9	4,4'-DDE	9/16/97	40	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	50-29-3	4,4'-DDT	9/16/97	40	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	106-43-4	4-CHLOROTOLUENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	106-43-4	4-CHLOROTOLUENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	309-00-2	ALDRIN	9/16/97	20	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	319-84-6	ALPHA-BHC	9/16/97	20	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151N	12674-11-2	AROCLOR-1016	9/16/97	79	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	12674-11-2	AROCLOR-1016	9/16/97	200	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	11104-28-2	AROCLOR-1221	9/16/97	200	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151N	11104-28-2	AROCLOR-1221	9/16/97	160	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151N	11141-16-5	AROCLOR-1232	9/16/97	79	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	11141-16-5	AROCLOR-1232	9/16/97	200	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151N	53469-21-9	AROCLOR-1242	9/16/97	79	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	53469-21-9	AROCLOR-1242	9/16/97	200	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	12672-29-6	AROCLOR-1248	9/16/97	200	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151N	12672-29-6	AROCLOR-1248	9/16/97	79	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151N	11097-69-1	AROCLOR-1254	9/16/97	79	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	11097-69-1	AROCLOR-1254	9/16/97	200	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	11096-82-5	AROCLOR-1260	9/16/97	860	ug/kg	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151N	11096-82-5	AROCLOR-1260	9/16/97	79	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	71-43-2	BENZENE	9/16/97	3	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	71-43-2	BENZENE	9/16/97	4.8	ug/kg	Y	Y	J	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	319-85-7	BETA-BHC	9/16/97	20	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151N	108-86-1	BROMOBENZENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	108-86-1	BROMOBENZENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	74-97-5	BROMOCHLOROMETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	74-97-5	BROMOCHLOROMETHANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	75-27-4	BROMODICHLOROMETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	75-27-4	BROMODICHLOROMETHANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	75-25-2	BROMOFORM	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	75-25-2	BROMOFORM	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	74-83-9	BROMOMETHANE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	74-83-9	BROMOMETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	104-51-8	BUTYLBENZENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	104-51-8	BUTYLBENZENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	56-23-5	CARBON TETRACHLORIDE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	56-23-5	CARBON TETRACHLORIDE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	57-74-9	CHLORDANE	9/16/97	200	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151N	108-90-7	CHLOROBENZENE	9/16/97	6	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	108-90-7	CHLOROBENZENE	9/16/97	4	ug/kg	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	124-48-1	CHLORODIBROMOMETHANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	124-48-1	CHLORODIBROMOMETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	75-00-3	CHLOROETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	75-00-3	CHLOROETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	67-66-3	CHLOROFORM	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	67-66-3	CHLOROFORM	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	74-87-3	CHLOROMETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	74-87-3	CHLOROMETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	156-59-2	CIS-1,2-DICHLOROETHENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	156-59-2	CIS-1,2-DICHLOROETHENE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-NWMATP#1	WA9151N	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	319-86-8	DELTA-BHC	9/16/97	20	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	74-95-3	DIBROMOMETHANE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	74-95-3	DIBROMOMETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	75-71-8	DICHLORODIFLUOROMETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	75-71-8	DICHLORODIFLUOROMETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	60-57-1	DIELDRIN	9/16/97	40	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	959-98-8	ENDOSULFAN I	9/16/97	40	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	33213-65-9	ENDOSULFAN II	9/16/97	40	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	1031-07-8	ENDOSULFAN SULFATE	9/16/97	40	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	72-20-8	ENDRIN	9/16/97	40	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	7421-93-4	ENDRIN ALDEHYDE	9/16/97	40	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	100-41-4	ETHYLBENZENE	9/16/97	3	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	100-41-4	ETHYLBENZENE	9/16/97	6	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	58-89-9	GAMMA-BHC (LINDANE)	9/16/97	20	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	76-44-8	HEPTACHLOR	9/16/97	20	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	1024-57-3	HEPTACHLOR EPOXIDE	9/16/97	20	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151	118-74-1	HEXACHLOROBENZENE	9/16/97	190	ug/Kg	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151N	87-68-3	HEXACHLOROBUTADIENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	87-68-3	HEXACHLOROBUTADIENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	98-82-8	ISOPROPYLBENZENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	98-82-8	ISOPROPYLBENZENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	7439-97-6	MERCURY	9/16/97	20	mg/kg	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-NWMATP#1	WA9151N	7439-97-6	MERCURY	9/16/97	24.4	mg/kg	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	SOIL	7471A/NONE
Plant Area	Soil	WA-NWMATP#1	WA9151	72-43-5	METHOXYCHLOR	9/16/97	200	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151N	75-09-2	METHYLENE CHLORIDE	9/16/97	33	ug/kg	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	75-09-2	METHYLENE CHLORIDE	9/16/97	6	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	136777-61-2	m-Xylene & p-Xylene	9/16/97	8.4	ug/Kg	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	91-20-3	NAPHTHALENE	9/16/97	3	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	91-20-3	NAPHTHALENE	9/16/97	2.8	ug/kg	Y	Y	J	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	103-65-1	N-PROPYLBENZENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	103-65-1	N-PROPYLBENZENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	95-47-6	O-XYLENE	9/16/97	10	ug/Kg	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	99-87-6	P-ISOPROPYLTOLUENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	99-87-6	P-ISOPROPYLTOLUENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	135-98-8	SEC-BUTYLBENZENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	135-98-8	SEC-BUTYLBENZENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	100-42-5	STYRENE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	100-42-5	STYRENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	98-06-6	TERT-BUTYLBENZENE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	98-06-6	TERT-BUTYLBENZENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	127-18-4	TETRACHLOROETHENE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	127-18-4	TETRACHLOROETHENE	9/16/97	1.5	ug/Kg	Y	Y	J	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	108-88-3	TOLUENE	9/16/97	3	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	108-88-3	TOLUENE	9/16/97	60	ug/kg	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	TSO	TOTAL SOLIDS	9/16/97	83.5	%	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	Soil	2540-G
Plant Area	Soil	WA-NWMATP#1	WA9151	8001-35-2	TOXAPHENE	9/16/97	200	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#1	WA9151N	156-60-5	TRANS-1,2-DICHLOROETHENE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	156-60-5	TRANS-1,2-DICHLOROETHENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/16/97	3	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	79-01-6	TRICHLOROETHENE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	79-01-6	TRICHLOROETHENE	9/16/97	7.4	ug/Kg	Y	Y		1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	75-69-4	TRICHLOROFLUOROMETHANE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	75-69-4	TRICHLOROFLUOROMETHANE	9/16/97	6	ug/Kg	Y	N	UJ	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	75-01-4	VINYL CHLORIDE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151N	75-01-4	VINYL CHLORIDE	9/16/97	6	ug/Kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#1	WA9151	1330-20-7	XYLENES, TOTAL	9/16/97	3	ug/kg	Y	N	U	1117921.7	922405.1	3	5	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	71-55-6	1,1,1-TRICHLOROETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	71-55-6	1,1,1-TRICHLOROETHANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	79-00-5	1,1,2-TRICHLOROETHANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	79-00-5	1,1,2-TRICHLOROETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	75-34-3	1,1-DICHLOROETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-NWMATP#2	WA9152	75-34-3	1,1-DICHLOROETHANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	75-35-4	1,1-DICHLOROETHENE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	75-35-4	1,1-DICHLOROETHENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	563-58-6	1,1-DICHLOROPROPENE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	563-58-6	1,1-DICHLOROPROPENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	87-61-6	1,2,3-TRICHLOROBENZENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	87-61-6	1,2,3-TRICHLOROBENZENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	96-18-4	1,2,3-TRICHLOROPROPANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	96-18-4	1,2,3-TRICHLOROPROPANE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	120-82-1	1,2,4-TRICHLOROBENZENE	9/16/97	1.3	ug/Kg	Y	Y	J	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	120-82-1	1,2,4-TRICHLOROBENZENE	9/16/97	5.3	ug/Kg	Y	Y	J	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	95-63-6	1,2,4-TRIMETHYLBENZENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	95-63-6	1,2,4-TRIMETHYLBENZENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	106-93-4	1,2-DIBROMOETHANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	106-93-4	1,2-DIBROMOETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	95-50-1	1,2-DICHLOROBENZENE	9/16/97	2.5	ug/kg	Y	Y	J	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	95-50-1	1,2-DICHLOROBENZENE	9/16/97	36	ug/kg	Y	Y	J	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	107-06-2	1,2-DICHLOROETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	107-06-2	1,2-DICHLOROETHANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	78-87-5	1,2-DICHLOROPROPANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	78-87-5	1,2-DICHLOROPROPANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	108-67-8	1,3,5-TRIMETHYLBENZENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	108-67-8	1,3,5-TRIMETHYLBENZENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	541-73-1	1,3-DICHLOROBENZENE	9/16/97	3.2	ug/kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	541-73-1	1,3-DICHLOROBENZENE	9/16/97	15	ug/kg	Y	Y	J	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	142-28-9	1,3-DICHLOROPROPANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	142-28-9	1,3-DICHLOROPROPANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	106-46-7	1,4-DICHLOROBENZENE	9/16/97	72	ug/kg	Y	Y		1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	106-46-7	1,4-DICHLOROBENZENE	9/16/97	5.3	ug/kg	Y	Y	J	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	594-20-7	2,2-DICHLOROPROPANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	594-20-7	2,2-DICHLOROPROPANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	95-49-8	2-CHLOROTOLUENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	95-49-8	2-CHLOROTOLUENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	72-54-8	4,4'-DDD	9/16/97	86	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	72-55-9	4,4'-DDE	9/16/97	86	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	50-29-3	4,4'-DDT	9/16/97	86	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	106-43-4	4-CHLOROTOLUENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	106-43-4	4-CHLOROTOLUENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	309-00-2	ALDRIN	9/16/97	43	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	319-84-6	ALPHA-BHC	9/16/97	43	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152N	12674-11-2	AROCLOR-1016	9/16/97	82	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	12674-11-2	AROCLOR-1016	9/16/97	220	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	11104-28-2	AROCLOR-1221	9/16/97	220	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152N	11104-28-2	AROCLOR-1221	9/16/97	160	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152N	11141-16-5	AROCLOR-1232	9/16/97	82	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	11141-16-5	AROCLOR-1232	9/16/97	220	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	53469-21-9	AROCLOR-1242	9/16/97	220	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152N	53469-21-9	AROCLOR-1242	9/16/97	82	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	12672-29-6	AROCLOR-1248	9/16/97	220	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152N	12672-29-6	AROCLOR-1248	9/16/97	82	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152N	11097-69-1	AROCLOR-1254	9/16/97	82	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	11097-69-1	AROCLOR-1254	9/16/97	220	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	11096-82-5	AROCLOR-1260	9/16/97	600	ug/kg	Y	Y		1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152N	11096-82-5	AROCLOR-1260	9/16/97	82	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	71-43-2	BENZENE	9/16/97	3.2	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	71-43-2	BENZENE	9/16/97	6.2	ug/kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	319-85-7	BETA-BHC	9/16/97	43	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152N	108-86-1	BROMOBENZENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	108-86-1	BROMOBENZENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	74-97-5	BROMOCHLOROMETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	74-97-5	BROMOCHLOROMETHANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	75-27-4	BROMODICHLOROMETHANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	75-27-4	BROMODICHLOROMETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	75-25-2	BROMOFORM	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	75-25-2	BROMOFORM	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-NWMATP#2	WA9152	74-83-9	BROMOMETHANE	9/16/97	6.5	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	74-83-9	BROMOMETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	104-51-8	BUTYLBENZENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	104-51-8	BUTYLBENZENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	56-23-5	CARBON TETRACHLORIDE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	56-23-5	CARBON TETRACHLORIDE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	57-74-9	CHLORDANE	9/16/97	430	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152N	108-90-7	CHLOROBENZENE	9/16/97	3.5	ug/kg	Y	Y	J	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	108-90-7	CHLOROBENZENE	9/16/97	3.2	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	124-48-1	CHLORODIBROMOMETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	124-48-1	CHLORODIBROMOMETHANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	75-00-3	CHLOROETHANE	9/16/97	6.5	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	75-00-3	CHLOROETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	67-66-3	CHLOROFORM	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	67-66-3	CHLOROFORM	9/16/97	4.4	ug/Kg	Y	Y		1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	74-87-3	CHLOROMETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	74-87-3	CHLOROMETHANE	9/16/97	6.5	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	156-59-2	CIS-1,2-DICHLOROETHENE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	156-59-2	CIS-1,2-DICHLOROETHENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	319-86-8	DELTA-BHC	9/16/97	43	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	74-95-3	DIBROMOMETHANE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	74-95-3	DIBROMOMETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	75-71-8	DICHLORODIFLUOROMETHANE	9/16/97	6.5	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	75-71-8	DICHLORODIFLUOROMETHANE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	60-57-1	DIELDRIN	9/16/97	86	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	959-98-8	ENDOSULFAN I	9/16/97	86	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	33213-65-9	ENDOSULFAN II	9/16/97	86	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	1031-07-8	ENDOSULFAN SULFATE	9/16/97	86	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	72-20-8	ENDRIN	9/16/97	86	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	7421-93-4	ENDRIN ALDEHYDE	9/16/97	86	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	100-41-4	ETHYLBENZENE	9/16/97	3.2	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	100-41-4	ETHYLBENZENE	9/16/97	6.2	ug/kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	58-89-9	GAMMA-BHC (LINDANE)	9/16/97	43	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	76-44-8	HEPTACHLOR	9/16/97	43	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	1024-57-3	HEPTACHLOR EPOXIDE	9/16/97	43	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	118-74-1	HEXACHLOROBENZENE	9/16/97	470	ug/Kg	Y	Y		1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	87-68-3	HEXACHLOROBUTADIENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	87-68-3	HEXACHLOROBUTADIENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	98-82-8	ISOPROPYLBENZENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	98-82-8	ISOPROPYLBENZENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	7439-97-6	MERCURY	9/16/97	150	mg/kg	Y	Y		1117875.2	922353.9	5	7	TP	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-NWMATP#2	WA9152N	7439-97-6	MERCURY	9/16/97	126	mg/kg	Y	Y		1117875.2	922353.9	5	7	TP	SOIL	SOIL	7471A/NONE
Plant Area	Soil	WA-NWMATP#2	WA9152	72-43-5	METHOXYCHLOR	9/16/97	430	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-NWMATP#2	WA9152	75-09-2	METHYLENE CHLORIDE	9/16/97	6.5	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	75-09-2	METHYLENE CHLORIDE	9/16/97	49	ug/kg	Y	Y	J	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	136777-61-2	m-Xylene & p-Xylene	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	91-20-3	NAPHTHALENE	9/16/97	14	ug/kg	Y	Y	J	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	91-20-3	NAPHTHALENE	9/16/97	13	ug/kg	Y	Y	J	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	103-65-1	N-PROPYLBENZENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	103-65-1	N-PROPYLBENZENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	95-47-6	O-XYLENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	99-87-6	P-ISOPROPYLTOLUENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	99-87-6	P-ISOPROPYLTOLUENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	135-98-8	SEC-BUTYLBENZENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	135-98-8	SEC-BUTYLBENZENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	100-42-5	STYRENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	100-42-5	STYRENE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	98-06-6	TERT-BUTYLBENZENE	9/16/97	3.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	98-06-6	TERT-BUTYLBENZENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	127-18-4	TETRACHLOROETHENE	9/16/97	6.4	ug/Kg	Y	Y		1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	127-18-4	TETRACHLOROETHENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	108-88-3	TOLUENE	9/16/97	3.2	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	108-88-3	TOLUENE	9/16/97	3.5	ug/kg	Y	Y	J	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	TSO	TOTAL SOLIDS	9/16/97	77.1	%	Y	Y		1117875.2	922353.9	5	7	TP	SOIL	Soil	2540-G
Plant Area	Soil	WA-NWMATP#2	WA9152	8001-35-2	TOXAPHENE	9/16/97	430	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8080

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-NWMATP#2	WA9152N	156-60-5	TRANS-1,2-DICHLOROETHENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	156-60-5	TRANS-1,2-DICHLOROETHENE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/16/97	3.2	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	79-01-6	TRICHLOROETHENE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	79-01-6	TRICHLOROETHENE	9/16/97	6.8	ug/Kg	Y	Y		1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	75-69-4	TRICHLOROFLUOROMETHANE	9/16/97	7.6	ug/Kg	Y	Y	J	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	75-69-4	TRICHLOROFLUOROMETHANE	9/16/97	6.5	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152N	75-01-4	VINYL CHLORIDE	9/16/97	6.2	ug/Kg	Y	N	UJ	1117875.2	922353.9	5	7	TP	SOIL	SOIL	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	75-01-4	VINYL CHLORIDE	9/16/97	6.5	ug/Kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-NWMATP#2	WA9152	1330-20-7	XYLENES, TOTAL	9/16/97	3.2	ug/kg	Y	N	U	1117875.2	922353.9	5	7	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SB-1	WA9186	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	2950	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	336	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	93.1	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	34.4	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	266	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	47.7	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	70.3	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	35.1	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	4.18	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	40321-76-4	1,2,3,7,8-PECDD	9/29/98	4.8	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	57117-41-6	1,2,3,7,8-PECDF	9/29/98	95.7	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	20.9	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	57117-31-4	2,3,4,7,8-PECDF	9/29/98	90	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	1746-01-6	2,3,7,8-TCDD	9/29/98	3.41	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	51207-31-9	2,3,7,8-TCDF	9/29/98	249	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	3268-87-9	OCDD	9/29/98	24100	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	39001-02-0	OCDF	9/29/98	1470	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	37871-00-4	TOTAL HPCDD	9/29/98	6290	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	38998-75-3	TOTAL HPCDF	9/29/98	922	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	34465-46-8	TOTAL HXCDD	9/29/98	363	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	55684-94-1	TOTAL HXCDF	9/29/98	580	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	TOC	TOTAL ORGANIC CARBON	9/29/98	53100	mg/Kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-1	WA9186	36088-22-9	TOTAL PECDD	9/29/98	56.8	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	30402-15-4	TOTAL PECDF	9/29/98	493	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	TSO	TOTAL SOLIDS	9/29/98	87.9	%	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-1	WA9186	41903-57-5	TOTAL TCDD	9/29/98	70.1	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9186	55722-27-5	Total TCDF	9/29/98	851	ng/kg	Y	Y		1117339.3	921907.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-1	WA9185	71-55-6	1,1,1-TRICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/29/98	11	ug/Kg	Y	N	UJ	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	79-00-5	1,1,2-TRICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	75-34-3	1,1-DICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	75-35-4	1,1-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	120-82-1	1,2,4-TRICHLOROBENZENE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	95-50-1	1,2-DICHLOROBENZENE	9/29/98	11000	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	107-06-2	1,2-DICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	78-87-5	1,2-DICHLOROPROPANE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	541-73-1	1,3-DICHLOROBENZENE	9/29/98	11000	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	106-46-7	1,4-DICHLOROBENZENE	9/29/98	11000	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	95-95-4	2,4,5-TRICHLOROPHENOL	9/29/98	28000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	88-06-2	2,4,6-TRICHLOROPHENOL	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	120-83-2	2,4-DICHLOROPHENOL	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	105-67-9	2,4-DIMETHYLPHENOL	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	51-28-5	2,4-DINITROPHENOL	9/29/98	28000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	121-14-2	2,4-DINITROTOLUENE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	606-20-2	2,6-DINITROTOLUENE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	78-93-3	2-BUTANONE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	91-58-7	2-CHLORONAPHTHALENE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	95-57-8	2-CHLOROPHENOL	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	591-78-6	2-HEXANONE	9/29/98	11	ug/Kg	Y	N	UJ	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	91-57-6	2-METHYLNAPHTHALENE	9/29/98	11000	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	95-48-7	2-METHYLPHENOL	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	88-74-4	2-NITROANILINE	9/29/98	28000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	88-75-5	2-NITROPHENOL	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	91-94-1	3,3'-DICHLOROBENZIDINE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-1	WA9185	99-09-2	3-NITROANILINE	9/29/98	28000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	72-54-8	4,4'-DDD	9/29/98	76	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	72-55-9	4,4'-DDE	9/29/98	20	ug/Kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	50-29-3	4,4'-DDT	9/29/98	76	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/29/98	28000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	59-50-7	4-CHLORO-3-METHYLPHENOL	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	106-47-8	4-CHLOROANILINE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	108-10-1	4-METHYL-2-PENTANONE	9/29/98	11	ug/Kg	Y	N	UJ	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	106-44-5	4-METHYLPHENOL	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	100-01-6	4-NITROANILINE	9/29/98	28000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	100-02-7	4-NITROPHENOL	9/29/98	28000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	83-32-9	ACENAPHTHENE	9/29/98	2100	ug/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	208-96-8	ACENAPHTHYLENE	9/29/98	11000	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	67-64-1	ACETONE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	309-00-2	ALDRIN	9/29/98	38	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	319-84-6	ALPHA-BHC	9/29/98	38	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	5103-71-9	ALPHA-CHLORDANE	9/29/98	38	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	7429-90-5	ALUMINUM	9/29/98	4070	mg/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	120-12-7	ANTHRACENE	9/29/98	4600	ug/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	7440-36-0	ANTIMONY	9/29/98	1.1	mg/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	12674-11-2	AROCLOR-1016	9/29/98	760	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	11104-28-2	AROCLOR-1221	9/29/98	1500	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	11141-16-5	AROCLOR-1232	9/29/98	760	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	53469-21-9	AROCLOR-1242	9/29/98	760	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	12672-29-6	AROCLOR-1248	9/29/98	760	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	11097-69-1	AROCLOR-1254	9/29/98	760	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	11096-82-5	AROCLOR-1260	9/29/98	1800	ug/kg	Y	Y	JN	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	7440-38-2	ARSENIC	9/29/98	31.7	mg/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	7440-39-3	BARIUM	9/29/98	120	mg/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	71-43-2	BENZENE	9/29/98	2	ug/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	56-55-3	BENZO(A)ANTHRACENE	9/29/98	14000	ug/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	50-32-8	BENZO(A)PYRENE	9/29/98	13000	ug/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	205-99-2	BENZO(B)FLUORANTHENE	9/29/98	18000	ug/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	191-24-2	BENZO(G,H,I)PERYLENE	9/29/98	12000	ug/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	207-08-9	BENZO(K)FLUORANTHENE	9/29/98	6400	ug/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	7440-41-7	BERYLLIUM	9/29/98	0.5	mg/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	319-85-7	BETA-BHC	9/29/98	38	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/29/98	15000	ug/Kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	75-27-4	BROMODICHLOROMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	75-25-2	BROMOFORM	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	74-83-9	BROMOMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	85-68-7	BUTYLBENZYL PHTHALATE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	7440-43-9	CADMIUM	9/29/98	0.97	mg/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	7440-70-2	CALCIUM	9/29/98	156000	mg/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	86-74-8	CARBAZOLE	9/29/98	2500	ug/Kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	75-15-0	CARBON DISULFIDE	9/29/98	11	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	56-23-5	CARBON TETRACHLORIDE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	108-90-7	CHLOROBENZENE	9/29/98	11	ug/kg	Y	N	UJ	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	124-48-1	CHLORODIBROMOMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	75-00-3	CHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	67-66-3	CHLOROFORM	9/29/98	4	ug/Kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	74-87-3	CHLOROMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	7440-47-3	CHROMIUM	9/29/98	14.1	mg/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	218-01-9	CHRYSENE	9/29/98	16000	ug/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	156-59-2	CIS-1,2-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	7440-48-4	COBALT	9/29/98	5.7	mg/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	7440-50-8	COPPER	9/29/98	225	mg/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	57-12-5	CYANIDE	9/29/98	0.57	mg/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	335.2
Plant Area	Soil	WA-SB-1	WA9185	319-86-8	DELTA-BHC	9/29/98	38	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	53-70-3	DIBENZO(A,H)ANTHRACENE	9/29/98	11000	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	132-64-9	DIBENZOFURAN	9/29/98	1200	ug/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	60-57-1	DIELDRIN	9/29/98	76	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-1	WA9185	84-66-2	DIETHYL PHTHALATE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	131-11-3	DIMETHYL PHTHALATE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	84-74-2	DI-N-BUTYL PHTHALATE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	117-84-0	DI-N-OCTYL PHTHALATE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	959-98-8	ENDOSULFAN I	9/29/98	38	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	33213-65-9	ENDOSULFAN II	9/29/98	70	ug/Kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	1031-07-8	ENDOSULFAN SULFATE	9/29/98	76	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	72-20-8	ENDRIN	9/29/98	76	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	7421-93-4	ENDRIN ALDEHYDE	9/29/98	76	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	53494-70-5	ENDRIN KETONE	9/29/98	76	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	100-41-4	ETHYLBENZENE	9/29/98	11	ug/kg	Y	N	UJ	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	206-44-0	FLUORANTHENE	9/29/98	27000	ug/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	86-73-7	FLUORENE	9/29/98	2100	ug/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	58-89-9	GAMMA-BHC (LINDANE)	9/29/98	38	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	5566-34-7	GAMMA-CHLORDANE	9/29/98	29	ug/Kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	76-44-8	HEPTACHLOR	9/29/98	38	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	1024-57-3	HEPTACHLOR EPOXIDE	9/29/98	11	ug/Kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	118-74-1	HEXACHLOROBENZENE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	87-68-3	HEXACHLOROBUTADIENE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	67-72-1	HEXACHLOROETHANE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	193-39-5	INDENO(1,2,3-CD)PYRENE	9/29/98	7400	ug/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	7439-89-6	IRON	9/29/98	17900	mg/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	78-59-1	ISOPHORONE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	7439-92-1	LEAD	9/29/98	290	mg/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	7439-95-4	MAGNESIUM	9/29/98	10000	mg/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	7439-96-5	MANGANESE	9/29/98	245	mg/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	7439-97-6	MERCURY	9/29/98	135	mg/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	245.1M
Plant Area	Soil	WA-SB-1	WA9185	72-43-5	METHOXYCHLOR	9/29/98	380	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	75-09-2	METHYLENE CHLORIDE	9/29/98	23	ug/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	91-20-3	NAPHTHALENE	9/29/98	1200	ug/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	7440-02-0	NICKEL	9/29/98	43.3	mg/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	98-95-3	NITROBENZENE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	86-30-6	N-NITROSODIPHENYLAMINE	9/29/98	11000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	87-86-5	PENTACHLOROPHENOL	9/29/98	28000	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	85-01-8	PHENANTHRENE	9/29/98	18000	ug/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	108-95-2	PHENOL	9/29/98	11000	ug/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	7440-09-7	POTASSIUM	9/29/98	457	mg/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	129-00-0	PYRENE	9/29/98	21000	ug/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-1	WA9185	7782-49-2	SELENIUM	9/29/98	1.2	mg/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	7440-22-4	SILVER	9/29/98	1.7	mg/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	7440-23-5	SODIUM	9/29/98	764	mg/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	100-42-5	STYRENE	9/29/98	11	ug/Kg	Y	N	UJ	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	127-18-4	TETRACHLOROETHENE	9/29/98	3	ug/Kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	7440-28-0	THALLIUM	9/29/98	1.7	mg/kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	108-88-3	TOLUENE	9/29/98	1	ug/kg	Y	Y	J	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	TSO	TOTAL SOLIDS	9/29/98	87.7	%	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-SB-1	WA9185	8001-35-2	TOXAPHENE	9/29/98	3800	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-1	WA9185	156-60-5	TRANS-1,2-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	79-01-6	TRICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	7440-62-2	VANADIUM	9/29/98	17.6	mg/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-1	WA9185	75-01-4	VINYL CHLORIDE	9/29/98	11	ug/Kg	Y	N	U	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	1330-20-7	XYLENES, TOTAL	9/29/98	11	ug/kg	Y	N	UJ	1117339.3	921907.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-1	WA9185	7440-66-6	ZINC	9/29/98	142	mg/kg	Y	Y		1117339.3	921907.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9188	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	61.4	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	158	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	70.4	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	4.35	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	610	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	9.98	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	108	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	8.67	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	23.3	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	40321-76-4	1,2,3,7,8-PECDD	9/28/98	3.5	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	57117-41-6	1,2,3,7,8-PECDF	9/28/98	1000	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-10	WA9188	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	38.6	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	57117-31-4	2,3,4,7,8-PECDF	9/28/98	724	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	1746-01-6	2,3,7,8-TCDD	9/28/98	2.81	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	51207-31-9	2,3,7,8-TCDF	9/28/98	3000	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	3268-87-9	OCDD	9/28/98	369	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	39001-02-0	OCDF	9/28/98	623	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	37871-00-4	TOTAL HPCDD	9/28/98	113	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	38998-75-3	TOTAL HPCDF	9/28/98	331	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	34465-46-8	TOTAL HXCDD	9/28/98	75.2	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	55684-94-1	TOTAL HXCDF	9/28/98	1080	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	TOC	TOTAL ORGANIC CARBON	9/28/98	33900	mg/Kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-10	WA9188	36088-22-9	TOTAL PECDD	9/28/98	51.2	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	30402-15-4	TOTAL PECDF	9/28/98	3270	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	TSO	TOTAL SOLIDS	9/28/98	74.4	%	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-10	WA9188	41903-57-5	TOTAL TCDD	9/28/98	49.6	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9188	55722-27-5	Total TCDF	9/28/98	6230	ng/kg	Y	Y		1117870.9	922482.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9187	71-55-6	1,1,1-TRICHLOROETHANE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	79-00-5	1,1,2-TRICHLOROETHANE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	75-34-3	1,1-DICHLOROETHANE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	75-35-4	1,1-DICHLOROETHENE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9189	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	11.9	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	107	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	68.1	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	0.87	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	123	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	4.42	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	28	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	3.81	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	4.47	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	40321-76-4	1,2,3,7,8-PECDD	9/28/98	1.58	ng/kg	Y	Y	*	1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	57117-41-6	1,2,3,7,8-PECDF	9/28/98	43.7	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9187	120-82-1	1,2,4-TRICHLOROBENZENE	9/28/98	61	ug/Kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	95-50-1	1,2-DICHLOROBENZENE	9/28/98	340	ug/Kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	107-06-2	1,2-DICHLOROETHANE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	78-87-5	1,2-DICHLOROPROPANE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	541-73-1	1,3-DICHLOROBENZENE	9/28/98	410	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	106-46-7	1,4-DICHLOROBENZENE	9/28/98	320	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9189	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	12	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	57117-31-4	2,3,4,7,8-PECDF	9/28/98	56.2	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	1746-01-6	2,3,7,8-TCDD	9/28/98	0.82	ng/kg	Y	Y	*	1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	51207-31-9	2,3,7,8-TCDF	9/28/98	133	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9187	95-95-4	2,4,5-TRICHLOROPHENOL	9/28/98	1000	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	88-06-2	2,4,6-TRICHLOROPHENOL	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	120-83-2	2,4-DICHLOROPHENOL	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	105-67-9	2,4-DIMETHYLPHENOL	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	51-28-5	2,4-DINITROPHENOL	9/28/98	1000	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	121-14-2	2,4-DINITROTOLUENE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	606-20-2	2,6-DINITROTOLUENE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	78-93-3	2-BUTANONE	9/28/98	10	ug/Kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	91-58-7	2-CHLORONAPHTHALENE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	95-57-8	2-CHLOROPHENOL	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	591-78-6	2-HEXANONE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	91-57-6	2-METHYLNAPHTHALENE	9/28/98	60	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	95-48-7	2-METHYLPHENOL	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	88-74-4	2-NITROANILINE	9/28/98	1000	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	88-75-5	2-NITROPHENOL	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	91-94-1	3,3'-DICHLOROBENZIDINE	9/28/98	410	ug/Kg	Y	N	R	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	99-09-2	3-NITROANILINE	9/28/98	1000	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	72-54-8	4,4'-DDD	9/28/98	40	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	72-55-9	4,4'-DDE	9/28/98	40	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	50-29-3	4,4'-DDT	9/28/98	40	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/28/98	1000	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	59-50-7	4-CHLORO-3-METHYLPHENOL	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-10	WA9187	106-47-8	4-CHLOROANILINE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	108-10-1	4-METHYL-2-PENTANONE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	106-44-5	4-METHYLPHENOL	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	100-01-6	4-NITROANILINE	9/28/98	1000	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	100-02-7	4-NITROPHENOL	9/28/98	1000	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	83-32-9	ACENAPHTHENE	9/28/98	150	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	208-96-8	ACENAPHTHYLENE	9/28/98	410	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	67-64-1	ACETONE	9/28/98	67	ug/Kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	309-00-2	ALDRIN	9/28/98	20	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	319-84-6	ALPHA-BHC	9/28/98	20	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	5103-71-9	ALPHA-CHLORDANE	9/28/98	20	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	7429-90-5	ALUMINUM	9/28/98	6440	mg/kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	120-12-7	ANTHRACENE	9/28/98	340	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	7440-36-0	ANTIMONY	9/28/98	0.7	mg/kg	Y	N	UJ	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	12674-11-2	AROCLOR-1016	9/28/98	400	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	11104-28-2	AROCLOR-1221	9/28/98	810	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	11141-16-5	AROCLOR-1232	9/28/98	400	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	53469-21-9	AROCLOR-1242	9/28/98	400	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	12672-29-6	AROCLOR-1248	9/28/98	400	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	11097-69-1	AROCLOR-1254	9/28/98	650	ug/kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	11096-82-5	AROCLOR-1260	9/28/98	400	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	7440-38-2	ARSENIC	9/28/98	12.6	mg/kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	7440-39-3	BARIUM	9/28/98	30.4	mg/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	71-43-2	BENZENE	9/28/98	12	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	56-55-3	BENZO(A)ANTHRACENE	9/28/98	1100	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	50-32-8	BENZO(A)PYRENE	9/28/98	1000	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	205-99-2	BENZO(B)FLUORANTHENE	9/28/98	1500	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	191-24-2	BENZO(G,H,I)PERYLENE	9/28/98	1100	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	207-08-9	BENZO(K)FLUORANTHENE	9/28/98	510	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	7440-41-7	BERYLLIUM	9/28/98	0.76	mg/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	319-85-7	BETA-BHC	9/28/98	20	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/28/98	2100	ug/Kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	75-27-4	BROMODICHLOROMETHANE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	75-25-2	BROMOFORM	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	74-83-9	BROMOMETHANE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	85-68-7	BUTYLBENZYL PHTHALATE	9/28/98	410	ug/Kg	Y	N	R	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	7440-43-9	CADMIUM	9/28/98	0.68	mg/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	7440-70-2	CALCIUM	9/28/98	240000	mg/kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	86-74-8	CARBAZOLE	9/28/98	120	ug/Kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	75-15-0	CARBON DISULFIDE	9/28/98	12	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	56-23-5	CARBON TETRACHLORIDE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	108-90-7	CHLOROBENZENE	9/28/98	1	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	124-48-1	CHLORODIBROMOMETHANE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	75-00-3	CHLOROETHANE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	67-66-3	CHLOROFORM	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	74-87-3	CHLOROMETHANE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	7440-47-3	CHROMIUM	9/28/98	18.1	mg/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	218-01-9	CHRYSENE	9/28/98	1200	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	156-59-2	CIS-1,2-DICHLOROETHENE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	7440-48-4	COBALT	9/28/98	5.3	mg/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	7440-50-8	COPPER	9/28/98	19.6	mg/kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	57-12-5	CYANIDE	9/28/98	0.61	mg/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	335.2
Plant Area	Soil	WA-SB-10	WA9187	319-86-8	DELTA-BHC	9/28/98	20	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	53-70-3	DIBENZO(A,H)ANTHRACENE	9/28/98	350	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	132-64-9	DIBENZOFURAN	9/28/98	90	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	60-57-1	DIELDRIN	9/28/98	40	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	84-66-2	DIETHYL PHTHALATE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	131-11-3	DIMETHYL PHTHALATE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	84-74-2	DI-N-BUTYL PHTHALATE	9/28/98	140	ug/Kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	117-84-0	DI-N-OCTYL PHTHALATE	9/28/98	410	ug/Kg	Y	N	R	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	959-98-8	ENDOSULFAN I	9/28/98	20	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	33213-65-9	ENDOSULFAN II	9/28/98	14	ug/Kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	1031-07-8	ENDOSULFAN SULFATE	9/28/98	40	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-10	WA9187	72-20-8	ENDRIN	9/28/98	40	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	7421-93-4	ENDRIN ALDEHYDE	9/28/98	40	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	53494-70-5	ENDRIN KETONE	9/28/98	40	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	100-41-4	ETHYLBENZENE	9/28/98	12	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	206-44-0	FLUORANTHENE	9/28/98	1100	ug/kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	86-73-7	FLUORENE	9/28/98	110	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	58-89-9	GAMMA-BHC (LINDANE)	9/28/98	20	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	5566-34-7	GAMMA-CHLORDANE	9/28/98	20	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	76-44-8	HEPTACHLOR	9/28/98	20	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	1024-57-3	HEPTACHLOR EPOXIDE	9/28/98	20	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	118-74-1	HEXACHLOROBENZENE	9/28/98	130	ug/Kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	87-68-3	HEXACHLOROBUTADIENE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	67-72-1	HEXACHLOROETHANE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	193-39-5	INDENO(1,2,3-CD)PYRENE	9/28/98	940	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	7439-89-6	IRON	9/28/98	8930	mg/kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	78-59-1	ISOPHORONE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	7439-92-1	LEAD	9/28/98	29.8	mg/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	7439-95-4	MAGNESIUM	9/28/98	15700	mg/kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	7439-96-5	MANGANESE	9/28/98	179	mg/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	7439-97-6	MERCURY	9/28/98	5.3	mg/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	245.1M
Plant Area	Soil	WA-SB-10	WA9187	72-43-5	METHOXYCHLOR	9/28/98	200	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	75-09-2	METHYLENE CHLORIDE	9/28/98	12	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	91-20-3	NAPHTHALENE	9/28/98	87	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	7440-02-0	NICKEL	9/28/98	17	mg/kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	98-95-3	NITROBENZENE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	86-30-6	N-NITROSODIPHENYLAMINE	9/28/98	410	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9189	3268-87-9	OCDD	9/28/98	29.8	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	39001-02-0	OCDF	9/28/98	937	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9187	87-86-5	PENTACHLOROPHENOL	9/28/98	1000	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	85-01-8	PHENANTHRENE	9/28/98	1200	ug/kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	108-95-2	PHENOL	9/28/98	140	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	7440-09-7	POTASSIUM	9/28/98	590	mg/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	129-00-0	PYRENE	9/28/98	3000	ug/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-10	WA9187	7782-49-2	SELENIUM	9/28/98	1.2	mg/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	7440-22-4	SILVER	9/28/98	0.27	mg/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	7440-23-5	SODIUM	9/28/98	365	mg/kg	Y	Y	J	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	100-42-5	STYRENE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	127-18-4	TETRACHLOROETHENE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	7440-28-0	THALLIUM	9/28/98	1.8	mg/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	108-88-3	TOLUENE	9/28/98	12	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9189	37871-00-4	TOTAL HPCDD	9/28/98	16	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	38998-75-3	TOTAL HPCDF	9/28/98	274	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	34465-46-8	TOTAL HXCDD	9/28/98	19.8	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	55684-94-1	TOTAL HXCDF	9/28/98	325	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	TOC	TOTAL ORGANIC CARBON	9/28/98	23200	mg/Kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-10	WA9189	36088-22-9	TOTAL PECDD	9/28/98	13.8	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	30402-15-4	TOTAL PECDF	9/28/98	368	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	TSO	TOTAL SOLIDS	9/28/98	62.6	%	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-10	WA9187	TSO	TOTAL SOLIDS	9/28/98	82.4	%	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-SB-10	WA9189	41903-57-5	TOTAL TCDD	9/28/98	13.7	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9189	55722-27-5	Total TCDF	9/28/98	530	ng/kg	Y	Y		1117870.9	922482.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9187	8001-35-2	TOXAPHENE	9/28/98	2000	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-10	WA9187	156-60-5	TRANS-1,2-DICHLOROETHENE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	79-01-6	TRICHLOROETHENE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	7440-62-2	VANADIUM	9/28/98	22.7	mg/kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9187	75-01-4	VINYL CHLORIDE	9/28/98	12	ug/Kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	1330-20-7	XYLENES, TOTAL	9/28/98	12	ug/kg	Y	N	U	1117870.9	922482.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-10	WA9187	7440-66-6	ZINC	9/28/98	725	mg/kg	Y	Y		1117870.9	922482.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-10	WA9190	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	23	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	221	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	130	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	1.67	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	253	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	9.11	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-10	WA9190	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	58.6	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	6.68	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	7.81	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	40321-76-4	1,2,3,7,8-PECDD	9/28/98	2.59	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	57117-41-6	1,2,3,7,8-PECDF	9/28/98	64.6	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	23.2	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	57117-31-4	2,3,4,7,8-PECDF	9/28/98	98.7	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	1746-01-6	2,3,7,8-TCDD	9/28/98	0.97	ng/kg	Y	Y	*	1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	51207-31-9	2,3,7,8-TCDF	9/28/98	140	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	3268-87-9	OCDD	9/28/98	51.7	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	39001-02-0	OCDF	9/28/98	1750	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	37871-00-4	TOTAL HPCDD	9/28/98	31.1	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	38998-75-3	TOTAL HPCDF	9/28/98	546	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	34465-46-8	TOTAL HXCDD	9/28/98	40.9	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	55684-94-1	TOTAL HXCDF	9/28/98	680	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	TOC	TOTAL ORGANIC CARBON	9/28/98	1070	mg/Kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-10	WA9190	36088-22-9	TOTAL PECDD	9/28/98	35	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	30402-15-4	TOTAL PECDF	9/28/98	734	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	TSO	TOTAL SOLIDS	9/28/98	69.9	%	Y	Y	J	1117870.9	922482.3	2	3	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-10	WA9190	41903-57-5	TOTAL TCDD	9/28/98	44.7	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9190	55722-27-5	Total TCDF	9/28/98	949	ng/kg	Y	Y		1117870.9	922482.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	10.7	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	65.5	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	41.2	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	0.7	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	77.8	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	2.94	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	17.9	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	2.61	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	2.88	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	40321-76-4	1,2,3,7,8-PECDD	9/28/98	1.13	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	57117-41-6	1,2,3,7,8-PECDF	9/28/98	26.5	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	7.7	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	57117-31-4	2,3,4,7,8-PECDF	9/28/98	33.4	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	1746-01-6	2,3,7,8-TCDD	9/28/98	1	ng/kg	Y	Y	*	1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	51207-31-9	2,3,7,8-TCDF	9/28/98	71.6	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	3268-87-9	OCDD	9/28/98	37.4	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	39001-02-0	OCDF	9/28/98	487	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	37871-00-4	TOTAL HPCDD	9/28/98	10.7	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	38998-75-3	TOTAL HPCDF	9/28/98	168	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	34465-46-8	TOTAL HXCDD	9/28/98	15.5	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	55684-94-1	TOTAL HXCDF	9/28/98	217	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	TOC	TOTAL ORGANIC CARBON	9/28/98	49100	mg/Kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-10	WA9191	36088-22-9	TOTAL PECDD	9/28/98	12.3	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	30402-15-4	TOTAL PECDF	9/28/98	237	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	TSO	TOTAL SOLIDS	9/28/98	44	%	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-10	WA9191	41903-57-5	TOTAL TCDD	9/28/98	10.1	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9191	55722-27-5	Total TCDF	9/28/98	355	ng/kg	Y	Y		1117870.9	922482.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	20.8	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	204	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	125	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	1.52	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	219	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	7.54	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	51.4	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	6.32	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	8.54	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	40321-76-4	1,2,3,7,8-PECDD	9/28/98	2.29	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	57117-41-6	1,2,3,7,8-PECDF	9/28/98	57.4	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	21.7	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	57117-31-4	2,3,4,7,8-PECDF	9/28/98	88.7	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	1746-01-6	2,3,7,8-TCDD	9/28/98	4.51	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	51207-31-9	2,3,7,8-TCDF	9/28/98	125	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	3268-87-9	OCDD	9/28/98	45.8	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	39001-02-0	OCDF	9/28/98	1530	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	37871-00-4	TOTAL HPCDD	9/28/98	27.5	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	38998-75-3	TOTAL HPCDF	9/28/98	511	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-10	WA9192	34465-46-8	TOTAL HXCDD	9/28/98	36	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	55684-94-1	TOTAL HXCDF	9/28/98	629	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	TOC	TOTAL ORGANIC CARBON	9/28/98	36400	mg/Kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-10	WA9192	36088-22-9	TOTAL PECDD	9/28/98	29.5	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	30402-15-4	TOTAL PECDF	9/28/98	633	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	TSO	TOTAL SOLIDS	9/28/98	35.8	%	Y	Y	J	1117870.9	922482.3	4	5	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-10	WA9192	41903-57-5	TOTAL TCDD	9/28/98	28.1	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-10	WA9192	55722-27-5	Total TCDF	9/28/98	803	ng/kg	Y	Y		1117870.9	922482.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	40.4	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	98.6	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	33.4	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	2.61	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	144	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	8.81	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	3707	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	5.88	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	4.52	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	40321-76-4	1,2,3,7,8-PECDD	9/28/98	4.3	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	57117-41-6	1,2,3,7,8-PECDF	9/28/98	150	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	19.5	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	57117-31-4	2,3,4,7,8-PECDF	9/28/98	178	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	1746-01-6	2,3,7,8-TCDD	9/28/98	4.38	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	51207-31-9	2,3,7,8-TCDF	9/28/98	453	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	3268-87-9	OCDD	9/28/98	195	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	39001-02-0	OCDF	9/28/98	390	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	37871-00-4	TOTAL HPCDD	9/28/98	72.4	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	38998-75-3	TOTAL HPCDF	9/28/98	187	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	34465-46-8	TOTAL HXCDD	9/28/98	56	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	55684-94-1	TOTAL HXCDF	9/28/98	456	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	TOC	TOTAL ORGANIC CARBON	9/28/98	43500	mg/Kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-11	WA9194	36088-22-9	TOTAL PECDD	9/28/98	40.7	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	30402-15-4	TOTAL PECDF	9/28/98	1010	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	TSO	TOTAL SOLIDS	9/28/98	95.1	%	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-11	WA9194	41903-57-5	TOTAL TCDD	9/28/98	47.9	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9194	55722-27-5	Total TCDF	9/28/98	1630	ng/kg	Y	Y		1117783.7	922682.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9193	71-55-6	1,1,1-TRICHLOROETHANE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	79-00-5	1,1,2-TRICHLOROETHANE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	75-34-3	1,1-DICHLOROETHANE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	75-35-4	1,1-DICHLOROETHENE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9195	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	19.4	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	48.2	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	20.8	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	1.26	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	74.7	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	3.23	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	17.5	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	2.64	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	2.1	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	40321-76-4	1,2,3,7,8-PECDD	9/28/98	2.48	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	57117-41-6	1,2,3,7,8-PECDF	9/28/98	80.7	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9193	120-82-1	1,2,4-TRICHLOROBENZENE	9/28/98	7500	ug/Kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	95-50-1	1,2-DICHLOROBENZENE	9/28/98	57000	ug/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	107-06-2	1,2-DICHLOROETHANE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	78-87-5	1,2-DICHLOROPROPANE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	541-73-1	1,3-DICHLOROBENZENE	9/28/98	31000	ug/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	106-46-7	1,4-DICHLOROBENZENE	9/28/98	2600000	ug/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9195	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	7.69	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	57117-31-4	2,3,4,7,8-PECDF	9/28/98	87.7	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	1746-01-6	2,3,7,8-TCDD	9/28/98	3.81	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	51207-31-9	2,3,7,8-TCDF	9/28/98	211	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9193	95-95-4	2,4,5-TRICHLOROPHENOL	9/28/98	30000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	88-06-2	2,4,6-TRICHLOROPHENOL	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	120-83-2	2,4-DICHLOROPHENOL	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	105-67-9	2,4-DIMETHYLPHENOL	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-11	WA9193	51-28-5	2,4-DINITROPHENOL	9/28/98	30000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	121-14-2	2,4-DINITROTOLUENE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	606-20-2	2,6-DINITROTOLUENE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	78-93-3	2-BUTANONE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	91-58-7	2-CHLORONAPHTHALENE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	95-57-8	2-CHLOROPHENOL	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	591-78-6	2-HEXANONE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	91-57-6	2-METHYLNAPHTHALENE	9/28/98	12000	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	95-48-7	2-METHYLPHENOL	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	88-74-4	2-NITROANILINE	9/28/98	30000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	88-75-5	2-NITROPHENOL	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	91-94-1	3,3'-DICHLOROBENZIDINE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	99-09-2	3-NITROANILINE	9/28/98	30000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	72-54-8	4,4'-DDD	9/28/98	860	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	72-55-9	4,4'-DDE	9/28/98	63	ug/Kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	50-29-3	4,4'-DDT	9/28/98	860	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/28/98	30000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	59-50-7	4-CHLORO-3-METHYLPHENOL	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	106-47-8	4-CHLOROANILINE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	108-10-1	4-METHYL-2-PENTANONE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	106-44-5	4-METHYLPHENOL	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	100-01-6	4-NITROANILINE	9/28/98	30000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	100-02-7	4-NITROPHENOL	9/28/98	30000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	83-32-9	ACENAPHTHENE	9/28/98	12000	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	208-96-8	ACENAPHTHYLENE	9/28/98	12000	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	67-64-1	ACETONE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	309-00-2	ALDRIN	9/28/98	430	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	319-84-6	ALPHA-BHC	9/28/98	430	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	5103-71-9	ALPHA-CHLORDANE	9/28/98	430	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	7429-90-5	ALUMINUM	9/28/98	10400	mg/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	120-12-7	ANTHRACENE	9/28/98	12000	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	7440-36-0	ANTIMONY	9/28/98	0.75	mg/kg	Y	N	UJ	1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	12674-11-2	AROCLOR-1016	9/28/98	8600	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	11104-28-2	AROCLOR-1221	9/28/98	17000	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	11141-16-5	AROCLOR-1232	9/28/98	8600	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	53469-21-9	AROCLOR-1242	9/28/98	8600	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	12672-29-6	AROCLOR-1248	9/28/98	8600	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	11097-69-1	AROCLOR-1254	9/28/98	5300	ug/kg	Y	Y	JN	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	11096-82-5	AROCLOR-1260	9/28/98	8600	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	7440-38-2	ARSENIC	9/28/98	16.6	mg/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	7440-39-3	BARIUM	9/28/98	108	mg/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	71-43-2	BENZENE	9/28/98	2	ug/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	56-55-3	BENZO(A)ANTHRACENE	9/28/98	4000	ug/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	50-32-8	BENZO(A)PYRENE	9/28/98	4100	ug/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	205-99-2	BENZO(B)FLUORANTHENE	9/28/98	8500	ug/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	191-24-2	BENZO(G,H,I)PERYLENE	9/28/98	3900	ug/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	207-08-9	BENZO(K)FLUORANTHENE	9/28/98	3400	ug/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	7440-41-7	BERYLLIUM	9/28/98	1.4	mg/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	319-85-7	BETA-BHC	9/28/98	430	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	75-27-4	BROMODICHLOROMETHANE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	75-25-2	BROMOFORM	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	74-83-9	BROMOMETHANE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	85-68-7	BUTYLBENZYL PHTHALATE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	7440-43-9	CADMIUM	9/28/98	0.57	mg/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	7440-70-2	CALCIUM	9/28/98	205000	mg/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	86-74-8	CARBAZOLE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	75-15-0	CARBON DISULFIDE	9/28/98	13	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	56-23-5	CARBON TETRACHLORIDE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	108-90-7	CHLOROBENZENE	9/28/98	17	ug/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	124-48-1	CHLORODIBROMOMETHANE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	75-00-3	CHLOROETHANE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	67-66-3	CHLOROFORM	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-11	WA9193	74-87-3	CHLOROMETHANE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	7440-47-3	CHROMIUM	9/28/98	17.3	mg/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	218-01-9	CHRYSENE	9/28/98	5700	ug/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	156-59-2	CIS-1,2-DICHLOROETHENE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	7440-48-4	COBALT	9/28/98	6	mg/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	7440-50-8	COPPER	9/28/98	44.6	mg/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	57-12-5	CYANIDE	9/28/98	0.64	mg/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	335.2
Plant Area	Soil	WA-SB-11	WA9193	319-86-8	DELTA-BHC	9/28/98	430	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	53-70-3	DIBENZO(A,H)ANTHRACENE	9/28/98	12000	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	132-64-9	DIBENZOFURAN	9/28/98	12000	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	60-57-1	DIELDRIN	9/28/98	860	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	84-66-2	DIETHYL PHTHALATE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	131-11-3	DIMETHYL PHTHALATE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	84-74-2	DI-N-BUTYL PHTHALATE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	117-84-0	DI-N-OCTYL PHTHALATE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	959-98-8	ENDOSULFAN I	9/28/98	430	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	33213-65-9	ENDOSULFAN II	9/28/98	860	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	1031-07-8	ENDOSULFAN SULFATE	9/28/98	860	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	72-20-8	ENDRIN	9/28/98	860	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	7421-93-4	ENDRIN ALDEHYDE	9/28/98	860	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	53494-70-5	ENDRIN KETONE	9/28/98	860	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	100-41-4	ETHYLBENZENE	9/28/98	13	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	206-44-0	FLUORANTHENE	9/28/98	5800	ug/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	86-73-7	FLUORENE	9/28/98	12000	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	58-89-9	GAMMA-BHC (LINDANE)	9/28/98	430	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	5566-34-7	GAMMA-CHLORDANE	9/28/98	430	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	76-44-8	HEPTACHLOR	9/28/98	430	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	1024-57-3	HEPTACHLOR EPOXIDE	9/28/98	430	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	118-74-1	HEXACHLOROBENZENE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	87-68-3	HEXACHLOROBUTADIENE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	67-72-1	HEXACHLOROETHANE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	193-39-5	INDENO(1,2,3-CD)PYRENE	9/28/98	3200	ug/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	7439-89-6	IRON	9/28/98	13000	mg/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	78-59-1	ISOPHORONE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	7439-92-1	LEAD	9/28/98	340	mg/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	7439-95-4	MAGNESIUM	9/28/98	12700	mg/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	7439-96-5	MANGANESE	9/28/98	195	mg/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	7439-97-6	MERCURY	9/28/98	4.4	mg/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	245.1M
Plant Area	Soil	WA-SB-11	WA9193	72-43-5	METHOXYCHLOR	9/28/98	4300	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	75-09-2	METHYLENE CHLORIDE	9/28/98	13	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	91-20-3	NAPHTHALENE	9/28/98	12000	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	7440-02-0	NICKEL	9/28/98	31.7	mg/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	98-95-3	NITROBENZENE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	86-30-6	N-NITROSODIPHENYLAMINE	9/28/98	12000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9195	3268-87-9	OCDD	9/28/98	107	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	39001-02-0	OCDF	9/28/98	269	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9193	87-86-5	PENTACHLOROPHENOL	9/28/98	30000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	85-01-8	PHENANTHRENE	9/28/98	12000	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	108-95-2	PHENOL	9/28/98	12000	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	7440-09-7	POTASSIUM	9/28/98	1560	mg/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	129-00-0	PYRENE	9/28/98	8800	ug/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-11	WA9193	7782-49-2	SELENIUM	9/28/98	1.2	mg/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	7440-22-4	SILVER	9/28/98	0.28	mg/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	7440-23-5	SODIUM	9/28/98	775	mg/kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	100-42-5	STYRENE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	127-18-4	TETRACHLOROETHENE	9/28/98	4	ug/Kg	Y	Y	J	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	7440-28-0	THALLIUM	9/28/98	1.9	mg/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	108-88-3	TOLUENE	9/28/98	13	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9195	37871-00-4	TOTAL HPCDD	9/28/98	33.7	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	38998-75-3	TOTAL HPCDF	9/28/98	100	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	34465-46-8	TOTAL HXCDD	9/28/98	23.8	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	55684-94-1	TOTAL HXCDF	9/28/98	202	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	TOC	TOTAL ORGANIC CARBON	9/28/98	71100	mg/Kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-11	WA9195	36088-22-9	TOTAL PECDD	9/28/98	23.6	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-11	WA9195	30402-15-4	TOTAL PECDF	9/28/98	467	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	TSO	TOTAL SOLIDS	9/28/98	75	%	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-11	WA9193	TSO	TOTAL SOLIDS	9/28/98	77.6	%	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-SB-11	WA9195	41903-57-5	TOTAL TCDD	9/28/98	49	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9195	55722-27-5	Total TCDF	9/28/98	753	ng/kg	Y	Y		1117783.7	922682.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9193	8001-35-2	TOXAPHENE	9/28/98	43000	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-11	WA9193	156-60-5	TRANS-1,2-DICHLOROETHENE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	79-01-6	TRICHLOROETHENE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	7440-62-2	VANADIUM	9/28/98	24	mg/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9193	75-01-4	VINYL CHLORIDE	9/28/98	13	ug/Kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	1330-20-7	XYLENES, TOTAL	9/28/98	13	ug/kg	Y	N	U	1117783.7	922682.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-11	WA9193	7440-66-6	ZINC	9/28/98	144	mg/kg	Y	Y		1117783.7	922682.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-11	WA9196	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	0.43	ng/kg	Y	Y	*	1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	0.77	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	0.027	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	0.1	ng/kg	Y	N	U	1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	1.26	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	0.1	ng/kg	Y	N	U	1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	0.38	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	0.12	ng/kg	Y	Y	*	1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	0.1	ng/kg	Y	N	U	1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	40321-76-4	1,2,3,7,8-PECDD	9/28/98	0.1	ng/kg	Y	N	U	1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	57117-41-6	1,2,3,7,8-PECDF	9/28/98	1.32	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	0.18	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	57117-31-4	2,3,4,7,8-PECDF	9/28/98	1.41	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	1746-01-6	2,3,7,8-TCDD	9/28/98	0.46	ng/kg	Y	Y	*	1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	51207-31-9	2,3,7,8-TCDF	9/28/98	5.36	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	3268-87-9	OCDD	9/28/98	1.45	ng/kg	Y	Y	*	1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	39001-02-0	OCDF	9/28/98	2.4	ng/kg	Y	Y	*	1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	37871-00-4	TOTAL HPCDD	9/28/98	0.1	ng/kg	Y	N	U	1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	38998-75-3	TOTAL HPCDF	9/28/98	1.45	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	34465-46-8	TOTAL HXCDD	9/28/98	0.85	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	55684-94-1	TOTAL HXCDF	9/28/98	2.96	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	TOC	TOTAL ORGANIC CARBON	9/28/98	57100	mg/Kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-11	WA9196	36088-22-9	TOTAL PECDD	9/28/98	0.18	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	30402-15-4	TOTAL PECDF	9/28/98	7.9	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	TSO	TOTAL SOLIDS	9/28/98	75.3	%	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-11	WA9196	41903-57-5	TOTAL TCDD	9/28/98	1.92	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9196	55722-27-5	Total TCDF	9/28/98	18.3	ng/kg	Y	Y		1117783.7	922682.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	4.4	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	7.31	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	2.25	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	0.22	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	8.6	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	0.57	ng/kg	Y	Y	*	1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	2.32	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	0.51	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	0.23	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	40321-76-4	1,2,3,7,8-PECDD	9/28/98	0.32	ng/kg	Y	Y	*	1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	57117-41-6	1,2,3,7,8-PECDF	9/28/98	8.82	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	1.25	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	57117-31-4	2,3,4,7,8-PECDF	9/28/98	9.44	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	1746-01-6	2,3,7,8-TCDD	9/28/98	1	ng/kg	Y	Y	*	1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	51207-31-9	2,3,7,8-TCDF	9/28/98	24.6	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	3268-87-9	OCDD	9/28/98	28.1	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	39001-02-0	OCDF	9/28/98	25.2	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	37871-00-4	TOTAL HPCDD	9/28/98	8.31	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	38998-75-3	TOTAL HPCDF	9/28/98	13.3	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	34465-46-8	TOTAL HXCDD	9/28/98	4.02	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	55684-94-1	TOTAL HXCDF	9/28/98	25.5	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	TOC	TOTAL ORGANIC CARBON	9/28/98	60900	mg/Kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-11	WA9197	36088-22-9	TOTAL PECDD	9/28/98	3.09	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	30402-15-4	TOTAL PECDF	9/28/98	53.8	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	TSO	TOTAL SOLIDS	9/28/98	82.2	%	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-11	WA9197	41903-57-5	TOTAL TCDD	9/28/98	5.18	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-11	WA9197	55722-27-5	Total TCDF	9/28/98	94.5	ng/kg	Y	Y		1117783.7	922682.3	3	4	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-11	WA9198	TOC	TOTAL ORGANIC CARBON	9/28/98	77800	mg/Kg	Y	Y		1117783.7	922682.3	4	5	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-11	WA9198	TSO	TOTAL SOLIDS	9/28/98	93.4	%	Y	Y		1117783.7	922682.3	4	5	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-12	WA9200	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	77.2	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	53.5	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	15.8	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	4.54	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	45.6	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	13.5	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	9.64	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	7.8	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	1.57	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	40321-76-4	1,2,3,7,8-PECDD	9/28/98	8.74	ng/kg	Y	Y	*	1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	57117-41-6	1,2,3,7,8-PECDF	9/28/98	17.2	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	3.57	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	57117-31-4	2,3,4,7,8-PECDF	9/28/98	89.9	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	1746-01-6	2,3,7,8-TCDD	9/28/98	4.8	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	51207-31-9	2,3,7,8-TCDF	9/28/98	68.6	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	3268-87-9	OCDD	9/28/98	348	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	39001-02-0	OCDF	9/28/98	205	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	37871-00-4	TOTAL HPCDD	9/28/98	132	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	38998-75-3	TOTAL HPCDF	9/28/98	91.6	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	34465-46-8	TOTAL HXCDD	9/28/98	79.4	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	55684-94-1	TOTAL HXCDF	9/28/98	113	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	TOC	TOTAL ORGANIC CARBON	9/28/98	33700	mg/Kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-12	WA9200	36088-22-9	TOTAL PECDD	9/28/98	43.8	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	30402-15-4	TOTAL PECDF	9/28/98	297	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	TSO	TOTAL SOLIDS	9/28/98	93.4	%	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-12	WA9200	41903-57-5	TOTAL TCDD	9/28/98	48.8	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9200	55722-27-5	Total TCDF	9/28/98	593	ng/kg	Y	Y		1117579.7	922729.3	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9199	71-55-6	1,1,1-TRICHLOROETHANE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	79-00-5	1,1,2-TRICHLOROETHANE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	75-34-3	1,1-DICHLOROETHANE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	75-35-4	1,1-DICHLOROETHENE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9201	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	48.2	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	151	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	67.2	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	4.5	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	137	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	12.3	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	27.5	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	7.64	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	3.28	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	40321-76-4	1,2,3,7,8-PECDD	9/28/98	8.59	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	57117-41-6	1,2,3,7,8-PECDF	9/28/98	39.4	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9199	120-82-1	1,2,4-TRICHLOROBENZENE	9/28/98	13000	ug/Kg	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	95-50-1	1,2-DICHLOROBENZENE	9/28/98	420000	ug/kg	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	107-06-2	1,2-DICHLOROETHANE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	78-87-5	1,2-DICHLOROPROPANE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	541-73-1	1,3-DICHLOROBENZENE	9/28/98	7900	ug/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	106-46-7	1,4-DICHLOROBENZENE	9/28/98	510000	ug/kg	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9201	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	8.49	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	57117-31-4	2,3,4,7,8-PECDF	9/28/98	140	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	1746-01-6	2,3,7,8-TCDD	9/28/98	2.18	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	51207-31-9	2,3,7,8-TCDF	9/28/98	158	ng/kg	Y	Y		1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9199	95-95-4	2,4,5-TRICHLOROPHENOL	9/28/98	23000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	88-06-2	2,4,6-TRICHLOROPHENOL	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	120-83-2	2,4-DICHLOROPHENOL	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	105-67-9	2,4-DIMETHYLPHENOL	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	51-28-5	2,4-DINITROPHENOL	9/28/98	23000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	121-14-2	2,4-DINITROTOLUENE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	606-20-2	2,6-DINITROTOLUENE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	78-93-3	2-BUTANONE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	91-58-7	2-CHLORONAPHTHALENE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	95-57-8	2-CHLOROPHENOL	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-12	WA9199	591-78-6	2-HEXANONE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	91-57-6	2-METHYLNAPHTHALENE	9/28/98	9100	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	95-48-7	2-METHYLPHENOL	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	88-74-4	2-NITROANILINE	9/28/98	23000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	88-75-5	2-NITROPHENOL	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	91-94-1	3,3'-DICHLOROBENZIDINE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	99-09-2	3-NITROANILINE	9/28/98	23000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	72-54-8	4,4'-DDD	9/28/98	350	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	72-55-9	4,4'-DDE	9/28/98	350	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	50-29-3	4,4'-DDT	9/28/98	350	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/28/98	23000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	59-50-7	4-CHLORO-3-METHYLPHENOL	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	106-47-8	4-CHLOROANILINE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	108-10-1	4-METHYL-2-PENTANONE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	106-44-5	4-METHYLPHENOL	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	100-01-6	4-NITROANILINE	9/28/98	23000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	100-02-7	4-NITROPHENOL	9/28/98	23000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	83-32-9	ACENAPHTHENE	9/28/98	9100	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	208-96-8	ACENAPHTHYLENE	9/28/98	9100	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	67-64-1	ACETONE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	309-00-2	ALDRIN	9/28/98	180	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	319-84-6	ALPHA-BHC	9/28/98	180	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	5103-71-9	ALPHA-CHLORDANE	9/28/98	180	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	7429-90-5	ALUMINUM	9/28/98	1350	mg/kg	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	120-12-7	ANTHRACENE	9/28/98	9100	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	7440-36-0	ANTIMONY	9/28/98	0.61	mg/kg	Y	N	UJ	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	12674-11-2	AROCLOR-1016	9/28/98	3500	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	11104-28-2	AROCLOR-1221	9/28/98	7000	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	11141-16-5	AROCLOR-1232	9/28/98	3500	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	53469-21-9	AROCLOR-1242	9/28/98	3500	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	12672-29-6	AROCLOR-1248	9/28/98	3500	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	11097-69-1	AROCLOR-1254	9/28/98	3100	ug/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	11096-82-5	AROCLOR-1260	9/28/98	3500	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	7440-38-2	ARSENIC	9/28/98	6.5	mg/kg	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	7440-39-3	BARIUM	9/28/98	22.4	mg/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	71-43-2	BENZENE	9/28/98	13000	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	56-55-3	BENZO(A)ANTHRACENE	9/28/98	1100	ug/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	50-32-8	BENZO(A)PYRENE	9/28/98	9100	ug/kg	Y	N	UJ	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	205-99-2	BENZO(B)FLUORANTHENE	9/28/98	1900	ug/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	191-24-2	BENZO(G,H,I)PERYLENE	9/28/98	940	ug/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	207-08-9	BENZO(K)FLUORANTHENE	9/28/98	9100	ug/kg	Y	N	UJ	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	7440-41-7	BERYLLIUM	9/28/98	1.1	mg/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	319-85-7	BETA-BHC	9/28/98	180	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	75-27-4	BROMODICHLOROMETHANE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	75-25-2	BROMOFORM	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	74-83-9	BROMOMETHANE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	85-68-7	BUTYLBENZYL PHTHALATE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	7440-43-9	CADMIUM	9/28/98	0.9	mg/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	7440-70-2	CALCIUM	9/28/98	283000	mg/kg	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	86-74-8	CARBAZOLE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	75-15-0	CARBON DISULFIDE	9/28/98	13000	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	56-23-5	CARBON TETRACHLORIDE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	108-90-7	CHLOROBENZENE	9/28/98	150000	ug/kg	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	124-48-1	CHLORODIBROMOMETHANE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	75-00-3	CHLOROETHANE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	67-66-3	CHLOROFORM	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	74-87-3	CHLOROMETHANE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	7440-47-3	CHROMIUM	9/28/98	12.4	mg/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	218-01-9	CHRYSENE	9/28/98	1400	ug/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	156-59-2	CIS-1,2-DICHLOROETHENE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	7440-48-4	COBALT	9/28/98	4	mg/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-12	WA9199	7440-50-8	COPPER	9/28/98	87.5	mg/kg	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	57-12-5	CYANIDE	9/28/98	0.53	mg/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	335.2
Plant Area	Soil	WA-SB-12	WA9199	319-86-8	DELTA-BHC	9/28/98	180	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	53-70-3	DIBENZO(A,H)ANTHRACENE	9/28/98	9100	ug/kg	Y	N	UJ	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	132-64-9	DIBENZOFURAN	9/28/98	9100	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	60-57-1	DIELDRIN	9/28/98	350	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	84-66-2	DIETHYL PHTHALATE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	131-11-3	DIMETHYL PHTHALATE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	84-74-2	DI-N-BUTYL PHTHALATE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	117-84-0	DI-N-OCTYL PHTHALATE	9/28/98	9100	ug/Kg	Y	N	UJ	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	959-98-8	ENDOSULFAN I	9/28/98	180	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	33213-65-9	ENDOSULFAN II	9/28/98	350	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	1031-07-8	ENDOSULFAN SULFATE	9/28/98	350	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	72-20-8	ENDRIN	9/28/98	350	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	7421-93-4	ENDRIN ALDEHYDE	9/28/98	350	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	53494-70-5	ENDRIN KETONE	9/28/98	350	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	100-41-4	ETHYLBENZENE	9/28/98	13000	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	206-44-0	FLUORANTHENE	9/28/98	2100	ug/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	86-73-7	FLUORENE	9/28/98	9100	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	58-89-9	GAMMA-BHC (LINDANE)	9/28/98	180	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	5566-34-7	GAMMA-CHLORDANE	9/28/98	180	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	76-44-8	HEPTACHLOR	9/28/98	180	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	1024-57-3	HEPTACHLOR EPOXIDE	9/28/98	180	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	118-74-1	HEXACHLOROBENZENE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	87-68-3	HEXACHLOROBUTADIENE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	67-72-1	HEXACHLOROETHANE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	193-39-5	INDENO(1,2,3-CD)PYRENE	9/28/98	9100	ug/kg	Y	N	UJ	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	7439-89-6	IRON	9/28/98	14700	mg/kg	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	78-59-1	ISOPHORONE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	7439-92-1	LEAD	9/28/98	121	mg/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	7439-95-4	MAGNESIUM	9/28/98	10900	mg/kg	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	7439-96-5	MANGANESE	9/28/98	226	mg/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	7439-97-6	MERCURY	9/28/98	6.7	mg/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	245.1M
Plant Area	Soil	WA-SB-12	WA9199	72-43-5	METHOXYCHLOR	9/28/98	1800	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-12	WA9199	75-09-2	METHYLENE CHLORIDE	9/28/98	13000	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	91-20-3	NAPHTHALENE	9/28/98	9100	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	7440-02-0	NICKEL	9/28/98	45.6	mg/kg	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	98-95-3	NITROBENZENE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	86-30-6	N-NITROSODIPHENYLAMINE	9/28/98	9100	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9201	3268-87-9	OCDD	9/28/98	180	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	39001-02-0	OCDF	9/28/98	626	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9199	87-86-5	PENTACHLOROPHENOL	9/28/98	23000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	85-01-8	PHENANTHRENE	9/28/98	1200	ug/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	108-95-2	PHENOL	9/28/98	9100	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	7440-09-7	POTASSIUM	9/28/98	113	mg/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	129-00-0	PYRENE	9/28/98	2000	ug/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-12	WA9199	7782-49-2	SELENIUM	9/28/98	1	mg/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	7440-22-4	SILVER	9/28/98	0.23	mg/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	7440-23-5	SODIUM	9/28/98	265	mg/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	100-42-5	STYRENE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	127-18-4	TETRACHLOROETHENE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	7440-28-0	THALLIUM	9/28/98	1.6	mg/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	108-88-3	TOLUENE	9/28/98	13000	ug/kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9201	37871-00-4	TOTAL HPCDD	9/28/98	80.6	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	38998-75-3	TOTAL HPCDF	9/28/98	294	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	34465-46-8	TOTAL HXCDD	9/28/98	76.8	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	55684-94-1	TOTAL HXCDF	9/28/98	292	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	TOC	TOTAL ORGANIC CARBON	9/28/98	59200	mg/Kg	Y	Y		1117579.7	922729.3	1	2	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-12	WA9201	36088-22-9	TOTAL PECDD	9/28/98	52.1	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	30402-15-4	TOTAL PECDF	9/28/98	473	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	TSO	TOTAL SOLIDS	9/28/98	93.8	%	Y	Y		1117579.7	922729.3	1	2	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-12	WA9199	TSO	TOTAL SOLIDS	9/28/98	94.6	%	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-SB-12	WA9201	41903-57-5	TOTAL TCDD	9/28/98	31.6	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9201	55722-27-5	Total TCDF	9/28/98	827	ng/kg	Y	Y	J	1117579.7	922729.3	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9199	8001-35-2	TOXAPHENE	9/28/98	18000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	PCB

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-12	WA9199	156-60-5	TRANS-1,2-DICHLOROETHENE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	79-01-6	TRICHLOROETHENE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	7440-62-2	VANADIUM	9/28/98	5.7	mg/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9199	75-01-4	VINYL CHLORIDE	9/28/98	13000	ug/Kg	Y	N	U	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	1330-20-7	XYLENES, TOTAL	9/28/98	1700	ug/kg	Y	Y	J	1117579.7	922729.3	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-12	WA9199	7440-66-6	ZINC	9/28/98	367	mg/kg	Y	Y		1117579.7	922729.3	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-12	WA9202	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	33.1	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	75.8	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	52.7	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	2.25	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	88.1	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	7.02	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	17.3	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	5.15	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	3.08	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	40321-76-4	1,2,3,7,8-PECDD	9/28/98	4.72	ng/kg	Y	Y	*	1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	57117-41-6	1,2,3,7,8-PECDF	9/28/98	31.8	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	6.09	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	57117-31-4	2,3,4,7,8-PECDF	9/28/98	115	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	1746-01-6	2,3,7,8-TCDD	9/28/98	2.23	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	51207-31-9	2,3,7,8-TCDF	9/28/98	120	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	3268-87-9	OCDD	9/28/98	126	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	39001-02-0	OCDF	9/28/98	570	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	37871-00-4	TOTAL HPCDD	9/28/98	61.8	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	38998-75-3	TOTAL HPCDF	9/28/98	182	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	34465-46-8	TOTAL HXCDD	9/28/98	49.9	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	55684-94-1	TOTAL HXCDF	9/28/98	179	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	TOC	TOTAL ORGANIC CARBON	9/28/98	62000	mg/Kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-12	WA9202	36088-22-9	TOTAL PECDD	9/28/98	30.2	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	30402-15-4	TOTAL PECDF	9/28/98	391	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	TSO	TOTAL SOLIDS	9/28/98	84.2	%	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-12	WA9202	41903-57-5	TOTAL TCDD	9/28/98	31.2	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9202	55722-27-5	Total TCDF	9/28/98	769	ng/kg	Y	Y		1117579.7	922729.3	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	12.7	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	18.2	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	12.8	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	1.67	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	30.1	ng/kg	Y	N	R	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	4.04	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	5.09	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	2.84	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	1.33	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	40321-76-4	1,2,3,7,8-PECDD	9/28/98	2.43	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	57117-41-6	1,2,3,7,8-PECDF	9/28/98	11.6	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	2.13	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	57117-31-4	2,3,4,7,8-PECDF	9/28/98	45.8	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	1746-01-6	2,3,7,8-TCDD	9/28/98	0.76	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	51207-31-9	2,3,7,8-TCDF	9/28/98	61.5	ng/kg	Y	Y		1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	3268-87-9	OCDD	9/28/98	28.8	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	39001-02-0	OCDF	9/28/98	116	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	37871-00-4	TOTAL HPCDD	9/28/98	25.8	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	38998-75-3	TOTAL HPCDF	9/28/98	43.6	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	34465-46-8	TOTAL HXCDD	9/28/98	85.8	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	55684-94-1	TOTAL HXCDF	9/28/98	63.6	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	TOC	TOTAL ORGANIC CARBON	9/28/98	70400	mg/Kg	Y	Y		1117579.7	922729.3	3	4	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-12	WA9203	36088-22-9	TOTAL PECDD	9/28/98	86.2	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	30402-15-4	TOTAL PECDF	9/28/98	160	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	TSO	TOTAL SOLIDS	9/28/98	80.7	%	Y	Y		1117579.7	922729.3	3	4	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-12	WA9203	41903-57-5	TOTAL TCDD	9/28/98	70.9	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9203	55722-27-5	Total TCDF	9/28/98	424	ng/kg	Y	Y	J	1117579.7	922729.3	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	6.2	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	12.5	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	8.04	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	0.93	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	25.6	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	1.63	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-12	WA9204	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	3.72	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	1.31	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	1.03	ng/kg	Y	N	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	40321-76-4	1,2,3,7,8-PECDD	9/28/98	1.34	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	57117-41-6	1,2,3,7,8-PECDF	9/28/98	8.23	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	1.03	ng/kg	Y	N	UJ	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	57117-31-4	2,3,4,7,8-PECDF	9/28/98	55.2	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	1746-01-6	2,3,7,8-TCDD	9/28/98	0.34	ng/kg	Y	N	UJ	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	51207-31-9	2,3,7,8-TCDF	9/28/98	50.4	ng/kg	Y	Y		1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	3268-87-9	OCDD	9/28/98	19.3	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	39001-02-0	OCDF	9/28/98	59.4	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	37871-00-4	TOTAL HPCDD	9/28/98	5.14	ng/kg	Y	N	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	38998-75-3	TOTAL HPCDF	9/28/98	17	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	34465-46-8	TOTAL HXCDD	9/28/98	39.8	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	55684-94-1	TOTAL HXCDF	9/28/98	41.4	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	TOC	TOTAL ORGANIC CARBON	9/28/98	40400	mg/Kg	Y	Y		1117579.7	922729.3	4	5	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-12	WA9204	36088-22-9	TOTAL PECDD	9/28/98	53.1	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	30402-15-4	TOTAL PECDF	9/28/98	172	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	TSO	TOTAL SOLIDS	9/28/98	65.1	%	Y	Y		1117579.7	922729.3	4	5	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-12	WA9204	41903-57-5	TOTAL TCDD	9/28/98	58.9	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-12	WA9204	55722-27-5	Total TCDF	9/28/98	451	ng/kg	Y	Y	J	1117579.7	922729.3	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	19.3	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	92.3	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	58.4	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	1.52	ng/kg	Y	Y	*	1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	109	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	6.61	ng/kg	Y	Y	*	1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	26.1	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	5.05	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	2.53	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	40321-76-4	1,2,3,7,8-PECDD	9/29/98	2.86	ng/kg	Y	Y	*	1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	57117-41-6	1,2,3,7,8-PECDF	9/29/98	46	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	9.86	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	57117-31-4	2,3,4,7,8-PECDF	9/29/98	47.3	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	1746-01-6	2,3,7,8-TCDD	9/29/98	1.17	ng/kg	Y	Y	*	1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	51207-31-9	2,3,7,8-TCDF	9/29/98	143	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	3268-87-9	OCDD	9/29/98	60.5	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	39001-02-0	OCDF	9/29/98	734	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	37871-00-4	TOTAL HPCDD	9/29/98	29.8	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	38998-75-3	TOTAL HPCDF	9/29/98	236	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	34465-46-8	TOTAL HXCDD	9/29/98	24.9	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	55684-94-1	TOTAL HXCDF	9/29/98	297	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	TOC	TOTAL ORGANIC CARBON	9/29/98	18000	mg/Kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-2	WA9206	36088-22-9	TOTAL PECDD	9/29/98	18.2	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	30402-15-4	TOTAL PECDF	9/29/98	299	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	TSO	TOTAL SOLIDS	9/29/98	93	%	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-2	WA9206	41903-57-5	TOTAL TCDD	9/29/98	12.1	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9206	55722-27-5	Total TCDF	9/29/98	480	ng/kg	Y	Y		1117533.8	921985.9	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-2	WA9205	71-55-6	1,1,1-TRICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/29/98	11	ug/Kg	Y	N	UJ	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	79-00-5	1,1,2-TRICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	75-34-3	1,1-DICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	75-35-4	1,1-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	120-82-1	1,2,4-TRICHLOROBENZENE	9/29/98	67	ug/Kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	95-50-1	1,2-DICHLOROBENZENE	9/29/98	1200	ug/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	107-06-2	1,2-DICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	78-87-5	1,2-DICHLOROPROPANE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	541-73-1	1,3-DICHLOROBENZENE	9/29/98	120	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	106-46-7	1,4-DICHLOROBENZENE	9/29/98	1300	ug/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	95-95-4	2,4,5-TRICHLOROPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	88-06-2	2,4,6-TRICHLOROPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	120-83-2	2,4-DICHLOROPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	105-67-9	2,4-DIMETHYLPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	51-28-5	2,4-DINITROPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	121-14-2	2,4-DINITROTOLUENE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-2	WA9205	606-20-2	2,6-DINITROTOLUENE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	78-93-3	2-BUTANONE	9/29/98	3	ug/Kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	91-58-7	2-CHLORONAPHTHALENE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	95-57-8	2-CHLOROPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	591-78-6	2-HEXANONE	9/29/98	11	ug/Kg	Y	N	UJ	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	91-57-6	2-METHYLNAPHTHALENE	9/29/98	200	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	95-48-7	2-METHYLPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	88-74-4	2-NITROANILINE	9/29/98	930	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	88-75-5	2-NITROPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	91-94-1	3,3'-DICHLOROBENZIDINE	9/29/98	370	ug/Kg	Y	N	UJ	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	99-09-2	3-NITROANILINE	9/29/98	930	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	72-54-8	4,4'-DDD	9/29/98	37	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	72-55-9	4,4'-DDE	9/29/98	37	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	50-29-3	4,4'-DDT	9/29/98	37	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	59-50-7	4-CHLORO-3-METHYLPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	106-47-8	4-CHLOROANILINE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	108-10-1	4-METHYL-2-PENTANONE	9/29/98	11	ug/Kg	Y	N	UJ	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	106-44-5	4-METHYLPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	100-01-6	4-NITROANILINE	9/29/98	930	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	100-02-7	4-NITROPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	83-32-9	ACENAPHTHENE	9/29/98	280	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	208-96-8	ACENAPHTHYLENE	9/29/98	370	ug/kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	67-64-1	ACETONE	9/29/98	61	ug/Kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	309-00-2	ALDRIN	9/29/98	19	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	319-84-6	ALPHA-BHC	9/29/98	19	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	5103-71-9	ALPHA-CHLORDANE	9/29/98	19	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	7429-90-5	ALUMINUM	9/29/98	3740	mg/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	120-12-7	ANTHRACENE	9/29/98	850	ug/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	7440-36-0	ANTIMONY	9/29/98	0.64	mg/kg	Y	N	UJ	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	12674-11-2	AROCLOR-1016	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	11104-28-2	AROCLOR-1221	9/29/98	740	ug/kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	11141-16-5	AROCLOR-1232	9/29/98	370	ug/kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	53469-21-9	AROCLOR-1242	9/29/98	370	ug/kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	12672-29-6	AROCLOR-1248	9/29/98	370	ug/kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	11097-69-1	AROCLOR-1254	9/29/98	310	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	11096-82-5	AROCLOR-1260	9/29/98	370	ug/kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	7440-38-2	ARSENIC	9/29/98	6.3	mg/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	7440-39-3	BARIUM	9/29/98	71.7	mg/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	71-43-2	BENZENE	9/29/98	5	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	56-55-3	BENZO(A)ANTHRACENE	9/29/98	2600	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	50-32-8	BENZO(A)PYRENE	9/29/98	2100	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	205-99-2	BENZO(B)FLUORANTHENE	9/29/98	3200	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	191-24-2	BENZO(G,H,I)PERYLENE	9/29/98	1600	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	207-08-9	BENZO(K)FLUORANTHENE	9/29/98	1200	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	7440-41-7	BERYLLIUM	9/29/98	0.4	mg/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	319-85-7	BETA-BHC	9/29/98	19	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/29/98	880	ug/Kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	75-27-4	BROMODICHLOROMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	75-25-2	BROMOFORM	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	74-83-9	BROMOMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	85-68-7	BUTYLBENZYL PHTHALATE	9/29/98	370	ug/Kg	Y	N	UJ	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	7440-43-9	CADMIUM	9/29/98	0.21	mg/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	7440-70-2	CALCIUM	9/29/98	157000	mg/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	86-74-8	CARBAZOLE	9/29/98	290	ug/Kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	75-15-0	CARBON DISULFIDE	9/29/98	1	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	56-23-5	CARBON TETRACHLORIDE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	108-90-7	CHLOROBENZENE	9/29/98	8	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	124-48-1	CHLORODIBROMOMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	75-00-3	CHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	67-66-3	CHLOROFORM	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	74-87-3	CHLOROMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	7440-47-3	CHROMIUM	9/29/98	8.9	mg/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-2	WA9205	218-01-9	CHRYSENE	9/29/98	2900	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	156-59-2	CIS-1,2-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	7440-48-4	COBALT	9/29/98	3.2	mg/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	7440-50-8	COPPER	9/29/98	27.4	mg/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	57-12-5	CYANIDE	9/29/98	0.56	mg/kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	335.2
Plant Area	Soil	WA-SB-2	WA9205	319-86-8	DELTA-BHC	9/29/98	19	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	53-70-3	DIBENZO(A,H)ANTHRACENE	9/29/98	500	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	132-64-9	DIBENZOFURAN	9/29/98	340	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	60-57-1	DIELDRIN	9/29/98	37	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	84-66-2	DIETHYL PHTHALATE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	131-11-3	DIMETHYL PHTHALATE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	84-74-2	DI-N-BUTYL PHTHALATE	9/29/98	79	ug/Kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	117-84-0	DI-N-OCTYL PHTHALATE	9/29/98	370	ug/Kg	Y	N	R	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	959-98-8	ENDOSULFAN I	9/29/98	19	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	33213-65-9	ENDOSULFAN II	9/29/98	7.8	ug/Kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	1031-07-8	ENDOSULFAN SULFATE	9/29/98	37	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	72-20-8	ENDRIN	9/29/98	37	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	7421-93-4	ENDRIN ALDEHYDE	9/29/98	37	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	53494-70-5	ENDRIN KETONE	9/29/98	37	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	100-41-4	ETHYLBENZENE	9/29/98	11	ug/kg	Y	N	UJ	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	206-44-0	FLUORANTHENE	9/29/98	3900	ug/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	86-73-7	FLUORENE	9/29/98	270	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	58-89-9	GAMMA-BHC (LINDANE)	9/29/98	19	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	5566-34-7	GAMMA-CHLORDANE	9/29/98	19	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	76-44-8	HEPTACHLOR	9/29/98	19	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	1024-57-3	HEPTACHLOR EPOXIDE	9/29/98	19	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	118-74-1	HEXACHLOROBENZENE	9/29/98	1300	ug/Kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	87-68-3	HEXACHLOROBUTADIENE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	67-72-1	HEXACHLOROETHANE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	193-39-5	INDENO(1,2,3-CD)PYRENE	9/29/98	1400	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	7439-89-6	IRON	9/29/98	8850	mg/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	78-59-1	ISOPHORONE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	7439-92-1	LEAD	9/29/98	16.5	mg/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	7439-95-4	MAGNESIUM	9/29/98	9160	mg/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	7439-96-5	MANGANESE	9/29/98	256	mg/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	7439-97-6	MERCURY	9/29/98	14.8	mg/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	245.1M
Plant Area	Soil	WA-SB-2	WA9205	72-43-5	METHOXYCHLOR	9/29/98	190	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	75-09-2	METHYLENE CHLORIDE	9/29/98	47	ug/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	91-20-3	NAPHTHALENE	9/29/98	310	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	7440-02-0	NICKEL	9/29/98	10.5	mg/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	98-95-3	NITROBENZENE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	86-30-6	N-NITROSODIPHENYLAMINE	9/29/98	370	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	87-86-5	PENTACHLOROPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	85-01-8	PHENANTHRENE	9/29/98	3400	ug/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	108-95-2	PHENOL	9/29/98	46	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	7440-09-7	POTASSIUM	9/29/98	1070	mg/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	129-00-0	PYRENE	9/29/98	5100	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-2	WA9205	7782-49-2	SELENIUM	9/29/98	1.1	mg/kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	7440-22-4	SILVER	9/29/98	0.24	mg/kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	7440-23-5	SODIUM	9/29/98	290	mg/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	100-42-5	STYRENE	9/29/98	11	ug/Kg	Y	N	UJ	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	127-18-4	TETRACHLOROETHENE	9/29/98	5	ug/Kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	7440-28-0	THALLIUM	9/29/98	1.6	mg/kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	108-88-3	TOLUENE	9/29/98	7	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	TSO	TOTAL SOLIDS	9/29/98	90	%	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-SB-2	WA9205	8001-35-2	TOXAPHENE	9/29/98	1900	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-2	WA9205	156-60-5	TRANS-1,2-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	79-01-6	TRICHLOROETHENE	9/29/98	2	ug/Kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	7440-62-2	VANADIUM	9/29/98	9.8	mg/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-2	WA9205	75-01-4	VINYL CHLORIDE	9/29/98	11	ug/Kg	Y	N	U	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	1330-20-7	XYLENES, TOTAL	9/29/98	5	ug/kg	Y	Y	J	1117533.8	921985.9	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-2	WA9205	7440-66-6	ZINC	9/29/98	35.7	mg/kg	Y	Y		1117533.8	921985.9	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9208	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	787	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-3	WA9208	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	118	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	64.7	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	9.18	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	220	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	12.3	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	52.8	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	36.9	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	6.26	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	40321-76-4	1,2,3,7,8-PECDD	9/29/98	3.26	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	57117-41-6	1,2,3,7,8-PECDF	9/29/98	214	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	12	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	57117-31-4	2,3,4,7,8-PECDF	9/29/98	124	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	1746-01-6	2,3,7,8-TCDD	9/29/98	3.36	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	51207-31-9	2,3,7,8-TCDF	9/29/98	912	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	3268-87-9	OCDD	9/29/98	4920	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	39001-02-0	OCDF	9/29/98	628	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	37871-00-4	TOTAL HPCDD	9/29/98	4550	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	38998-75-3	TOTAL HPCDF	9/29/98	336	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	34465-46-8	TOTAL HXCDD	9/29/98	640	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	55684-94-1	TOTAL HXCDF	9/29/98	423	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	TOC	TOTAL ORGANIC CARBON	9/29/98	76100	mg/Kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-3	WA9208	36088-22-9	TOTAL PECDD	9/29/98	49.7	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	30402-15-4	TOTAL PECDF	9/29/98	637	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	TSO	TOTAL SOLIDS	9/29/98	78.5	%	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-3	WA9208	41903-57-5	TOTAL TCDD	9/29/98	43.8	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9208	55722-27-5	Total TCDF	9/29/98	1700	ng/kg	Y	Y		1117287.6	922152.8	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-3	WA9207	71-55-6	1,1,1-TRICHLOROETHANE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	79-00-5	1,1,2-TRICHLOROETHANE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	75-34-3	1,1-DICHLOROETHANE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	75-35-4	1,1-DICHLOROETHENE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	120-82-1	1,2,4-TRICHLOROBENZENE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	95-50-1	1,2-DICHLOROBENZENE	9/29/98	140	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	107-06-2	1,2-DICHLOROETHANE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	78-87-5	1,2-DICHLOROPROPANE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	541-73-1	1,3-DICHLOROBENZENE	9/29/98	75	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	106-46-7	1,4-DICHLOROBENZENE	9/29/98	140	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	95-95-4	2,4,5-TRICHLOROPHENOL	9/29/98	1000	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	88-06-2	2,4,6-TRICHLOROPHENOL	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	120-83-2	2,4-DICHLOROPHENOL	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	105-67-9	2,4-DIMETHYLPHENOL	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	51-28-5	2,4-DINITROPHENOL	9/29/98	1000	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	121-14-2	2,4-DINITROTOLUENE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	606-20-2	2,6-DINITROTOLUENE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	78-93-3	2-BUTANONE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	91-58-7	2-CHLORONAPHTHALENE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	95-57-8	2-CHLOROPHENOL	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	591-78-6	2-HEXANONE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	91-57-6	2-METHYLNAPHTHALENE	9/29/98	400	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	95-48-7	2-METHYLPHENOL	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	88-74-4	2-NITROANILINE	9/29/98	1000	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	88-75-5	2-NITROPHENOL	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	91-94-1	3,3'-DICHLOROBENZIDINE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	99-09-2	3-NITROANILINE	9/29/98	1000	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	72-54-8	4,4'-DDD	9/29/98	4	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	72-55-9	4,4'-DDE	9/29/98	2.7	ug/Kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	50-29-3	4,4'-DDT	9/29/98	4	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/29/98	1000	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	59-50-7	4-CHLORO-3-METHYLPHENOL	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	106-47-8	4-CHLOROANILINE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	108-10-1	4-METHYL-2-PENTANONE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	106-44-5	4-METHYLPHENOL	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	100-01-6	4-NITROANILINE	9/29/98	1000	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-3	WA9207	100-02-7	4-NITROPHENOL	9/29/98	1000	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	83-32-9	ACENAPHTHENE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	208-96-8	ACENAPHTHYLENE	9/29/98	400	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	67-64-1	ACETONE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	309-00-2	ALDRIN	9/29/98	2	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	319-84-6	ALPHA-BHC	9/29/98	2	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	5103-71-9	ALPHA-CHLORDANE	9/29/98	2	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	7429-90-5	ALUMINUM	9/29/98	5260	mg/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	120-12-7	ANTHRACENE	9/29/98	110	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	7440-36-0	ANTIMONY	9/29/98	0.7	mg/kg	Y	N	UJ	1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	12674-11-2	AROCLOR-1016	9/29/98	40	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	11104-28-2	AROCLOR-1221	9/29/98	80	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	11141-16-5	AROCLOR-1232	9/29/98	40	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	53469-21-9	AROCLOR-1242	9/29/98	40	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	12672-29-6	AROCLOR-1248	9/29/98	40	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	11097-69-1	AROCLOR-1254	9/29/98	190	ug/kg	Y	Y	JN	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	11096-82-5	AROCLOR-1260	9/29/98	40	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	7440-38-2	ARSENIC	9/29/98	6.6	mg/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	7440-39-3	BARIUM	9/29/98	73.5	mg/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	71-43-2	BENZENE	9/29/98	12	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	56-55-3	BENZO(A)ANTHRACENE	9/29/98	360	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	50-32-8	BENZO(A)PYRENE	9/29/98	380	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	205-99-2	BENZO(B)FLUORANTHENE	9/29/98	870	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	191-24-2	BENZO(G,H,I)PERYLENE	9/29/98	250	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	207-08-9	BENZO(K)FLUORANTHENE	9/29/98	270	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	7440-41-7	BERYLLIUM	9/29/98	0.52	mg/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	319-85-7	BETA-BHC	9/29/98	2	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/29/98	2200	ug/Kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	75-27-4	BROMODICHLOROMETHANE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	75-25-2	BROMOFORM	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	74-83-9	BROMOMETHANE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	85-68-7	BUTYLBENZYL PHTHALATE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	7440-43-9	CADMIUM	9/29/98	0.4	mg/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	7440-70-2	CALCIUM	9/29/98	182000	mg/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	86-74-8	CARBAZOLE	9/29/98	42	ug/Kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	75-15-0	CARBON DISULFIDE	9/29/98	12	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	56-23-5	CARBON TETRACHLORIDE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	108-90-7	CHLOROBENZENE	9/29/98	1	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	124-48-1	CHLORODIBROMOMETHANE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	75-00-3	CHLOROETHANE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	67-66-3	CHLOROFORM	9/29/98	2	ug/Kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	74-87-3	CHLOROMETHANE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	7440-47-3	CHROMIUM	9/29/98	18.7	mg/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	218-01-9	CHRYSENE	9/29/98	560	ug/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	156-59-2	CIS-1,2-DICHLOROETHENE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	7440-48-4	COBALT	9/29/98	5.5	mg/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	7440-50-8	COPPER	9/29/98	24.4	mg/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	57-12-5	CYANIDE	9/29/98	0.6	mg/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	335.2
Plant Area	Soil	WA-SB-3	WA9207	319-86-8	DELTA-BHC	9/29/98	2	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	53-70-3	DIBENZO(A,H)ANTHRACENE	9/29/98	85	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	132-64-9	DIBENZOFURAN	9/29/98	400	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	60-57-1	DIELDRIN	9/29/98	4	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	84-66-2	DIETHYL PHTHALATE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	131-11-3	DIMETHYL PHTHALATE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	84-74-2	DI-N-BUTYL PHTHALATE	9/29/98	43	ug/Kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	117-84-0	DI-N-OCTYL PHTHALATE	9/29/98	400	ug/Kg	Y	N	UJ	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	959-98-8	ENDOSULFAN I	9/29/98	2	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	33213-65-9	ENDOSULFAN II	9/29/98	3.6	ug/Kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	1031-07-8	ENDOSULFAN SULFATE	9/29/98	4	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	72-20-8	ENDRIN	9/29/98	4	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	7421-93-4	ENDRIN ALDEHYDE	9/29/98	5.9	ug/Kg	Y	N	R	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	53494-70-5	ENDRIN KETONE	9/29/98	5.2	ug/Kg	Y	N	R	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	100-41-4	ETHYLBENZENE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	206-44-0	FLUORANTHENE	9/29/98	590	ug/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-3	WA9207	86-73-7	FLUORENE	9/29/98	350	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	58-89-9	GAMMA-BHC (LINDANE)	9/29/98	2	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	5566-34-7	GAMMA-CHLORDANE	9/29/98	2	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	76-44-8	HEPTACHLOR	9/29/98	2	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	1024-57-3	HEPTACHLOR EPOXIDE	9/29/98	2	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	118-74-1	HEXACHLOROBENZENE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	87-68-3	HEXACHLOROBUTADIENE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	67-72-1	HEXACHLOROETHANE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	193-39-5	INDENO(1,2,3-CD)PYRENE	9/29/98	240	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	7439-89-6	IRON	9/29/98	10300	mg/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	78-59-1	ISOPHORONE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	7439-92-1	LEAD	9/29/98	35.1	mg/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	7439-95-4	MAGNESIUM	9/29/98	5600	mg/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	7439-96-5	MANGANESE	9/29/98	355	mg/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	7439-97-6	MERCURY	9/29/98	3.1	mg/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	245.1M
Plant Area	Soil	WA-SB-3	WA9207	72-43-5	METHOXYCHLOR	9/29/98	20	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	75-09-2	METHYLENE CHLORIDE	9/29/98	12	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	91-20-3	NAPHTHALENE	9/29/98	62	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	7440-02-0	NICKEL	9/29/98	17.3	mg/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	98-95-3	NITROBENZENE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	86-30-6	N-NITROSODIPHENYLAMINE	9/29/98	400	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	87-86-5	PENTACHLOROPHENOL	9/29/98	1000	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	85-01-8	PHENANTHRENE	9/29/98	330	ug/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	108-95-2	PHENOL	9/29/98	400	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	7440-09-7	POTASSIUM	9/29/98	597	mg/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	129-00-0	PYRENE	9/29/98	770	ug/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-3	WA9207	7782-49-2	SELENIUM	9/29/98	1.2	mg/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	7440-22-4	SILVER	9/29/98	0.26	mg/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	7440-23-5	SODIUM	9/29/98	369	mg/kg	Y	Y	J	1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	100-42-5	STYRENE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	127-18-4	TETRACHLOROETHENE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	7440-28-0	THALLIUM	9/29/98	1.8	mg/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	108-88-3	TOLUENE	9/29/98	12	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	TSO	TOTAL SOLIDS	9/29/98	83.3	%	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-SB-3	WA9207	8001-35-2	TOXAPHENE	9/29/98	200	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-3	WA9207	156-60-5	TRANS-1,2-DICHLOROETHENE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	79-01-6	TRICHLOROETHENE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	7440-62-2	VANADIUM	9/29/98	19.4	mg/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-3	WA9207	75-01-4	VINYL CHLORIDE	9/29/98	12	ug/Kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	1330-20-7	XYLENES, TOTAL	9/29/98	12	ug/kg	Y	N	U	1117287.6	922152.8	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-3	WA9207	7440-66-6	ZINC	9/29/98	56.2	mg/kg	Y	Y		1117287.6	922152.8	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9210	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	126	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	56.9	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	21.6	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	1.46	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	51.8	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	4.43	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	14.4	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	3.9	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	1.45	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	40321-76-4	1,2,3,7,8-PECDD	9/29/98	1.64	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	57117-41-6	1,2,3,7,8-PECDF	9/29/98	19.1	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	7.25	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	57117-31-4	2,3,4,7,8-PECDF	9/29/98	24.7	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	1746-01-6	2,3,7,8-TCDD	9/29/98	3.89	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	51207-31-9	2,3,7,8-TCDF	9/29/98	56.2	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	3268-87-9	OCDD	9/29/98	1580	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	39001-02-0	OCDF	9/29/98	266	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	37871-00-4	TOTAL HPCDD	9/29/98	282	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	38998-75-3	TOTAL HPCDF	9/29/98	141	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	34465-46-8	TOTAL HXCDD	9/29/98	43.5	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	55684-94-1	TOTAL HXCDF	9/29/98	142	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	TOC	TOTAL ORGANIC CARBON	9/29/98	56800	mg/Kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-4	WA9210	36088-22-9	TOTAL PECDD	9/29/98	21.5	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-4	WA9210	30402-15-4	TOTAL PECDF	9/29/98	142	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	TSO	TOTAL SOLIDS	9/29/98	88.6	%	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-4	WA9210	41903-57-5	TOTAL TCDD	9/29/98	36	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9210	55722-27-5	Total TCDF	9/29/98	197	ng/kg	Y	Y		1117132.2	922368.1	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-4	WA9209	71-55-6	1,1,1-TRICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/29/98	11	ug/Kg	Y	N	UJ	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	79-00-5	1,1,2-TRICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	75-34-3	1,1-DICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	75-35-4	1,1-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	120-82-1	1,2,4-TRICHLOROBENZENE	9/29/98	69	ug/Kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	95-50-1	1,2-DICHLOROBENZENE	9/29/98	1000	ug/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	107-06-2	1,2-DICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	78-87-5	1,2-DICHLOROPROPANE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	541-73-1	1,3-DICHLOROBENZENE	9/29/98	370	ug/kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	106-46-7	1,4-DICHLOROBENZENE	9/29/98	240	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	95-95-4	2,4,5-TRICHLOROPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	88-06-2	2,4,6-TRICHLOROPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	120-83-2	2,4-DICHLOROPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	105-67-9	2,4-DIMETHYLPHENOL	9/29/98	45	ug/Kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	51-28-5	2,4-DINITROPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	121-14-2	2,4-DINITROTOLUENE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	606-20-2	2,6-DINITROTOLUENE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	78-93-3	2-BUTANONE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	91-58-7	2-CHLORONAPHTHALENE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	95-57-8	2-CHLOROPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	591-78-6	2-HEXANONE	9/29/98	11	ug/Kg	Y	N	UJ	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	91-57-6	2-METHYLNAPHTHALENE	9/29/98	730	ug/Kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	95-48-7	2-METHYLPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	88-74-4	2-NITROANILINE	9/29/98	930	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	88-75-5	2-NITROPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	91-94-1	3,3'-DICHLOROBENZIDINE	9/29/98	370	ug/Kg	Y	N	R	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	99-09-2	3-NITROANILINE	9/29/98	930	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	72-54-8	4,4'-DDD	9/29/98	37	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	72-55-9	4,4'-DDE	9/29/98	57	ug/Kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	50-29-3	4,4'-DDT	9/29/98	37	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	59-50-7	4-CHLORO-3-METHYLPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	106-47-8	4-CHLOROANILINE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	108-10-1	4-METHYL-2-PENTANONE	9/29/98	11	ug/Kg	Y	N	UJ	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	106-44-5	4-METHYLPHENOL	9/29/98	87	ug/Kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	100-01-6	4-NITROANILINE	9/29/98	930	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	100-02-7	4-NITROPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	83-32-9	ACENAPHTHENE	9/29/98	1400	ug/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	208-96-8	ACENAPHTHYLENE	9/29/98	84	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	67-64-1	ACETONE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	309-00-2	ALDRIN	9/29/98	19	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	319-84-6	ALPHA-BHC	9/29/98	20	ug/Kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	5103-71-9	ALPHA-CHLORDANE	9/29/98	46	ug/Kg	Y	N	R	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	7429-90-5	ALUMINUM	9/29/98	5970	mg/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	120-12-7	ANTHRACENE	9/29/98	3400	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	7440-36-0	ANTIMONY	9/29/98	0.65	mg/kg	Y	N	UJ	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	12674-11-2	AROCLOR-1016	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	11104-28-2	AROCLOR-1221	9/29/98	740	ug/kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	11141-16-5	AROCLOR-1232	9/29/98	370	ug/kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	53469-21-9	AROCLOR-1242	9/29/98	370	ug/kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	12672-29-6	AROCLOR-1248	9/29/98	370	ug/kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	11097-69-1	AROCLOR-1254	9/29/98	3000	ug/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	11096-82-5	AROCLOR-1260	9/29/98	370	ug/kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	7440-38-2	ARSENIC	9/29/98	6.1	mg/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	7440-39-3	BARIUM	9/29/98	46.5	mg/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	71-43-2	BENZENE	9/29/98	2	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	56-55-3	BENZO(A)ANTHRACENE	9/29/98	7000	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	50-32-8	BENZO(A)PYRENE	9/29/98	6200	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-4	WA9209	205-99-2	BENZO(B)FLUORANTHENE	9/29/98	7300	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	191-24-2	BENZO(G,H,I)PERYLENE	9/29/98	5300	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	207-08-9	BENZO(K)FLUORANTHENE	9/29/98	2700	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	7440-41-7	BERYLLIUM	9/29/98	0.29	mg/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	319-85-7	BETA-BHC	9/29/98	19	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/29/98	2900	ug/Kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	75-27-4	BROMODICHLOROMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	75-25-2	BROMOFORM	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	74-83-9	BROMOMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	85-68-7	BUTYLBENZYL PHTHALATE	9/29/98	370	ug/Kg	Y	N	R	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	7440-43-9	CADMIUM	9/29/98	0.12	mg/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	7440-70-2	CALCIUM	9/29/98	48300	mg/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	86-74-8	CARBAZOLE	9/29/98	1500	ug/Kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	75-15-0	CARBON DISULFIDE	9/29/98	11	ug/kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	56-23-5	CARBON TETRACHLORIDE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	108-90-7	CHLOROBENZENE	9/29/98	13	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	124-48-1	CHLORODIBROMOMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	75-00-3	CHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	67-66-3	CHLOROFORM	9/29/98	2	ug/Kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	74-87-3	CHLOROMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	7440-47-3	CHROMIUM	9/29/98	9.7	mg/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	218-01-9	CHRYSENE	9/29/98	7100	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	156-59-2	CIS-1,2-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	7440-48-4	COBALT	9/29/98	3.6	mg/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	7440-50-8	COPPER	9/29/98	12.2	mg/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	57-12-5	CYANIDE	9/29/98	0.56	mg/kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	335.2
Plant Area	Soil	WA-SB-4	WA9209	319-86-8	DELTA-BHC	9/29/98	6.9	ug/Kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	53-70-3	DIBENZO(A,H)ANTHRACENE	9/29/98	1200	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	132-64-9	DIBENZOFURAN	9/29/98	1200	ug/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	60-57-1	DIELDRIN	9/29/98	130	ug/Kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	84-66-2	DIETHYL PHTHALATE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	131-11-3	DIMETHYL PHTHALATE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	84-74-2	DI-N-BUTYL PHTHALATE	9/29/98	180	ug/Kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	117-84-0	DI-N-OCTYL PHTHALATE	9/29/98	370	ug/Kg	Y	N	R	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	959-98-8	ENDOSULFAN I	9/29/98	19	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	33213-65-9	ENDOSULFAN II	9/29/98	51	ug/Kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	1031-07-8	ENDOSULFAN SULFATE	9/29/98	37	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	72-20-8	ENDRIN	9/29/98	37	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	7421-93-4	ENDRIN ALDEHYDE	9/29/98	37	ug/Kg	Y	N	R	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	53494-70-5	ENDRIN KETONE	9/29/98	76	ug/Kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	100-41-4	ETHYLBENZENE	9/29/98	11	ug/kg	Y	N	UJ	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	206-44-0	FLUORANTHENE	9/29/98	12000	ug/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	86-73-7	FLUORENE	9/29/98	1500	ug/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	58-89-9	GAMMA-BHC (LINDANE)	9/29/98	19	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	5566-34-7	GAMMA-CHLORDANE	9/29/98	19	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	76-44-8	HEPTACHLOR	9/29/98	22	ug/Kg	Y	Y	JN	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	1024-57-3	HEPTACHLOR EPOXIDE	9/29/98	47	ug/Kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	118-74-1	HEXACHLOROBENZENE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	87-68-3	HEXACHLOROBUTADIENE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	67-72-1	HEXACHLOROETHANE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	193-39-5	INDENO(1,2,3-CD)PYRENE	9/29/98	4700	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	7439-89-6	IRON	9/29/98	9910	mg/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	78-59-1	ISOPHORONE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	7439-92-1	LEAD	9/29/98	22.9	mg/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	7439-95-4	MAGNESIUM	9/29/98	2830	mg/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	7439-96-5	MANGANESE	9/29/98	342	mg/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	7439-97-6	MERCURY	9/29/98	1.6	mg/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	245.1M
Plant Area	Soil	WA-SB-4	WA9209	72-43-5	METHOXYCHLOR	9/29/98	190	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	75-09-2	METHYLENE CHLORIDE	9/29/98	31	ug/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	91-20-3	NAPHTHALENE	9/29/98	2200	ug/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	7440-02-0	NICKEL	9/29/98	8.3	mg/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	98-95-3	NITROBENZENE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-4	WA9209	86-30-6	N-NITROSODIPHENYLAMINE	9/29/98	370	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	87-86-5	PENTACHLOROPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	85-01-8	PHENANTHRENE	9/29/98	13000	ug/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	108-95-2	PHENOL	9/29/98	71	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	7440-09-7	POTASSIUM	9/29/98	403	mg/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	129-00-0	PYRENE	9/29/98	16000	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-4	WA9209	7782-49-2	SELENIUM	9/29/98	1.1	mg/kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	7440-22-4	SILVER	9/29/98	0.24	mg/kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	7440-23-5	SODIUM	9/29/98	176	mg/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	100-42-5	STYRENE	9/29/98	11	ug/Kg	Y	N	UJ	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	127-18-4	TETRACHLOROETHENE	9/29/98	11	ug/Kg	Y	N	UJ	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	7440-28-0	THALLIUM	9/29/98	1.6	mg/kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	108-88-3	TOLUENE	9/29/98	2	ug/kg	Y	Y	J	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	TSO	TOTAL SOLIDS	9/29/98	89.8	%	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-SB-4	WA9209	8001-35-2	TOXAPHENE	9/29/98	1900	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-4	WA9209	156-60-5	TRANS-1,2-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	79-01-6	TRICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	7440-62-2	VANADIUM	9/29/98	13.6	mg/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-4	WA9209	75-01-4	VINYL CHLORIDE	9/29/98	11	ug/Kg	Y	N	U	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	1330-20-7	XYLENES, TOTAL	9/29/98	11	ug/kg	Y	N	UJ	1117132.2	922368.1	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-4	WA9209	7440-66-6	ZINC	9/29/98	53.2	mg/kg	Y	Y		1117132.2	922368.1	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9212	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	38.4	ng/kg	Y	Y	*	1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	1260	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	618	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	11.3	ng/kg	Y	N	U	1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	3660	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	11.3	ng/kg	Y	N	U	1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	748	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	11.3	ng/kg	Y	N	U	1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	91.9	ng/kg	Y	N	U	1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	40321-76-4	1,2,3,7,8-PECDD	9/29/98	2.23	ng/kg	Y	N	U	1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	57117-41-6	1,2,3,7,8-PECDF	9/29/98	4060	ng/kg	Y	Y	J	1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	197	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	57117-31-4	2,3,4,7,8-PECDF	9/29/98	2290	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	1746-01-6	2,3,7,8-TCDD	9/29/98	4.33	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	51207-31-9	2,3,7,8-TCDF	9/29/98	7890	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	3268-87-9	OCDD	9/29/98	247	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	39001-02-0	OCDF	9/29/98	2630	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	37871-00-4	TOTAL HPCDD	9/29/98	20.1	ng/kg	Y	N	U	1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	38998-75-3	TOTAL HPCDF	9/29/98	2550	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	34465-46-8	TOTAL HXCDD	9/29/98	11.3	ng/kg	Y	N	U	1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	55684-94-1	TOTAL HXCDF	9/29/98	5830	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	36088-22-9	TOTAL PECDD	9/29/98	12.9	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	30402-15-4	TOTAL PECDF	9/29/98	10800	ng/kg	Y	Y	J	1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	41903-57-5	TOTAL TCDD	9/29/98	21.7	ng/kg	Y	Y		1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9212	55722-27-5	Total TCDF	9/29/98	16560	ng/kg	Y	Y	J	1117632.2	922152	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-5	WA9211	71-55-6	1,1,1-TRICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/29/98	11	ug/Kg	Y	N	UJ	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	79-00-5	1,1,2-TRICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	75-34-3	1,1-DICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	75-35-4	1,1-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	120-82-1	1,2,4-TRICHLOROBENZENE	9/29/98	110	ug/Kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	95-50-1	1,2-DICHLOROBENZENE	9/29/98	210	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	107-06-2	1,2-DICHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	78-87-5	1,2-DICHLOROPROPANE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	541-73-1	1,3-DICHLOROBENZENE	9/29/98	370	ug/kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	106-46-7	1,4-DICHLOROBENZENE	9/29/98	400	ug/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	95-95-4	2,4,5-TRICHLOROPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	88-06-2	2,4,6-TRICHLOROPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	120-83-2	2,4-DICHLOROPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	105-67-9	2,4-DIMETHYLPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	51-28-5	2,4-DINITROPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	121-14-2	2,4-DINITROTOLUENE	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	606-20-2	2,6-DINITROTOLUENE	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-5	WA9211	78-93-3	2-BUTANONE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	91-58-7	2-CHLORONAPHTHALENE	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	95-57-8	2-CHLOROPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	591-78-6	2-HEXANONE	9/29/98	11	ug/Kg	Y	N	UJ	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	91-57-6	2-METHYLNAPHTHALENE	9/29/98	360	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	95-48-7	2-METHYLPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	88-74-4	2-NITROANILINE	9/29/98	930	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	88-75-5	2-NITROPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	91-94-1	3,3'-DICHLOROBENZIDINE	9/29/98	370	ug/Kg	Y	N	R	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	99-09-2	3-NITROANILINE	9/29/98	930	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	72-54-8	4,4'-DDD	9/29/98	3700	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	72-55-9	4,4'-DDE	9/29/98	3700	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	50-29-3	4,4'-DDT	9/29/98	3700	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	59-50-7	4-CHLORO-3-METHYLPHENOL	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	106-47-8	4-CHLOROANILINE	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	108-10-1	4-METHYL-2-PENTANONE	9/29/98	11	ug/Kg	Y	N	UJ	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	106-44-5	4-METHYLPHENOL	9/29/98	48	ug/Kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	100-01-6	4-NITROANILINE	9/29/98	930	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	100-02-7	4-NITROPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	83-32-9	ACENAPHTHENE	9/29/98	670	ug/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	208-96-8	ACENAPHTHYLENE	9/29/98	78	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	67-64-1	ACETONE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	309-00-2	ALDRIN	9/29/98	1900	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	319-84-6	ALPHA-BHC	9/29/98	1900	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	5103-71-9	ALPHA-CHLORDANE	9/29/98	1900	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	7429-90-5	ALUMINUM	9/29/98	4570	mg/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	120-12-7	ANTHRACENE	9/29/98	1400	ug/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	7440-36-0	ANTIMONY	9/29/98	0.65	mg/kg	Y	N	UJ	1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	12674-11-2	AROCLOR-1016	9/29/98	37000	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	11104-28-2	AROCLOR-1221	9/29/98	74000	ug/kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	11141-16-5	AROCLOR-1232	9/29/98	37000	ug/kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	53469-21-9	AROCLOR-1242	9/29/98	37000	ug/kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	12672-29-6	AROCLOR-1248	9/29/98	37000	ug/kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	11097-69-1	AROCLOR-1254	9/29/98	7500	ug/kg	Y	Y	JN	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	11096-82-5	AROCLOR-1260	9/29/98	37000	ug/kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	7440-38-2	ARSENIC	9/29/98	11.7	mg/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	7440-39-3	BARIUM	9/29/98	522	mg/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	71-43-2	BENZENE	9/29/98	14	ug/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	56-55-3	BENZO(A)ANTHRACENE	9/29/98	4100	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	50-32-8	BENZO(A)PYRENE	9/29/98	4200	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	205-99-2	BENZO(B)FLUORANTHENE	9/29/98	6900	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	191-24-2	BENZO(G,H,I)PERYLENE	9/29/98	5400	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	207-08-9	BENZO(K)FLUORANTHENE	9/29/98	2200	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	7440-41-7	BERYLLIUM	9/29/98	0.41	mg/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	319-85-7	BETA-BHC	9/29/98	1900	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/29/98	9400	ug/Kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	75-27-4	BROMODICHLOROMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	75-25-2	BROMOFORM	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	74-83-9	BROMOMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	85-68-7	BUTYLBENZYL PHTHALATE	9/29/98	370	ug/Kg	Y	N	R	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	7440-43-9	CADMIUM	9/29/98	0.74	mg/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	7440-70-2	CALCIUM	9/29/98	180000	mg/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	86-74-8	CARBAZOLE	9/29/98	410	ug/Kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	75-15-0	CARBON DISULFIDE	9/29/98	11	ug/kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	56-23-5	CARBON TETRACHLORIDE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	108-90-7	CHLOROBENZENE	9/29/98	3	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	124-48-1	CHLORODIBROMOMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	75-00-3	CHLOROETHANE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	67-66-3	CHLOROFORM	9/29/98	27	ug/Kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	74-87-3	CHLOROMETHANE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	7440-47-3	CHROMIUM	9/29/98	18.9	mg/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	218-01-9	CHRYSENE	9/29/98	5000	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-5	WA9211	156-59-2	CIS-1,2-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	7440-48-4	COBALT	9/29/98	10.6	mg/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	7440-50-8	COPPER	9/29/98	155	mg/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	57-12-5	CYANIDE	9/29/98	0.56	mg/kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	335.2
Plant Area	Soil	WA-SB-5	WA9211	319-86-8	DELTA-BHC	9/29/98	1900	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	53-70-3	DIBENZO(A,H)ANTHRACENE	9/29/98	1700	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	132-64-9	DIBENZOFURAN	9/29/98	520	ug/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	60-57-1	DIELDRIN	9/29/98	3700	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	84-66-2	DIETHYL PHTHALATE	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	131-11-3	DIMETHYL PHTHALATE	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	84-74-2	DI-N-BUTYL PHTHALATE	9/29/98	59	ug/Kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	117-84-0	DI-N-OCTYL PHTHALATE	9/29/98	370	ug/Kg	Y	N	R	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	959-98-8	ENDOSULFAN I	9/29/98	1900	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	33213-65-9	ENDOSULFAN II	9/29/98	3700	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	1031-07-8	ENDOSULFAN SULFATE	9/29/98	3700	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	72-20-8	ENDRIN	9/29/98	3700	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	7421-93-4	ENDRIN ALDEHYDE	9/29/98	1200	ug/Kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	53494-70-5	ENDRIN KETONE	9/29/98	3700	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	100-41-4	ETHYLBENZENE	9/29/98	11	ug/kg	Y	N	UJ	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	206-44-0	FLUORANTHENE	9/29/98	6000	ug/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	86-73-7	FLUORENE	9/29/98	540	ug/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	58-89-9	GAMMA-BHC (LINDANE)	9/29/98	1900	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	5566-34-7	GAMMA-CHLORDANE	9/29/98	1900	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	76-44-8	HEPTACHLOR	9/29/98	190	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	1024-57-3	HEPTACHLOR EPOXIDE	9/29/98	190	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	118-74-1	HEXACHLOROBENZENE	9/29/98	28000	ug/Kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	87-68-3	HEXACHLOROBUTADIENE	9/29/98	1800	ug/Kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/29/98	120	ug/Kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	67-72-1	HEXACHLOROETHANE	9/29/98	850	ug/Kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	193-39-5	INDENO(1,2,3-CD)PYRENE	9/29/98	4700	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	7439-89-6	IRON	9/29/98	20500	mg/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	78-59-1	ISOPHORONE	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	7439-92-1	LEAD	9/29/98	183	mg/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	7439-95-4	MAGNESIUM	9/29/98	8750	mg/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	7439-96-5	MANGANESE	9/29/98	225	mg/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	7439-97-6	MERCURY	9/29/98	211	mg/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	245.1M
Plant Area	Soil	WA-SB-5	WA9211	72-43-5	METHOXYCHLOR	9/29/98	19000	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	75-09-2	METHYLENE CHLORIDE	9/29/98	27	ug/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	91-20-3	NAPHTHALENE	9/29/98	710	ug/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	7440-02-0	NICKEL	9/29/98	4040	mg/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	98-95-3	NITROBENZENE	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	86-30-6	N-NITROSODIPHENYLAMINE	9/29/98	370	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	87-86-5	PENTACHLOROPHENOL	9/29/98	930	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	85-01-8	PHENANTHRENE	9/29/98	5200	ug/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	108-95-2	PHENOL	9/29/98	56	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	7440-09-7	POTASSIUM	9/29/98	611	mg/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	129-00-0	PYRENE	9/29/98	7400	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-5	WA9211	7782-49-2	SELENIUM	9/29/98	1.1	mg/kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	7440-22-4	SILVER	9/29/98	0.25	mg/kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	7440-23-5	SODIUM	9/29/98	521	mg/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	100-42-5	STYRENE	9/29/98	11	ug/Kg	Y	N	UJ	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	127-18-4	TETRACHLOROETHENE	9/29/98	120	ug/Kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	7440-28-0	THALLIUM	9/29/98	1.6	mg/kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	108-88-3	TOLUENE	9/29/98	1	ug/kg	Y	Y	J	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	TSO	TOTAL SOLIDS	9/29/98	89.7	%	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-SB-5	WA9211	8001-35-2	TOXAPHENE	9/29/98	190000	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-5	WA9211	156-60-5	TRANS-1,2-DICHLOROETHENE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	79-01-6	TRICHLOROETHENE	9/29/98	19	ug/Kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	7440-62-2	VANADIUM	9/29/98	22.8	mg/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-5	WA9211	75-01-4	VINYL CHLORIDE	9/29/98	11	ug/Kg	Y	N	U	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	1330-20-7	XYLENES, TOTAL	9/29/98	11	ug/kg	Y	N	UJ	1117632.2	922152	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-5	WA9211	7440-66-6	ZINC	9/29/98	65.1	mg/kg	Y	Y		1117632.2	922152	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9214	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	2.8	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	7.5	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-6	WA9214	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	0.93	ng/kg	Y	N	U	1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	0.44	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	3.9	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	0.5	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	2.24	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	0.63	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	0.38	ng/kg	Y	N	U	1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	40321-76-4	1,2,3,7,8-PECDD	9/29/98	0.51	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	57117-41-6	1,2,3,7,8-PECDF	9/29/98	3.11	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	1.33	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	57117-31-4	2,3,4,7,8-PECDF	9/29/98	2.76	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	1746-01-6	2,3,7,8-TCDD	9/29/98	0.34	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	51207-31-9	2,3,7,8-TCDF	9/29/98	8.16	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	3268-87-9	OCDD	9/29/98	8.67	ng/kg	Y	Y	*	1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	39001-02-0	OCDF	9/29/98	5.43	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	37871-00-4	TOTAL HPCDD	9/29/98	5.04	ng/kg	Y	N	U	1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	38998-75-3	TOTAL HPCDF	9/29/98	7.5	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	34465-46-8	TOTAL HXCDD	9/29/98	4.99	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	55684-94-1	TOTAL HXCDF	9/29/98	16	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	TOC	TOTAL ORGANIC CARBON	9/29/98	85100	mg/Kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-6	WA9214	36088-22-9	TOTAL PECDD	9/29/98	7.48	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	30402-15-4	TOTAL PECDF	9/29/98	18.2	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	TSO	TOTAL SOLIDS	9/29/98	74.9	%	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-6	WA9214	41903-57-5	TOTAL TCDD	9/29/98	10.4	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9214	55722-27-5	Total TCDF	9/29/98	61.8	ng/kg	Y	Y		1117422	922342.4	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-6	WA9213	71-55-6	1,1,1-TRICHLOROETHANE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/29/98	13	ug/Kg	Y	N	UJ	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	79-00-5	1,1,2-TRICHLOROETHANE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	75-34-3	1,1-DICHLOROETHANE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	75-35-4	1,1-DICHLOROETHENE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	120-82-1	1,2,4-TRICHLOROBENZENE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	95-50-1	1,2-DICHLOROBENZENE	9/29/98	1600	ug/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	107-06-2	1,2-DICHLOROETHANE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	78-87-5	1,2-DICHLOROPROPANE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	541-73-1	1,3-DICHLOROBENZENE	9/29/98	440	ug/kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	106-46-7	1,4-DICHLOROBENZENE	9/29/98	280	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	95-95-4	2,4,5-TRICHLOROPHENOL	9/29/98	1100	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	88-06-2	2,4,6-TRICHLOROPHENOL	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	120-83-2	2,4-DICHLOROPHENOL	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	105-67-9	2,4-DIMETHYLPHENOL	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	51-28-5	2,4-DINITROPHENOL	9/29/98	1100	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	121-14-2	2,4-DINITROTOLUENE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	606-20-2	2,6-DINITROTOLUENE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	78-93-3	2-BUTANONE	9/29/98	34	ug/Kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	91-58-7	2-CHLORONAPHTHALENE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	95-57-8	2-CHLOROPHENOL	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	591-78-6	2-HEXANONE	9/29/98	13	ug/Kg	Y	N	UJ	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	91-57-6	2-METHYLNAPHTHALENE	9/29/98	490	ug/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	95-48-7	2-METHYLPHENOL	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	88-74-4	2-NITROANILINE	9/29/98	1100	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	88-75-5	2-NITROPHENOL	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	91-94-1	3,3'-DICHLOROBENZIDINE	9/29/98	440	ug/Kg	Y	N	UJ	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	99-09-2	3-NITROANILINE	9/29/98	1100	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	72-54-8	4,4'-DDD	9/29/98	4.4	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	72-55-9	4,4'-DDE	9/29/98	4.4	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	50-29-3	4,4'-DDT	9/29/98	4.4	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/29/98	1100	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	59-50-7	4-CHLORO-3-METHYLPHENOL	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	106-47-8	4-CHLOROANILINE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	108-10-1	4-METHYL-2-PENTANONE	9/29/98	13	ug/Kg	Y	N	UJ	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	106-44-5	4-METHYLPHENOL	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	100-01-6	4-NITROANILINE	9/29/98	1100	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	100-02-7	4-NITROPHENOL	9/29/98	1100	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-6	WA9213	83-32-9	ACENAPHTHENE	9/29/98	93	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	208-96-8	ACENAPHTHYLENE	9/29/98	95	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	67-64-1	ACETONE	9/29/98	120	ug/Kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	309-00-2	ALDRIN	9/29/98	2.2	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	319-84-6	ALPHA-BHC	9/29/98	2.2	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	5103-71-9	ALPHA-CHLORDANE	9/29/98	2.2	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	7429-90-5	ALUMINUM	9/29/98	8960	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	120-12-7	ANTHRACENE	9/29/98	290	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	7440-36-0	ANTIMONY	9/29/98	1	mg/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	12674-11-2	AROCLOR-1016	9/29/98	44	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	11104-28-2	AROCLOR-1221	9/29/98	88	ug/kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	11141-16-5	AROCLOR-1232	9/29/98	44	ug/kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	53469-21-9	AROCLOR-1242	9/29/98	44	ug/kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	12672-29-6	AROCLOR-1248	9/29/98	44	ug/kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	11097-69-1	AROCLOR-1254	9/29/98	260	ug/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	11096-82-5	AROCLOR-1260	9/29/98	44	ug/kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	7440-38-2	ARSENIC	9/29/98	15.8	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	7440-39-3	BARIUM	9/29/98	98.3	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	71-43-2	BENZENE	9/29/98	4	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	56-55-3	BENZO(A)ANTHRACENE	9/29/98	1400	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	50-32-8	BENZO(A)PYRENE	9/29/98	1200	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	205-99-2	BENZO(B)FLUORANTHENE	9/29/98	2100	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	191-24-2	BENZO(G,H,I)PERYLENE	9/29/98	1300	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	207-08-9	BENZO(K)FLUORANTHENE	9/29/98	720	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	7440-41-7	BERYLLIUM	9/29/98	1.3	mg/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	319-85-7	BETA-BHC	9/29/98	2.2	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/29/98	4400	ug/Kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	75-27-4	BROMODICHLOROMETHANE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	75-25-2	BROMOFORM	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	74-83-9	BROMOMETHANE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	85-68-7	BUTYLBENZYL PHTHALATE	9/29/98	440	ug/Kg	Y	N	UJ	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	7440-43-9	CADMIUM	9/29/98	0.79	mg/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	7440-70-2	CALCIUM	9/29/98	160000	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	86-74-8	CARBAZOLE	9/29/98	170	ug/Kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	75-15-0	CARBON DISULFIDE	9/29/98	2	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	56-23-5	CARBON TETRACHLORIDE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	108-90-7	CHLOROBENZENE	9/29/98	13	ug/kg	Y	N	UJ	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	124-48-1	CHLORODIBROMOMETHANE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	75-00-3	CHLOROETHANE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	67-66-3	CHLOROFORM	9/29/98	8	ug/Kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	74-87-3	CHLOROMETHANE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	7440-47-3	CHROMIUM	9/29/98	13.6	mg/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	218-01-9	CHRYSENE	9/29/98	1900	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	156-59-2	CIS-1,2-DICHLOROETHENE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	7440-48-4	COBALT	9/29/98	17.7	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	7440-50-8	COPPER	9/29/98	64	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	57-12-5	CYANIDE	9/29/98	2.3	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	335.2
Plant Area	Soil	WA-SB-6	WA9213	319-86-8	DELTA-BHC	9/29/98	2.2	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	53-70-3	DIBENZO(A,H)ANTHRACENE	9/29/98	400	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	132-64-9	DIBENZOFURAN	9/29/98	270	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	60-57-1	DIELDRIN	9/29/98	4.4	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	84-66-2	DIETHYL PHTHALATE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	131-11-3	DIMETHYL PHTHALATE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	84-74-2	DI-N-BUTYL PHTHALATE	9/29/98	67	ug/Kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	117-84-0	DI-N-OCTYL PHTHALATE	9/29/98	440	ug/Kg	Y	N	R	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	959-98-8	ENDOSULFAN I	9/29/98	2.2	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	33213-65-9	ENDOSULFAN II	9/29/98	6.8	ug/Kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	1031-07-8	ENDOSULFAN SULFATE	9/29/98	4.4	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	72-20-8	ENDRIN	9/29/98	4.4	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	7421-93-4	ENDRIN ALDEHYDE	9/29/98	4.4	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	53494-70-5	ENDRIN KETONE	9/29/98	22	ug/Kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	100-41-4	ETHYLBENZENE	9/29/98	13	ug/kg	Y	N	UJ	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	206-44-0	FLUORANTHENE	9/29/98	2000	ug/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	86-73-7	FLUORENE	9/29/98	64	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-6	WA9213	58-89-9	GAMMA-BHC (LINDANE)	9/29/98	2.2	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	5566-34-7	GAMMA-CHLORDANE	9/29/98	2.2	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	76-44-8	HEPTACHLOR	9/29/98	2.2	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	1024-57-3	HEPTACHLOR EPOXIDE	9/29/98	3.5	ug/Kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	118-74-1	HEXACHLOROBENZENE	9/29/98	970	ug/Kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	87-68-3	HEXACHLOROBUTADIENE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	67-72-1	HEXACHLOROETHANE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	193-39-5	INDENO(1,2,3-CD)PYRENE	9/29/98	950	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	7439-89-6	IRON	9/29/98	45800	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	78-59-1	ISOPHORONE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	7439-92-1	LEAD	9/29/98	66.1	mg/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	7439-95-4	MAGNESIUM	9/29/98	7410	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	7439-96-5	MANGANESE	9/29/98	154	mg/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	7439-97-6	MERCURY	9/29/98	9.3	mg/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	245.1M
Plant Area	Soil	WA-SB-6	WA9213	72-43-5	METHOXYCHLOR	9/29/98	43	ug/Kg	Y	Y	JN	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	75-09-2	METHYLENE CHLORIDE	9/29/98	31	ug/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	91-20-3	NAPHTHALENE	9/29/98	4100	ug/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	7440-02-0	NICKEL	9/29/98	51.2	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	98-95-3	NITROBENZENE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	86-30-6	N-NITROSODIPHENYLAMINE	9/29/98	440	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	87-86-5	PENTACHLOROPHENOL	9/29/98	1100	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	85-01-8	PHENANTHRENE	9/29/98	1900	ug/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	108-95-2	PHENOL	9/29/98	86	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	7440-09-7	POTASSIUM	9/29/98	893	mg/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	129-00-0	PYRENE	9/29/98	3100	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-6	WA9213	7782-49-2	SELENIUM	9/29/98	2	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	7440-22-4	SILVER	9/29/98	0.29	mg/kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	7440-23-5	SODIUM	9/29/98	514	mg/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	100-42-5	STYRENE	9/29/98	13	ug/Kg	Y	N	UJ	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	127-18-4	TETRACHLOROETHENE	9/29/98	170	ug/Kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	7440-28-0	THALLIUM	9/29/98	1.9	mg/kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	108-88-3	TOLUENE	9/29/98	4	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	TSO	TOTAL SOLIDS	9/29/98	75.9	%	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-SB-6	WA9213	8001-35-2	TOXAPHENE	9/29/98	220	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-6	WA9213	156-60-5	TRANS-1,2-DICHLOROETHENE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	79-01-6	TRICHLOROETHENE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	7440-62-2	VANADIUM	9/29/98	25	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-6	WA9213	75-01-4	VINYL CHLORIDE	9/29/98	13	ug/Kg	Y	N	U	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	1330-20-7	XYLENES, TOTAL	9/29/98	3	ug/kg	Y	Y	J	1117422	922342.4	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-6	WA9213	7440-66-6	ZINC	9/29/98	1240	mg/kg	Y	Y		1117422	922342.4	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9216	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/29/98	366	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/29/98	1950	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/29/98	730	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	39227-28-6	1,2,3,4,7,8-HXCDD	9/29/98	20.8	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	70648-26-9	1,2,3,4,7,8-HXCDF	9/29/98	2670	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	57653-85-7	1,2,3,6,7,8-HXCDD	9/29/98	42.3	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	57117-44-9	1,2,3,6,7,8-HXCDF	9/29/98	810	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	19408-74-3	1,2,3,7,8,9-HXCDD	9/29/98	45.2	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	72918-21-9	1,2,3,7,8,9-HXCDF	9/29/98	54.4	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	40321-76-4	1,2,3,7,8-PECDD	9/29/98	23.3	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	57117-41-6	1,2,3,7,8-PECDF	9/29/98	1900	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	60851-34-5	2,3,4,6,7,8-HXCDF	9/29/98	323	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	57117-31-4	2,3,4,7,8-PECDF	9/29/98	1280	ng/kg	Y	N	R	1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	1746-01-6	2,3,7,8-TCDD	9/29/98	21.8	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	51207-31-9	2,3,7,8-TCDF	9/29/98	5370	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	3268-87-9	OCDD	9/29/98	2030	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	39001-02-0	OCDF	9/29/98	4310	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	37871-00-4	TOTAL HPCDD	9/29/98	731	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	38998-75-3	TOTAL HPCDF	9/29/98	3980	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	34465-46-8	TOTAL HXCDD	9/29/98	384	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	55684-94-1	TOTAL HXCDF	9/29/98	6550	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	TOC	TOTAL ORGANIC CARBON	9/29/98	57600	mg/Kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-7	WA9216	36088-22-9	TOTAL PECDD	9/29/98	237	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	30402-15-4	TOTAL PECDF	9/29/98	8530	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-7	WA9216	TSO	TOTAL SOLIDS	9/29/98	88.8	%	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-7	WA9216	41903-57-5	TOTAL TCDD	9/29/98	253	ng/kg	Y	Y		1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9216	55722-27-5	Total TCDF	9/29/98	14570	ng/kg	Y	Y	J	1117739.5	922330.6	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-7	WA9215	71-55-6	1,1,1-TRICHLOROETHANE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	79-00-5	1,1,2-TRICHLOROETHANE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	75-34-3	1,1-DICHLOROETHANE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	75-35-4	1,1-DICHLOROETHENE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	120-82-1	1,2,4-TRICHLOROBENZENE	9/29/98	1300	ug/Kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	95-50-1	1,2-DICHLOROBENZENE	9/29/98	15000	ug/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	107-06-2	1,2-DICHLOROETHANE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	78-87-5	1,2-DICHLOROPROPANE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	541-73-1	1,3-DICHLOROBENZENE	9/29/98	64	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	106-46-7	1,4-DICHLOROBENZENE	9/29/98	680	ug/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	95-95-4	2,4,5-TRICHLOROPHENOL	9/29/98	1100	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	88-06-2	2,4,6-TRICHLOROPHENOL	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	120-83-2	2,4-DICHLOROPHENOL	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	105-67-9	2,4-DIMETHYLPHENOL	9/29/98	400	ug/Kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	51-28-5	2,4-DINITROPHENOL	9/29/98	1100	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	121-14-2	2,4-DINITROTOLUENE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	606-20-2	2,6-DINITROTOLUENE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	78-93-3	2-BUTANONE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	91-58-7	2-CHLORONAPHTHALENE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	95-57-8	2-CHLOROPHENOL	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	591-78-6	2-HEXANONE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	91-57-6	2-METHYLNAPHTHALENE	9/29/98	1100	ug/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	95-48-7	2-METHYLPHENOL	9/29/98	280	ug/Kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	88-74-4	2-NITROANILINE	9/29/98	1100	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	88-75-5	2-NITROPHENOL	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	91-94-1	3,3'-DICHLOROBENZIDINE	9/29/98	420	ug/Kg	Y	N	R	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	99-09-2	3-NITROANILINE	9/29/98	1100	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	72-54-8	4,4'-DDD	9/29/98	85	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	72-55-9	4,4'-DDE	9/29/98	85	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	50-29-3	4,4'-DDT	9/29/98	85	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/29/98	1100	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	59-50-7	4-CHLORO-3-METHYLPHENOL	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	106-47-8	4-CHLOROANILINE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	108-10-1	4-METHYL-2-PENTANONE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	106-44-5	4-METHYLPHENOL	9/29/98	740	ug/Kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	100-01-6	4-NITROANILINE	9/29/98	1100	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	100-02-7	4-NITROPHENOL	9/29/98	1100	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	83-32-9	ACENAPHTHENE	9/29/98	2400	ug/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	208-96-8	ACENAPHTHYLENE	9/29/98	420	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	67-64-1	ACETONE	9/29/98	13	ug/Kg	Y	N	UJ	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	309-00-2	ALDRIN	9/29/98	42	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	319-84-6	ALPHA-BHC	9/29/98	42	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	5103-71-9	ALPHA-CHLORDANE	9/29/98	42	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	7429-90-5	ALUMINUM	9/29/98	7000	mg/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	120-12-7	ANTHRACENE	9/29/98	6700	ug/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	7440-36-0	ANTIMONY	9/29/98	0.74	mg/kg	Y	N	UJ	1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	12674-11-2	AROCLOR-1016	9/29/98	850	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	11104-28-2	AROCLOR-1221	9/29/98	1700	ug/kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	11141-16-5	AROCLOR-1232	9/29/98	850	ug/kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	53469-21-9	AROCLOR-1242	9/29/98	850	ug/kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	12672-29-6	AROCLOR-1248	9/29/98	850	ug/kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	11097-69-1	AROCLOR-1254	9/29/98	850	ug/kg	Y	Y	JN	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	11096-82-5	AROCLOR-1260	9/29/98	850	ug/kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	7440-38-2	ARSENIC	9/29/98	14.1	mg/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	7440-39-3	BARIUM	9/29/98	557	mg/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	71-43-2	BENZENE	9/29/98	3	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	56-55-3	BENZO(A)ANTHRACENE	9/29/98	16000	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	50-32-8	BENZO(A)PYRENE	9/29/98	18000	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	205-99-2	BENZO(B)FLUORANTHENE	9/29/98	23000	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-7	WA9215	191-24-2	BENZO(G,H,I)PERYLENE	9/29/98	23000	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	207-08-9	BENZO(K)FLUORANTHENE	9/29/98	7600	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	7440-41-7	BERYLLIUM	9/29/98	0.75	mg/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	319-85-7	BETA-BHC	9/29/98	42	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/29/98	5100	ug/Kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	75-27-4	BROMODICHLOROMETHANE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	75-25-2	BROMOFORM	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	74-83-9	BROMOMETHANE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	85-68-7	BUTYLBENZYL PHTHALATE	9/29/98	420	ug/Kg	Y	N	R	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	7440-43-9	CADMIUM	9/29/98	1.2	mg/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	7440-70-2	CALCIUM	9/29/98	197000	mg/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	86-74-8	CARBAZOLE	9/29/98	1600	ug/Kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	75-15-0	CARBON DISULFIDE	9/29/98	2	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	56-23-5	CARBON TETRACHLORIDE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	108-90-7	CHLOROBENZENE	9/29/98	3	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	124-48-1	CHLORODIBROMOMETHANE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	75-00-3	CHLOROETHANE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	67-66-3	CHLOROFORM	9/29/98	8	ug/Kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	74-87-3	CHLOROMETHANE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	7440-47-3	CHROMIUM	9/29/98	20	mg/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	218-01-9	CHRYSENE	9/29/98	17000	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	156-59-2	CIS-1,2-DICHLOROETHENE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	7440-48-4	COBALT	9/29/98	9	mg/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	7440-50-8	COPPER	9/29/98	136	mg/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	57-12-5	CYANIDE	9/29/98	5	mg/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	335.2
Plant Area	Soil	WA-SB-7	WA9215	319-86-8	DELTA-BHC	9/29/98	42	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	53-70-3	DIBENZO(A,H)ANTHRACENE	9/29/98	5800	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	132-64-9	DIBENZOFURAN	9/29/98	1700	ug/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	60-57-1	DIELDRIN	9/29/98	85	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	84-66-2	DIETHYL PHTHALATE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	131-11-3	DIMETHYL PHTHALATE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	84-74-2	DI-N-BUTYL PHTHALATE	9/29/98	170	ug/Kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	117-84-0	DI-N-OCTYL PHTHALATE	9/29/98	420	ug/Kg	Y	N	R	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	959-98-8	ENDOSULFAN I	9/29/98	42	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	33213-65-9	ENDOSULFAN II	9/29/98	85	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	1031-07-8	ENDOSULFAN SULFATE	9/29/98	85	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	72-20-8	ENDRIN	9/29/98	85	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	7421-93-4	ENDRIN ALDEHYDE	9/29/98	85	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	53494-70-5	ENDRIN KETONE	9/29/98	50	ug/Kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	100-41-4	ETHYLBENZENE	9/29/98	13	ug/kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	206-44-0	FLUORANTHENE	9/29/98	23000	ug/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	86-73-7	FLUORENE	9/29/98	2200	ug/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	58-89-9	GAMMA-BHC (LINDANE)	9/29/98	42	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	5566-34-7	GAMMA-CHLORDANE	9/29/98	42	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	76-44-8	HEPTACHLOR	9/29/98	18	ug/Kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	1024-57-3	HEPTACHLOR EPOXIDE	9/29/98	42	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	118-74-1	HEXACHLOROBENZENE	9/29/98	1300	ug/Kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	87-68-3	HEXACHLOROBUTADIENE	9/29/98	120	ug/Kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	67-72-1	HEXACHLOROETHANE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	193-39-5	INDENO(1,2,3-CD)PYRENE	9/29/98	18000	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	7439-89-6	IRON	9/29/98	20800	mg/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	78-59-1	ISOPHORONE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	7439-92-1	LEAD	9/29/98	200	mg/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	7439-95-4	MAGNESIUM	9/29/98	16500	mg/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	7439-96-5	MANGANESE	9/29/98	314	mg/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	7439-97-6	MERCURY	9/29/98	2440	mg/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	245.1M
Plant Area	Soil	WA-SB-7	WA9215	72-43-5	METHOXYCHLOR	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	75-09-2	METHYLENE CHLORIDE	9/29/98	18	ug/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	91-20-3	NAPHTHALENE	9/29/98	2200	ug/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	7440-02-0	NICKEL	9/29/98	49.2	mg/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	98-95-3	NITROBENZENE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	86-30-6	N-NITROSODIPHENYLAMINE	9/29/98	420	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-7	WA9215	87-86-5	PENTACHLOROPHENOL	9/29/98	1100	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	85-01-8	PHENANTHRENE	9/29/98	20000	ug/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	108-95-2	PHENOL	9/29/98	240	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	7440-09-7	POTASSIUM	9/29/98	1300	mg/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	129-00-0	PYRENE	9/29/98	31000	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-7	WA9215	7782-49-2	SELENIUM	9/29/98	1.2	mg/kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	7440-22-4	SILVER	9/29/98	0.28	mg/kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	7440-23-5	SODIUM	9/29/98	896	mg/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	100-42-5	STYRENE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	127-18-4	TETRACHLOROETHENE	9/29/98	16	ug/Kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	7440-28-0	THALLIUM	9/29/98	1.9	mg/kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	108-88-3	TOLUENE	9/29/98	5	ug/kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	TSO	TOTAL SOLIDS	9/29/98	78.7	%	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-SB-7	WA9215	8001-35-2	TOXAPHENE	9/29/98	4200	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-7	WA9215	156-60-5	TRANS-1,2-DICHLOROETHENE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	79-01-6	TRICHLOROETHENE	9/29/98	11	ug/Kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	7440-62-2	VANADIUM	9/29/98	20.9	mg/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-7	WA9215	75-01-4	VINYL CHLORIDE	9/29/98	13	ug/Kg	Y	N	U	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	1330-20-7	XYLENES, TOTAL	9/29/98	2	ug/Kg	Y	Y	J	1117739.5	922330.6	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-7	WA9215	7440-66-6	ZINC	9/29/98	109	mg/kg	Y	Y		1117739.5	922330.6	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9224	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	61.2	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	122	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	44.8	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	36.7	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	108	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	15.3	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	29	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	28.2	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	2.98	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	40321-76-4	1,2,3,7,8-PECDD	9/28/98	12.6	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	57117-41-6	1,2,3,7,8-PECDF	9/28/98	73.8	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	7.15	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	57117-31-4	2,3,4,7,8-PECDF	9/28/98	116	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	1746-01-6	2,3,7,8-TCDD	9/28/98	43.7	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	51207-31-9	2,3,7,8-TCDF	9/28/98	261	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	3268-87-9	OCDD	9/28/98	252	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	39001-02-0	OCDF	9/28/98	545	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	37871-00-4	TOTAL HPCDD	9/28/98	140	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	38998-75-3	TOTAL HPCDF	9/28/98	250	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	34465-46-8	TOTAL HXCDD	9/28/98	166	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	55684-94-1	TOTAL HXCDF	9/28/98	278	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	TOC	TOTAL ORGANIC CARBON	9/28/98	110000	mg/Kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-9	WA9224	36088-22-9	TOTAL PECDD	9/28/98	130	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	30402-15-4	TOTAL PECDF	9/28/98	530	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	TSO	TOTAL SOLIDS	9/28/98	91.1	%	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-9	WA9224	41903-57-5	TOTAL TCDD	9/28/98	226	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9224	55722-27-5	Total TCDF	9/28/98	1160	ng/kg	Y	Y		1117294	922603.7	0.5	1	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9223	71-55-6	1,1,1-TRICHLOROETHANE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	79-00-5	1,1,2-TRICHLOROETHANE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	75-34-3	1,1-DICHLOROETHANE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	75-35-4	1,1-DICHLOROETHENE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9225	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	26.7	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	112	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	45.3	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	5.62	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	126	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	9.35	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	30	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	8.14	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	3.57	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	40321-76-4	1,2,3,7,8-PECDD	9/28/98	9.47	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	57117-41-6	1,2,3,7,8-PECDF	9/28/98	113	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9223	120-82-1	1,2,4-TRICHLOROBENZENE	9/28/98	300	ug/Kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	95-50-1	1,2-DICHLOROBENZENE	9/28/98	2400	ug/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	107-06-2	1,2-DICHLOROETHANE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-9	WA9223	540-59-0	1,2-DICHLOROETHENE (TOTAL)	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	78-87-5	1,2-DICHLOROPROPANE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	541-73-1	1,3-DICHLOROBENZENE	9/28/98	360	ug/kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	106-46-7	1,4-DICHLOROBENZENE	9/28/98	270	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9225	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	6.62	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	57117-31-4	2,3,4,7,8-PECDF	9/28/98	148	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	1746-01-6	2,3,7,8-TCDD	9/28/98	7.05	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	51207-31-9	2,3,7,8-TCDF	9/28/98	376	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9223	95-95-4	2,4,5-TRICHLOROPHENOL	9/28/98	910	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	88-06-2	2,4,6-TRICHLOROPHENOL	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	120-83-2	2,4-DICHLOROPHENOL	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	105-67-9	2,4-DIMETHYLPHENOL	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	51-28-5	2,4-DINITROPHENOL	9/28/98	910	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	121-14-2	2,4-DINITROTOLUENE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	606-20-2	2,6-DINITROTOLUENE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	78-93-3	2-BUTANONE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	91-58-7	2-CHLORONAPHTHALENE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	95-57-8	2-CHLOROPHENOL	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	591-78-6	2-HEXANONE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	91-57-6	2-METHYLNAPHTHALENE	9/28/98	140	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	95-48-7	2-METHYLPHENOL	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	88-74-4	2-NITROANILINE	9/28/98	910	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	88-75-5	2-NITROPHENOL	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	91-94-1	3,3'-DICHLOROBENZIDINE	9/28/98	360	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	99-09-2	3-NITROANILINE	9/28/98	910	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	72-54-8	4,4'-DDD	9/28/98	36	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	72-55-9	4,4'-DDE	9/28/98	36	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	50-29-3	4,4'-DDT	9/28/98	36	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	534-52-1	4,6-DINITRO-2-METHYLPHENOL	9/28/98	910	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	101-55-3	4-BROMOPHENYL PHENYL ETHER	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	59-50-7	4-CHLORO-3-METHYLPHENOL	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	106-47-8	4-CHLOROANILINE	9/28/98	58	ug/Kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	108-10-1	4-METHYL-2-PENTANONE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	106-44-5	4-METHYLPHENOL	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	100-01-6	4-NITROANILINE	9/28/98	910	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	100-02-7	4-NITROPHENOL	9/28/98	910	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	83-32-9	ACENAPHTHENE	9/28/98	160	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	208-96-8	ACENAPHTHYLENE	9/28/98	150	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	67-64-1	ACETONE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	309-00-2	ALDRIN	9/28/98	18	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	319-84-6	ALPHA-BHC	9/28/98	18	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	5103-71-9	ALPHA-CHLORDANE	9/28/98	14	ug/Kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	7429-90-5	ALUMINUM	9/28/98	2750	mg/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	120-12-7	ANTHRACENE	9/28/98	370	ug/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	7440-36-0	ANTIMONY	9/28/98	0.63	mg/kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	12674-11-2	AROCLOR-1016	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	11104-28-2	AROCLOR-1221	9/28/98	730	ug/kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	11141-16-5	AROCLOR-1232	9/28/98	360	ug/kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	53469-21-9	AROCLOR-1242	9/28/98	360	ug/kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	12672-29-6	AROCLOR-1248	9/28/98	360	ug/kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	11097-69-1	AROCLOR-1254	9/28/98	770	ug/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	11096-82-5	AROCLOR-1260	9/28/98	360	ug/kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	7440-38-2	ARSENIC	9/28/98	65.7	mg/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	7440-39-3	BARIUM	9/28/98	81	mg/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	71-43-2	BENZENE	9/28/98	11	ug/kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	56-55-3	BENZO(A)ANTHRACENE	9/28/98	2300	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	50-32-8	BENZO(A)PYRENE	9/28/98	2300	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	205-99-2	BENZO(B)FLUORANTHENE	9/28/98	4400	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	191-24-2	BENZO(G,H,I)PERYLENE	9/28/98	2400	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	207-08-9	BENZO(K)FLUORANTHENE	9/28/98	1100	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	7440-41-7	BERYLLIUM	9/28/98	0.44	mg/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	319-85-7	BETA-BHC	9/28/98	18	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	111-91-1	BIS(2-CHLOROETHOXY)METHANE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	111-44-4	BIS(2-CHLOROETHYL)ETHER	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	9/28/98	2000	ug/Kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-9	WA9223	75-27-4	BROMODICHLOROMETHANE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	75-25-2	BROMOFORM	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	74-83-9	BROMOMETHANE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	85-68-7	BUTYLBENZYL PHTHALATE	9/28/98	360	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	7440-43-9	CADMIUM	9/28/98	0.7	mg/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	7440-70-2	CALCIUM	9/28/98	202000	mg/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	86-74-8	CARBAZOLE	9/28/98	210	ug/Kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	75-15-0	CARBON DISULFIDE	9/28/98	1	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	56-23-5	CARBON TETRACHLORIDE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	108-90-7	CHLOROBENZENE	9/28/98	7	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	124-48-1	CHLORODIBROMOMETHANE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	75-00-3	CHLOROETHANE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	67-66-3	CHLOROFORM	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	74-87-3	CHLOROMETHANE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	7440-47-3	CHROMIUM	9/28/98	9.7	mg/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	218-01-9	CHRYSENE	9/28/98	3200	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	156-59-2	CIS-1,2-DICHLOROETHENE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	7440-48-4	COBALT	9/28/98	3.1	mg/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	7440-50-8	COPPER	9/28/98	26.3	mg/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	57-12-5	CYANIDE	9/28/98	0.55	mg/kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	335.2
Plant Area	Soil	WA-SB-9	WA9223	319-86-8	DELTA-BHC	9/28/98	18	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	53-70-3	DIBENZO(A,H)ANTHRACENE	9/28/98	640	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	132-64-9	DIBENZOFURAN	9/28/98	140	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	60-57-1	DIELDRIN	9/28/98	36	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	84-66-2	DIETHYL PHTHALATE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	131-11-3	DIMETHYL PHTHALATE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	84-74-2	DI-N-BUTYL PHTHALATE	9/28/98	160	ug/Kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	117-84-0	DI-N-OCTYL PHTHALATE	9/28/98	360	ug/Kg	Y	N	R	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	959-98-8	ENDOSULFAN I	9/28/98	18	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	33213-65-9	ENDOSULFAN II	9/28/98	37	ug/Kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	1031-07-8	ENDOSULFAN SULFATE	9/28/98	36	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	72-20-8	ENDRIN	9/28/98	36	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	7421-93-4	ENDRIN ALDEHYDE	9/28/98	38	ug/Kg	Y	N	R	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	53494-70-5	ENDRIN KETONE	9/28/98	36	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	100-41-4	ETHYLBENZENE	9/28/98	11	ug/kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	206-44-0	FLUORANTHENE	9/28/98	2500	ug/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	86-73-7	FLUORENE	9/28/98	170	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	58-89-9	GAMMA-BHC (LINDANE)	9/28/98	18	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	5566-34-7	GAMMA-CHLORDANE	9/28/98	18	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	76-44-8	HEPTACHLOR	9/28/98	18	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	1024-57-3	HEPTACHLOR EPOXIDE	9/28/98	18	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	118-74-1	HEXACHLOROBENZENE	9/28/98	86	ug/Kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	87-68-3	HEXACHLOROBUTADIENE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	77-47-4	HEXACHLOROCYCLOPENTADIENE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	67-72-1	HEXACHLOROETHANE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	193-39-5	INDENO(1,2,3-CD)PYRENE	9/28/98	2000	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	7439-89-6	IRON	9/28/98	11900	mg/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	78-59-1	ISOPHORONE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	7439-92-1	LEAD	9/28/98	61.6	mg/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	7439-95-4	MAGNESIUM	9/28/98	8010	mg/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	7439-96-5	MANGANESE	9/28/98	161	mg/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	7439-97-6	MERCURY	9/28/98	4.2	mg/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	245.1M
Plant Area	Soil	WA-SB-9	WA9223	72-43-5	METHOXYCHLOR	9/28/98	180	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	75-09-2	METHYLENE CHLORIDE	9/28/98	11	ug/kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	91-20-3	NAPHTHALENE	9/28/98	170	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	7440-02-0	NICKEL	9/28/98	18.9	mg/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	98-95-3	NITROBENZENE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	86-30-6	N-NITROSODIPHENYLAMINE	9/28/98	360	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9225	3268-87-9	OCDD	9/28/98	109	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	39001-02-0	OCDF	9/28/98	639	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9223	87-86-5	PENTACHLOROPHENOL	9/28/98	910	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	85-01-8	PHENANTHRENE	9/28/98	2100	ug/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	108-95-2	PHENOL	9/28/98	360	ug/kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2
Plant Area	Soil	WA-SB-9	WA9223	7440-09-7	POTASSIUM	9/28/98	374	mg/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	129-00-0	PYRENE	9/28/98	4600	ug/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-9	WA9223	7782-49-2	SELENIUM	9/28/98	1.4	mg/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	7440-22-4	SILVER	9/28/98	0.24	mg/kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	7440-23-5	SODIUM	9/28/98	275	mg/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	100-42-5	STYRENE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	127-18-4	TETRACHLOROETHENE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	7440-28-0	THALLIUM	9/28/98	1.6	mg/kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	108-88-3	TOLUENE	9/28/98	11	ug/kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9225	37871-00-4	TOTAL HPCDD	9/28/98	47	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	38998-75-3	TOTAL HPCDF	9/28/98	238	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	34465-46-8	TOTAL HXCDD	9/28/98	87.9	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	55684-94-1	TOTAL HXCDF	9/28/98	311	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	TOC	TOTAL ORGANIC CARBON	9/28/98	59400	mg/Kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-9	WA9225	36088-22-9	TOTAL PECDD	9/28/98	209	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	30402-15-4	TOTAL PECDF	9/28/98	658	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9223	TSO	TOTAL SOLIDS	9/28/98	91.6	%	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-SB-9	WA9225	TSO	TOTAL SOLIDS	9/28/98	92.6	%	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-9	WA9225	41903-57-5	TOTAL TCDD	9/28/98	547	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9225	55722-27-5	Total TCDF	9/28/98	1490	ng/kg	Y	Y		1117294	922603.7	1	2	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9223	8001-35-2	TOXAPHENE	9/28/98	1800	ug/Kg	Y	N	U	1117294	922603.7	0	2	SB	SOIL	Soil	PCB
Plant Area	Soil	WA-SB-9	WA9223	156-60-5	TRANS-1,2-DICHLOROETHENE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	79-01-6	TRICHLOROETHENE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	7440-62-2	VANADIUM	9/28/98	9.5	mg/kg	Y	Y	J	1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9223	75-01-4	VINYL CHLORIDE	9/28/98	11	ug/Kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	1330-20-7	XYLENES, TOTAL	9/28/98	11	ug/kg	Y	N	UJ	1117294	922603.7	0	2	SB	SOIL	Soil	ASP 95-1
Plant Area	Soil	WA-SB-9	WA9223	7440-66-6	ZINC	9/28/98	102	mg/kg	Y	Y		1117294	922603.7	0	2	SB	SOIL	Soil	200.7M
Plant Area	Soil	WA-SB-9	WA9226	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	0.68	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	2.3	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	0.87	ng/kg	Y	Y	*	1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	0.15	ng/kg	Y	N	U	1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	2.44	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	0.15	ng/kg	Y	N	U	1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	0.43	ng/kg	Y	Y	*	1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	0.15	ng/kg	Y	N	U	1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	0.18	ng/kg	Y	N	U	1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	40321-76-4	1,2,3,7,8-PECDD	9/28/98	0.18	ng/kg	Y	Y	*	1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	57117-41-6	1,2,3,7,8-PECDF	9/28/98	2.19	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	0.18	ng/kg	Y	N	U	1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	57117-31-4	2,3,4,7,8-PECDF	9/28/98	2.83	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	1746-01-6	2,3,7,8-TCDD	9/28/98	0.94	ng/kg	Y	Y	*	1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	51207-31-9	2,3,7,8-TCDF	9/28/98	7.89	ng/kg	Y	Y	J	1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	3268-87-9	OCDD	9/28/98	3.87	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	39001-02-0	OCDF	9/28/98	13.4	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	37871-00-4	TOTAL HPCDD	9/28/98	1.12	ng/kg	Y	N	U	1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	38998-75-3	TOTAL HPCDF	9/28/98	2.64	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	34465-46-8	TOTAL HXCDD	9/28/98	0.26	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	55684-94-1	TOTAL HXCDF	9/28/98	3.9	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	TOC	TOTAL ORGANIC CARBON	9/28/98	37400	mg/Kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-9	WA9226	36088-22-9	TOTAL PECDD	9/28/98	0.82	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	30402-15-4	TOTAL PECDF	9/28/98	12.9	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	TSO	TOTAL SOLIDS	9/28/98	95.5	%	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-9	WA9226	41903-57-5	TOTAL TCDD	9/28/98	6	ng/kg	Y	Y		1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9226	55722-27-5	Total TCDF	9/28/98	34.3	ng/kg	Y	Y	J	1117294	922603.7	2	3	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	11.1	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	18.1	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	4.59	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	1.83	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	15.7	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	2.36	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	4.81	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	2.7	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	0.52	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	40321-76-4	1,2,3,7,8-PECDD	9/28/98	1.84	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	57117-41-6	1,2,3,7,8-PECDF	9/28/98	10.3	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	2.18	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	57117-31-4	2,3,4,7,8-PECDF	9/28/98	13.2	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	1746-01-6	2,3,7,8-TCDD	9/28/98	5.31	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SB-9	WA9227	51207-31-9	2,3,7,8-TCDF	9/28/98	27.8	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	3268-87-9	OCDD	9/28/98	52.3	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	39001-02-0	OCDF	9/28/98	46.5	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	37871-00-4	TOTAL HPCDD	9/28/98	21.6	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	38998-75-3	TOTAL HPCDF	9/28/98	32.2	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	34465-46-8	TOTAL HXCDD	9/28/98	24.4	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	55684-94-1	TOTAL HXCDF	9/28/98	41.6	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	TOC	TOTAL ORGANIC CARBON	9/28/98	36000	mg/Kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-9	WA9227	36088-22-9	TOTAL PECDD	9/28/98	23.5	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	30402-15-4	TOTAL PECDF	9/28/98	70.9	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	TSO	TOTAL SOLIDS	9/28/98	86.7	%	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-9	WA9227	41903-57-5	TOTAL TCDD	9/28/98	48.4	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9227	55722-27-5	Total TCDF	9/28/98	124	ng/kg	Y	Y		1117294	922603.7	3	4	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	35822-46-9	1,2,3,4,6,7,8-HPCDD	9/28/98	6.54	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	67562-39-4	1,2,3,4,6,7,8-HPCDF	9/28/98	23.7	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	55673-89-7	1,2,3,4,7,8,9-HPCDF	9/28/98	12.4	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	39227-28-6	1,2,3,4,7,8-HXCDD	9/28/98	2.86	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	70648-26-9	1,2,3,4,7,8-HXCDF	9/28/98	36.2	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	57653-85-7	1,2,3,6,7,8-HXCDD	9/28/98	2.95	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	57117-44-9	1,2,3,6,7,8-HXCDF	9/28/98	8.75	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	19408-74-3	1,2,3,7,8,9-HXCDD	9/28/98	4.01	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	72918-21-9	1,2,3,7,8,9-HXCDF	9/28/98	1.5	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	40321-76-4	1,2,3,7,8-PECDD	9/28/98	2.7	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	57117-41-6	1,2,3,7,8-PECDF	9/28/98	20.8	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	60851-34-5	2,3,4,6,7,8-HXCDF	9/28/98	3.09	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	57117-31-4	2,3,4,7,8-PECDF	9/28/98	19.4	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	1746-01-6	2,3,7,8-TCDD	9/28/98	3.24	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	51207-31-9	2,3,7,8-TCDF	9/28/98	39.9	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	3268-87-9	OCDD	9/28/98	13.1	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	39001-02-0	OCDF	9/28/98	125	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	37871-00-4	TOTAL HPCDD	9/28/98	13.1	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	38998-75-3	TOTAL HPCDF	9/28/98	49.5	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	34465-46-8	TOTAL HXCDD	9/28/98	37.4	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	55684-94-1	TOTAL HXCDF	9/28/98	81.2	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	TOC	TOTAL ORGANIC CARBON	9/28/98	33000	mg/Kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW9060
Plant Area	Soil	WA-SB-9	WA9228	36088-22-9	TOTAL PECDD	9/28/98	57.2	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	30402-15-4	TOTAL PECDF	9/28/98	132	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	TSO	TOTAL SOLIDS	9/28/98	79.2	%	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	WET CHEMISTRY
Plant Area	Soil	WA-SB-9	WA9228	41903-57-5	TOTAL TCDD	9/28/98	104	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SB-9	WA9228	55722-27-5	Total TCDF	9/28/98	261	ng/kg	Y	Y		1117294	922603.7	4	5	SB	SOIL	Soil	SW8290
Plant Area	Soil	WA-SS#2	WA9240	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	71-55-6	1,1,1-TRICHLOROETHANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	79-00-5	1,1,2-TRICHLOROETHANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	75-34-3	1,1-DICHLOROETHANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	75-35-4	1,1-DICHLOROETHENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	563-58-6	1,1-DICHLOROPROPENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	87-61-6	1,2,3-TRICHLOROBENZENE	9/15/97	3.3	ug/Kg	Y	Y	J	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	96-18-4	1,2,3-TRICHLOROPROPANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	120-82-1	1,2,4-TRICHLOROBENZENE	9/15/97	4.4	ug/Kg	Y	Y		1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	95-63-6	1,2,4-TRIMETHYLBENZENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	106-93-4	1,2-DIBROMOETHANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	95-50-1	1,2-DICHLOROBENZENE	9/15/97	40	ug/kg	Y	Y		1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	107-06-2	1,2-DICHLOROETHANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	78-87-5	1,2-DICHLOROPROPANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	108-67-8	1,3,5-TRIMETHYLBENZENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	541-73-1	1,3-DICHLOROBENZENE	9/15/97	26	ug/kg	Y	Y		1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	142-28-9	1,3-DICHLOROPROPANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	106-46-7	1,4-DICHLOROBENZENE	9/15/97	300	ug/kg	Y	Y		1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	594-20-7	2,2-DICHLOROPROPANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	95-49-8	2-CHLOROTOLUENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	72-54-8	4,4'-DDD	9/15/97	44	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	72-55-9	4,4'-DDE	9/15/97	44	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	50-29-3	4,4'-DDT	9/15/97	44	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	106-43-4	4-CHLOROTOLUENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	309-00-2	ALDRIN	9/15/97	22	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SS#2	WA9240	319-84-6	ALPHA-BHC	9/15/97	22	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	12674-11-2	AROCLOR-1016	9/15/97	220	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	11104-28-2	AROCLOR-1221	9/15/97	220	ug/kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	11141-16-5	AROCLOR-1232	9/15/97	220	ug/kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	53469-21-9	AROCLOR-1242	9/15/97	220	ug/kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	12672-29-6	AROCLOR-1248	9/15/97	220	ug/kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	11097-69-1	AROCLOR-1254	9/15/97	220	ug/kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	11096-82-5	AROCLOR-1260	9/15/97	450	ug/kg	Y	Y		1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	71-43-2	BENZENE	9/15/97	1.7	ug/kg	Y	Y	J	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	319-85-7	BETA-BHC	9/15/97	22	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	108-86-1	BROMOBENZENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	74-97-5	BROMOCHLOROMETHANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	75-27-4	BROMODICHLOROMETHANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	75-25-2	BROMOFORM	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	74-83-9	BROMOMETHANE	9/15/97	6.6	ug/Kg	Y	N	UJ	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	104-51-8	BUTYLBENZENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	56-23-5	CARBON TETRACHLORIDE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	57-74-9	CHLORDANE	9/15/97	220	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	108-90-7	CHLOROBENZENE	9/15/97	1.7	ug/kg	Y	Y	J	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	124-48-1	CHLORODIBROMOMETHANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	75-00-3	CHLOROETHANE	9/15/97	6.6	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	67-66-3	CHLOROFORM	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	74-87-3	CHLOROMETHANE	9/15/97	6.6	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	156-59-2	CIS-1,2-DICHLOROETHENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	319-86-8	DELTA-BHC	9/15/97	22	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	74-95-3	DIBROMOMETHANE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	75-71-8	DICHLORODIFLUOROMETHANE	9/15/97	6.6	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	60-57-1	DIELDRIN	9/15/97	44	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	959-98-8	ENDOSULFAN I	9/15/97	44	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	33213-65-9	ENDOSULFAN II	9/15/97	44	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	1031-07-8	ENDOSULFAN SULFATE	9/15/97	44	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	72-20-8	ENDRIN	9/15/97	44	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	7421-93-4	ENDRIN ALDEHYDE	9/15/97	44	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	100-41-4	ETHYLBENZENE	9/15/97	3.3	ug/kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	58-89-9	GAMMA-BHC (LINDANE)	9/15/97	22	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	76-44-8	HEPTACHLOR	9/15/97	22	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	1024-57-3	HEPTACHLOR EPOXIDE	9/15/97	22	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	118-74-1	HEXACHLOROBENZENE	9/15/97	37	ug/Kg	Y	Y		1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	87-68-3	HEXACHLOROBUTADIENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	98-82-8	ISOPROPYLBENZENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	7439-97-6	MERCURY	9/15/97	9.8	mg/kg	Y	Y		1117744.6	922685.3	9	9	TP	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-SS#2	WA9240	72-43-5	METHOXYCHLOR	9/15/97	220	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	75-09-2	METHYLENE CHLORIDE	9/15/97	6.6	ug/kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	91-20-3	NAPHTHALENE	9/15/97	1.7	ug/kg	Y	Y	J	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	103-65-1	N-PROPYLBENZENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	99-87-6	P-ISOPROPYLTOLUENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	135-98-8	SEC-BUTYLBENZENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	100-42-5	STYRENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	98-06-6	TERT-BUTYLBENZENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	127-18-4	TETRACHLOROETHENE	9/15/97	4	ug/Kg	Y	Y		1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	108-88-3	TOLUENE	9/15/97	3.3	ug/kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	TSO	TOTAL SOLIDS	9/15/97	76.2	%	Y	Y		1117744.6	922685.3	9	9	TP	SOIL	Soil	2540-G
Plant Area	Soil	WA-SS#2	WA9240	8001-35-2	TOXAPHENE	9/15/97	220	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SS#2	WA9240	156-60-5	TRANS-1,2-DICHLOROETHENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/15/97	3.3	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	79-01-6	TRICHLOROETHENE	9/15/97	5.4	ug/Kg	Y	Y		1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	75-69-4	TRICHLOROFLUOROMETHANE	9/15/97	6.6	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	75-01-4	VINYL CHLORIDE	9/15/97	6.6	ug/Kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SS#2	WA9240	1330-20-7	XYLENES, TOTAL	9/15/97	3.3	ug/kg	Y	N	U	1117744.6	922685.3	9	9	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	71-55-6	1,1,1-TRICHLOROETHANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	79-00-5	1,1,2-TRICHLOROETHANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	75-34-3	1,1-DICHLOROETHANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	75-35-4	1,1-DICHLOROETHENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	563-58-6	1,1-DICHLOROPROPENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SWMATP1	WA9242	87-61-6	1,2,3-TRICHLOROBENZENE	9/22/97	3.3	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	96-18-4	1,2,3-TRICHLOROPROPANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	120-82-1	1,2,4-TRICHLOROBENZENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	95-63-6	1,2,4-TRIMETHYLBENZENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	106-93-4	1,2-DIBROMOETHANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	95-50-1	1,2-DICHLOROBENZENE	9/22/97	3.3	ug/kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	107-06-2	1,2-DICHLOROETHANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	78-87-5	1,2-DICHLOROPROPANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	108-67-8	1,3,5-TRIMETHYLBENZENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	541-73-1	1,3-DICHLOROBENZENE	9/22/97	3.3	ug/kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	142-28-9	1,3-DICHLOROPROPANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	106-46-7	1,4-DICHLOROBENZENE	9/22/97	3.3	ug/kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	594-20-7	2,2-DICHLOROPROPANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	95-49-8	2-CHLOROTOLUENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	72-54-8	4,4'-DDD	9/22/97	22	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	72-55-9	4,4'-DDE	9/22/97	22	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	50-29-3	4,4'-DDT	9/22/97	22	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	106-43-4	4-CHLOROTOLUENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	309-00-2	ALDRIN	9/22/97	11	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	319-84-6	ALPHA-BHC	9/22/97	11	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	12674-11-2	AROCLOR-1016	9/22/97	22	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	11104-28-2	AROCLOR-1221	9/22/97	22	ug/kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	11141-16-5	AROCLOR-1232	9/22/97	22	ug/kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	53469-21-9	AROCLOR-1242	9/22/97	22	ug/kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	12672-29-6	AROCLOR-1248	9/22/97	22	ug/kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	11097-69-1	AROCLOR-1254	9/22/97	22	ug/kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	11096-82-5	AROCLOR-1260	9/22/97	42	ug/kg	Y	Y		1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	71-43-2	BENZENE	9/22/97	3.3	ug/kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	319-85-7	BETA-BHC	9/22/97	11	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	108-86-1	BROMOBENZENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	74-97-5	BROMOCHLOROMETHANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	75-27-4	BROMODICHLOROMETHANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	75-25-2	BROMOFORM	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	74-83-9	BROMOMETHANE	9/22/97	6.5	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	104-51-8	BUTYLBENZENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	56-23-5	CARBON TETRACHLORIDE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	57-74-9	CHLORDANE	9/22/97	110	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	108-90-7	CHLOROBENZENE	9/22/97	3.3	ug/kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	124-48-1	CHLORODIBROMOMETHANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	75-00-3	CHLOROETHANE	9/22/97	6.5	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	67-66-3	CHLOROFORM	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	74-87-3	CHLOROMETHANE	9/22/97	6.5	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	156-59-2	CIS-1,2-DICHLOROETHENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	319-86-8	DELTA-BHC	9/22/97	11	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	74-95-3	DIBROMOMETHANE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	75-71-8	DICHLORODIFLUOROMETHANE	9/22/97	6.5	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	60-57-1	DIELDRIN	9/22/97	22	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	959-98-8	ENDOSULFAN I	9/22/97	22	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	33213-65-9	ENDOSULFAN II	9/22/97	22	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	1031-07-8	ENDOSULFAN SULFATE	9/22/97	22	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	72-20-8	ENDRIN	9/22/97	22	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	7421-93-4	ENDRIN ALDEHYDE	9/22/97	22	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	100-41-4	ETHYLBENZENE	9/22/97	3.3	ug/kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	58-89-9	GAMMA-BHC (LINDANE)	9/22/97	11	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	76-44-8	HEPTACHLOR	9/22/97	11	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	1024-57-3	HEPTACHLOR EPOXIDE	9/22/97	11	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	118-74-1	HEXACHLOROBENZENE	9/22/97	7	ug/Kg	Y	Y		1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	87-68-3	HEXACHLOROBUTADIENE	9/22/97	3.3	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	98-82-8	ISOPROPYLBENZENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	7439-97-6	MERCURY	9/22/97	10	mg/kg	Y	Y		1117353.7	921913.2	2	6	TP	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-SWMATP1	WA9242	72-43-5	METHOXYCHLOR	9/22/97	110	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	75-09-2	METHYLENE CHLORIDE	9/22/97	1.8	ug/kg	Y	Y	J	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	91-20-3	NAPHTHALENE	9/22/97	3.3	ug/kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	103-65-1	N-PROPYLBENZENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	99-87-6	P-ISOPROPYLTOLUENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-SWMATP1	WA9242	135-98-8	SEC-BUTYLBENZENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	100-42-5	STYRENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	98-06-6	TERT-BUTYLBENZENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	127-18-4	TETRACHLOROETHENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	108-88-3	TOLUENE	9/22/97	1.2	ug/kg	Y	Y	J	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	TSO	TOTAL SOLIDS	9/22/97	76.4	%	Y	Y		1117353.7	921913.2	2	6	TP	SOIL	Soil	2540-G
Plant Area	Soil	WA-SWMATP1	WA9242	8001-35-2	TOXAPHENE	9/22/97	110	ug/Kg	Y	N	U	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8080
Plant Area	Soil	WA-SWMATP1	WA9242	156-60-5	TRANS-1,2-DICHLOROETHENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/22/97	3.3	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	79-01-6	TRICHLOROETHENE	9/22/97	0.95	ug/Kg	Y	Y	J	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	75-69-4	TRICHLOROFLUOROMETHANE	9/22/97	6.5	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	75-01-4	VINYL CHLORIDE	9/22/97	6.5	ug/Kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-SWMATP1	WA9242	1330-20-7	XYLENES, TOTAL	9/22/97	3.3	ug/kg	Y	N	UJ	1117353.7	921913.2	2	6	TP	SOIL	Soil	SW8260
Plant Area	Soil	WA-WA-B1	WA9290	71-55-6	1,1,1-TRICHLOROETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	79-00-5	1,1,2-TRICHLOROETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	75-34-3	1,1-DICHLOROETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	75-35-4	1,1-DICHLOROETHENE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	120-82-1	1,2,4-TRICHLOROBENZENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	95-50-1	1,2-DICHLOROBENZENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	107-06-2	1,2-DICHLOROETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	78-87-5	1,2-DICHLOROPROPANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	541-73-1	1,3-DICHLOROBENZENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	106-46-7	1,4-DICHLOROBENZENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	95-95-4	2,4,5-TRICHLOROPHENOL	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	88-06-2	2,4,6-TRICHLOROPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	120-83-2	2,4-DICHLOROPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	105-67-9	2,4-DIMETHYLPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	51-28-5	2,4-DINITROPHENOL	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	121-14-2	2,4-DINITROTOLUENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	606-20-2	2,6-DINITROTOLUENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	78-93-3	2-BUTANONE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	91-58-7	2-CHLORONAPHTHALENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	95-57-8	2-CHLOROPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	591-78-6	2-HEXANONE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	91-57-6	2-METHYLNAPHTHALENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	95-48-7	2-METHYLPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	88-74-4	2-NITROANILINE	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	88-75-5	2-NITROPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	91-94-1	3,3'-DICHLOROBENZIDINE	1/27/92	110000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	99-09-2	3-NITROANILINE	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	59-50-7	4-CHLORO-3-METHYLPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	106-47-8	4-CHLOROANILINE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	108-10-1	4-METHYL-2-PENTANONE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	106-44-5	4-METHYLPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	100-01-6	4-NITROANILINE	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	100-02-7	4-NITROPHENOL	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	83-32-9	ACENAPHTHENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	208-96-8	ACENAPHTHYLENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	67-64-1	ACETONE	1/27/92	34	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	7429-90-5	ALUMINUM	1/27/92	7720	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	120-12-7	ANTHRACENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	7440-36-0	ANTIMONY	1/27/92	9.6	mg/kg	Y	N	UJ	1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	7440-38-2	ARSENIC	1/27/92	11.2	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	7440-39-3	BARIUM	1/27/92	29.8	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	71-43-2	BENZENE	1/27/92	1	ug/kg	Y	Y	J	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	56-55-3	BENZO(A)ANTHRACENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	50-32-8	BENZO(A)PYRENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	205-99-2	BENZO(B)FLUORANTHENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	191-24-2	BENZO(G,H,I)PERYLENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	207-08-9	BENZO(K)FLUORANTHENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	65-85-0	BENZOIC ACID	1/27/92	290000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B1	WA9290	100-51-6	BENZYL ALCOHOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	7440-41-7	BERYLLIUM	1/27/92	0.35	mg/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	75-27-4	BROMODICHLOROMETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	75-25-2	BROMOFORM	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	74-83-9	BROMOMETHANE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	85-68-7	BUTYLBENZYL PHTHALATE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	7440-43-9	CADMIUM	1/27/92	1.1	mg/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	7440-70-2	CALCIUM	1/27/92	289000	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	75-15-0	CARBON DISULFIDE	1/27/92	9	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	56-23-5	CARBON TETRACHLORIDE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	108-90-7	CHLOROBENZENE	1/27/92	13	ug/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	124-48-1	CHLORODIBROMOMETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	75-00-3	CHLOROETHANE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	67-66-3	CHLOROFORM	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	74-87-3	CHLOROMETHANE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	7440-47-3	CHROMIUM	1/27/92	7.9	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	218-01-9	CHRYSENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	7440-48-4	COBALT	1/27/92	2.8	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	7440-50-8	COPPER	1/27/92	8.8	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	57-12-5	CYANIDE	1/27/92	4.1	mg/kg	Y	Y	J	1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	53-70-3	DIBENZO(A,H)ANTHRACENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	132-64-9	DIBENZOFURAN	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	84-66-2	DIETHYL PHTHALATE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	131-11-3	DIMETHYL PHTHALATE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	84-74-2	DI-N-BUTYL PHTHALATE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	117-84-0	DI-N-OCTYL PHTHALATE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	100-41-4	ETHYLBENZENE	1/27/92	9	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	206-44-0	FLUORANTHENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	86-73-7	FLUORENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	118-74-1	HEXACHLOROBENZENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	87-68-3	HEXACHLOROBUTADIENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	67-72-1	HEXACHLOROETHANE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	193-39-5	INDENO(1,2,3-CD)PYRENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	7439-89-6	IRON	1/27/92	6700	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	78-59-1	ISOPHORONE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	7439-92-1	LEAD	1/27/92	2	mg/kg	Y	Y	J	1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	7439-95-4	MAGNESIUM	1/27/92	17700	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	7439-96-5	MANGANESE	1/27/92	114	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	7439-97-6	MERCURY	1/27/92	71.4	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	75-09-2	METHYLENE CHLORIDE	1/27/92	9	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	91-20-3	NAPHTHALENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	7440-02-0	NICKEL	1/27/92	8.5	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	98-95-3	NITROBENZENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	86-30-6	N-NITROSODIPHENYLAMINE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	87-86-5	PENTACHLOROPHENOL	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	85-01-8	PHENANTHRENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	108-95-2	PHENOL	1/27/92	4500	ug/kg	Y	Y	J	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	7440-09-7	POTASSIUM	1/27/92	13500	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	129-00-0	PYRENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9290	7782-49-2	SELENIUM	1/27/92	1.1	mg/kg	Y	N	UJ	1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	7440-22-4	SILVER	1/27/92	1.1	mg/kg	Y	N	UJ	1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	7440-23-5	SODIUM	1/27/92	2030	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	100-42-5	STYRENE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	127-18-4	TETRACHLOROETHENE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	7440-28-0	THALLIUM	1/27/92	3.5	mg/kg	Y	N	UJ	1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	108-88-3	TOLUENE	1/27/92	2	ug/kg	Y	Y	J	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	TSO	TOTAL SOLIDS	1/27/92	57	%	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B1	WA9290	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	79-01-6	TRICHLOROETHENE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	7440-62-2	VANADIUM	1/27/92	18.9	mg/kg	Y	Y		1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9290	75-01-4	VINYL CHLORIDE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B1	WA9290	1330-20-7	XYLENES, TOTAL	1/27/92	9	ug/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9290	7440-66-6	ZINC	1/27/92	13.6	mg/kg	Y	N	U	1117545	921962.9	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	71-55-6	1,1,1-TRICHLOROETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	79-00-5	1,1,2-TRICHLOROETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	75-34-3	1,1-DICHLOROETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	75-35-4	1,1-DICHLOROETHENE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	120-82-1	1,2,4-TRICHLOROBENZENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	95-50-1	1,2-DICHLOROBENZENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	107-06-2	1,2-DICHLOROETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	78-87-5	1,2-DICHLOROPROPANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	541-73-1	1,3-DICHLOROBENZENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	106-46-7	1,4-DICHLOROBENZENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	95-95-4	2,4,5-TRICHLOROPHENOL	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	88-06-2	2,4,6-TRICHLOROPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	120-83-2	2,4-DICHLOROPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	105-67-9	2,4-DIMETHYLPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	51-28-5	2,4-DINITROPHENOL	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	121-14-2	2,4-DINITROTOLUENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	606-20-2	2,6-DINITROTOLUENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	78-93-3	2-BUTANONE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	91-58-7	2-CHLORONAPHTHALENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	95-57-8	2-CHLOROPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	591-78-6	2-HEXANONE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	91-57-6	2-METHYLNAPHTHALENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	95-48-7	2-METHYLPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	88-74-4	2-NITROANILINE	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	88-75-5	2-NITROPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	91-94-1	3,3'-DICHLOROBENZIDINE	1/27/92	110000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	99-09-2	3-NITROANILINE	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	59-50-7	4-CHLORO-3-METHYLPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	106-47-8	4-CHLOROANILINE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	108-10-1	4-METHYL-2-PENTANONE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	106-44-5	4-METHYLPHENOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	100-01-6	4-NITROANILINE	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	100-02-7	4-NITROPHENOL	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	83-32-9	ACENAPHTHENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	208-96-8	ACENAPHTHYLENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	67-64-1	ACETONE	1/27/92	60	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	7429-90-5	ALUMINUM	1/27/92	9100	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	120-12-7	ANTHRACENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	7440-36-0	ANTIMONY	1/27/92	5.8	mg/kg	Y	N	UJ	1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	7440-38-2	ARSENIC	1/27/92	11.8	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	7440-39-3	BARIUM	1/27/92	35.7	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	71-43-2	BENZENE	1/27/92	9	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	56-55-3	BENZO(A)ANTHRACENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	50-32-8	BENZO(A)PYRENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	205-99-2	BENZO(B)FLUORANTHENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	191-24-2	BENZO(G,H,I)PERYLENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	207-08-9	BENZO(K)FLUORANTHENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	65-85-0	BENZOIC ACID	1/27/92	290000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	100-51-6	BENZYL ALCOHOL	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	7440-41-7	BERYLLIUM	1/27/92	0.35	mg/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	75-27-4	BROMODICHLOROMETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	75-25-2	BROMOFORM	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	74-83-9	BROMOMETHANE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	85-68-7	BUTYLBENZYL PHTHALATE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	7440-43-9	CADMIUM	1/27/92	1.1	mg/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	7440-70-2	CALCIUM	1/27/92	279000	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B1	WA9289	75-15-0	CARBON DISULFIDE	1/27/92	9	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	56-23-5	CARBON TETRACHLORIDE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	108-90-7	CHLOROBENZENE	1/27/92	9	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	124-48-1	CHLORODIBROMOMETHANE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	75-00-3	CHLOROETHANE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	67-66-3	CHLOROFORM	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	74-87-3	CHLOROMETHANE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	7440-47-3	CHROMIUM	1/27/92	9.2	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	218-01-9	CHRYSENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	7440-48-4	COBALT	1/27/92	3.1	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	7440-50-8	COPPER	1/27/92	12.7	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	57-12-5	CYANIDE	1/27/92	3	mg/kg	Y	Y	J	1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	53-70-3	DIBENZO(A,H)ANTHRACENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	132-64-9	DIBENZOFURAN	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	84-66-2	DIETHYL PHTHALATE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	131-11-3	DIMETHYL PHTHALATE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	84-74-2	DI-N-BUTYL PHTHALATE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	117-84-0	DI-N-OCTYL PHTHALATE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	100-41-4	ETHYLBENZENE	1/27/92	9	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	206-44-0	FLUORANTHENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	86-73-7	FLUORENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	118-74-1	HEXACHLOROBENZENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	87-68-3	HEXACHLOROBUTADIENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	67-72-1	HEXACHLOROETHANE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	193-39-5	INDENO(1,2,3-CD)PYRENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	7439-89-6	IRON	1/27/92	7760	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	78-59-1	ISOPHORONE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	7439-92-1	LEAD	1/27/92	2.7	mg/kg	Y	Y	J	1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	7439-95-4	MAGNESIUM	1/27/92	16300	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	7439-96-5	MANGANESE	1/27/92	150	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	7439-97-6	MERCURY	1/27/92	1370	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	75-09-2	METHYLENE CHLORIDE	1/27/92	9	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	91-20-3	NAPHTHALENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	7440-02-0	NICKEL	1/27/92	8.3	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	98-95-3	NITROBENZENE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	86-30-6	N-NITROSODIPHENYLAMINE	1/27/92	57000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	87-86-5	PENTACHLOROPHENOL	1/27/92	290000	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	85-01-8	PHENANTHRENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	108-95-2	PHENOL	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	7440-09-7	POTASSIUM	1/27/92	13600	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	129-00-0	PYRENE	1/27/92	57000	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B1	WA9289	7782-49-2	SELENIUM	1/27/92	1.1	mg/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	7440-22-4	SILVER	1/27/92	1.1	mg/kg	Y	N	UJ	1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	7440-23-5	SODIUM	1/27/92	1420	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	100-42-5	STYRENE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	127-18-4	TETRACHLOROETHENE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	7440-28-0	THALLIUM	1/27/92	0.35	mg/kg	Y	N	UJ	1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	108-88-3	TOLUENE	1/27/92	1	ug/kg	Y	Y	J	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	TSO	TOTAL SOLIDS	1/27/92	57	%	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B1	WA9289	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	79-01-6	TRICHLOROETHENE	1/27/92	9	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	7440-62-2	VANADIUM	1/27/92	21.7	mg/kg	Y	Y		1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B1	WA9289	75-01-4	VINYL CHLORIDE	1/27/92	18	ug/Kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	1330-20-7	XYLENES, TOTAL	1/27/92	9	ug/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B1	WA9289	7440-66-6	ZINC	1/27/92	15.9	mg/kg	Y	N	U	1117545	921962.9	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	71-55-6	1,1,1-TRICHLOROETHANE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	79-00-5	1,1,2-TRICHLOROETHANE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	75-34-3	1,1-DICHLOROETHANE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	75-35-4	1,1-DICHLOROETHENE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	120-82-1	1,2,4-TRICHLOROBENZENE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	95-50-1	1,2-DICHLOROBENZENE	1/20/92	98000	ug/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	107-06-2	1,2-DICHLOROETHANE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B10	WA9291	78-87-5	1,2-DICHLOROPROPANE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	541-73-1	1,3-DICHLOROBENZENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	106-46-7	1,4-DICHLOROBENZENE	1/20/92	300000	ug/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	95-95-4	2,4,5-TRICHLOROPHENOL	1/20/92	260000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	88-06-2	2,4,6-TRICHLOROPHENOL	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	120-83-2	2,4-DICHLOROPHENOL	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	105-67-9	2,4-DIMETHYLPHENOL	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	51-28-5	2,4-DINITROPHENOL	1/20/92	260000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	121-14-2	2,4-DINITROTOLUENE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	606-20-2	2,6-DINITROTOLUENE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	78-93-3	2-BUTANONE	1/20/92	19000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	91-58-7	2-CHLORONAPHTHALENE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	95-57-8	2-CHLOROPHENOL	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	591-78-6	2-HEXANONE	1/20/92	19000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	91-57-6	2-METHYLNAPHTHALENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	95-48-7	2-METHYLPHENOL	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	88-74-4	2-NITROANILINE	1/20/92	260000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	88-75-5	2-NITROPHENOL	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	91-94-1	3,3'-DICHLOROBENZIDINE	1/20/92	100000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	99-09-2	3-NITROANILINE	1/20/92	260000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/20/92	260000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	59-50-7	4-CHLORO-3-METHYLPHENOL	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	106-47-8	4-CHLOROANILINE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	108-10-1	4-METHYL-2-PENTANONE	1/20/92	19000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	106-44-5	4-METHYLPHENOL	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	100-01-6	4-NITROANILINE	1/20/92	260000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	100-02-7	4-NITROPHENOL	1/20/92	260000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	83-32-9	ACENAPHTHENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	208-96-8	ACENAPHTHYLENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	67-64-1	ACETONE	1/20/92	19000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	7429-90-5	ALUMINUM	1/20/92	6740	mg/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	120-12-7	ANTHRACENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	7440-36-0	ANTIMONY	1/20/92	4.9	mg/kg	Y	N	UJ	1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	7440-38-2	ARSENIC	1/20/92	2.4	mg/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	7440-39-3	BARIUM	1/20/92	65.1	mg/kg	Y	Y	J	1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	71-43-2	BENZENE	1/20/92	4500	ug/kg	Y	Y	J	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	56-55-3	BENZO(A)ANTHRACENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	50-32-8	BENZO(A)PYRENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	205-99-2	BENZO(B)FLUORANTHENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	191-24-2	BENZO(G,H,I)PERYLENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	207-08-9	BENZO(K)FLUORANTHENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	65-85-0	BENZOIC ACID	1/20/92	260000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	100-51-6	BENZYL ALCOHOL	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	7440-41-7	BERYLLIUM	1/20/92	1.2	mg/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	75-27-4	BROMODICHLOROMETHANE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	75-25-2	BROMOFORM	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	74-83-9	BROMOMETHANE	1/20/92	19000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	85-68-7	BUTYLBENZYL PHTHALATE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	7440-43-9	CADMIUM	1/20/92	0.92	mg/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	7440-70-2	CALCIUM	1/20/92	62300	mg/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	75-15-0	CARBON DISULFIDE	1/20/92	9700	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	56-23-5	CARBON TETRACHLORIDE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	108-90-7	CHLOROBENZENE	1/20/92	230000	ug/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	124-48-1	CHLORODIBROMOMETHANE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	75-00-3	CHLOROETHANE	1/20/92	19000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	67-66-3	CHLOROFORM	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	74-87-3	CHLOROMETHANE	1/20/92	19000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	7440-47-3	CHROMIUM	1/20/92	7.1	mg/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	218-01-9	CHRYSENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	7440-48-4	COBALT	1/20/92	8	mg/kg	Y	Y	J	1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B10	WA9291	7440-50-8	COPPER	1/20/92	24.9	mg/kg	Y	Y	J	1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	57-12-5	CYANIDE	1/20/92	0.77	mg/kg	Y	N	R	1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	53-70-3	DIBENZO(A,H)ANTHRACENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	132-64-9	DIBENZOFURAN	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	84-66-2	DIETHYL PHTHALATE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	131-11-3	DIMETHYL PHTHALATE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	84-74-2	DI-N-BUTYL PHTHALATE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	117-84-0	DI-N-OCTYL PHTHALATE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	100-41-4	ETHYLBENZENE	1/20/92	9700	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	206-44-0	FLUORANTHENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	86-73-7	FLUORENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	118-74-1	HEXACHLOROBENZENE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	87-68-3	HEXACHLOROBUTADIENE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	67-72-1	HEXACHLOROETHANE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	193-39-5	INDENO(1,2,3-CD)PYRENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	7439-89-6	IRON	1/20/92	5800	mg/kg	Y	Y	J	1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	78-59-1	ISOPHORONE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	7439-92-1	LEAD	1/20/92	40.1	mg/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	7439-95-4	MAGNESIUM	1/20/92	4160	mg/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	7439-96-5	MANGANESE	1/20/92	114	mg/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	7439-97-6	MERCURY	1/20/92	0.66	mg/kg	Y	Y	J	1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	75-09-2	METHYLENE CHLORIDE	1/20/92	9700	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	91-20-3	NAPHTHALENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	7440-02-0	NICKEL	1/20/92	15	mg/kg	Y	Y	J	1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	98-95-3	NITROBENZENE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	86-30-6	N-NITROSODIPHENYLAMINE	1/20/92	51000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	87-86-5	PENTACHLOROPHENOL	1/20/92	260000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	85-01-8	PHENANTHRENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	108-95-2	PHENOL	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	7440-09-7	POTASSIUM	1/20/92	5340	mg/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	129-00-0	PYRENE	1/20/92	51000	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9291	7782-49-2	SELENIUM	1/20/92	0.92	mg/kg	Y	N	UJ	1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	7440-22-4	SILVER	1/20/92	1.1	mg/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	7440-23-5	SODIUM	1/20/92	3180	mg/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	100-42-5	STYRENE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	127-18-4	TETRACHLOROETHENE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	7440-28-0	THALLIUM	1/20/92	3.1	mg/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	108-88-3	TOLUENE	1/20/92	9700	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	TSO	TOTAL SOLIDS	1/20/92	65	%	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B10	WA9291	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	79-01-6	TRICHLOROETHENE	1/20/92	9700	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	7440-62-2	VANADIUM	1/20/92	21.2	mg/kg	Y	Y		1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9291	75-01-4	VINYL CHLORIDE	1/20/92	19000	ug/Kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	1330-20-7	XYLENES, TOTAL	1/20/92	9700	ug/kg	Y	N	U	1117796.4	922563.9	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9291	7440-66-6	ZINC	1/20/92	14.9	mg/kg	Y	N	R	1117796.4	922563.9	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9292	120-82-1	1,2,4-TRICHLOROBENZENE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	95-50-1	1,2-DICHLOROBENZENE	1/20/92	19000	ug/Kg	Y	Y		1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	541-73-1	1,3-DICHLOROBENZENE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	106-46-7	1,4-DICHLOROBENZENE	1/20/92	48000	ug/Kg	Y	Y		1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	95-95-4	2,4,5-TRICHLOROPHENOL	1/20/92	29000	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	88-06-2	2,4,6-TRICHLOROPHENOL	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	120-83-2	2,4-DICHLOROPHENOL	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	105-67-9	2,4-DIMETHYLPHENOL	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	51-28-5	2,4-DINITROPHENOL	1/20/92	29000	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	121-14-2	2,4-DINITROTOLUENE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	606-20-2	2,6-DINITROTOLUENE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	91-58-7	2-CHLORONAPHTHALENE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	95-57-8	2-CHLOROPHENOL	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	91-57-6	2-METHYLNAPHTHALENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	95-48-7	2-METHYLPHENOL	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	88-74-4	2-NITROANILINE	1/20/92	29000	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	88-75-5	2-NITROPHENOL	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	91-94-1	3,3'-DICHLOROBENZIDINE	1/20/92	12000	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	99-09-2	3-NITROANILINE	1/20/92	29000	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B10	WA9292	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/20/92	29000	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	59-50-7	4-CHLORO-3-METHYLPHENOL	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	106-47-8	4-CHLOROANILINE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	106-44-5	4-METHYLPHENOL	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	100-01-6	4-NITROANILINE	1/20/92	29000	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	100-02-7	4-NITROPHENOL	1/20/92	29000	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	83-32-9	ACENAPHTHENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	208-96-8	ACENAPHTHYLENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	120-12-7	ANTHRACENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	56-55-3	BENZO(A)ANTHRACENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	50-32-8	BENZO(A)PYRENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	205-99-2	BENZO(B)FLUORANTHENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	191-24-2	BENZO(G,H,I)PERYLENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	207-08-9	BENZO(K)FLUORANTHENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	65-85-0	BENZOIC ACID	1/20/92	29000	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	100-51-6	BENZYL ALCOHOL	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	85-68-7	BUTYLBENZYL PHTHALATE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	218-01-9	CHRYSENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	53-70-3	DIBENZO(A,H)ANTHRACENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	132-64-9	DIBENZOFURAN	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	84-66-2	DIETHYL PHTHALATE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	131-11-3	DIMETHYL PHTHALATE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	84-74-2	DI-N-BUTYL PHTHALATE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	117-84-0	DI-N-OCTYL PHTHALATE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	206-44-0	FLUORANTHENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	86-73-7	FLUORENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	118-74-1	HEXACHLOROBENZENE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	87-68-3	HEXACHLOROBUTADIENE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	67-72-1	HEXACHLOROETHANE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	193-39-5	INDENO(1,2,3-CD)PYRENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	78-59-1	ISOPHORONE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	91-20-3	NAPHTHALENE	1/20/92	1500	ug/kg	Y	Y	J	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	98-95-3	NITROBENZENE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	86-30-6	N-NITROSODIPHENYLAMINE	1/20/92	5800	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	87-86-5	PENTACHLOROPHENOL	1/20/92	29000	ug/Kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	85-01-8	PHENANTHRENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	108-95-2	PHENOL	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9292	129-00-0	PYRENE	1/20/92	5800	ug/kg	Y	N	U	1117796.4	922563.9	27	29	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B10	WA9293	71-55-6	1,1,1-TRICHLOROETHANE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	79-00-5	1,1,2-TRICHLOROETHANE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	75-34-3	1,1-DICHLOROETHANE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	75-35-4	1,1-DICHLOROETHENE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	107-06-2	1,2-DICHLOROETHANE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	78-87-5	1,2-DICHLOROPROPANE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	78-93-3	2-BUTANONE	1/20/92	110000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	591-78-6	2-HEXANONE	1/20/92	110000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	108-10-1	4-METHYL-2-PENTANONE	1/20/92	110000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	67-64-1	ACETONE	1/20/92	110000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	7429-90-5	ALUMINUM	1/20/92	3040	mg/kg	Y	Y		1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	7440-36-0	ANTIMONY	1/20/92	4.9	mg/kg	Y	N	UJ	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	7440-38-2	ARSENIC	1/20/92	0.98	mg/kg	Y	Y		1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	7440-39-3	BARIUM	1/20/92	79.5	mg/kg	Y	Y	J	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	71-43-2	BENZENE	1/20/92	38000	ug/kg	Y	Y	J	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	7440-41-7	BERYLLIUM	1/20/92	0.35	mg/kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	75-27-4	BROMODICHLOROMETHANE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	75-25-2	BROMOFORM	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	74-83-9	BROMOMETHANE	1/20/92	110000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	7440-43-9	CADMIUM	1/20/92	1.1	mg/kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B10	WA9293	7440-70-2	CALCIUM	1/20/92	227000	mg/kg	Y	Y		1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	75-15-0	CARBON DISULFIDE	1/20/92	55000	ug/kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	56-23-5	CARBON TETRACHLORIDE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	108-90-7	CHLOROBENZENE	1/20/92	440000	ug/kg	Y	Y		1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	124-48-1	CHLORODIBROMOMETHANE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	75-00-3	CHLOROETHANE	1/20/92	110000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	67-66-3	CHLOROFORM	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	74-87-3	CHLOROMETHANE	1/20/92	110000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	7440-47-3	CHROMIUM	1/20/92	5.4	mg/kg	Y	Y		1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	7440-48-4	COBALT	1/20/92	1.4	mg/kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	7440-50-8	COPPER	1/20/92	7.8	mg/kg	Y	Y	J	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	57-12-5	CYANIDE	1/20/92	0.88	mg/kg	Y	N	R	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	100-41-4	ETHYLBENZENE	1/20/92	55000	ug/kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	7439-89-6	IRON	1/20/92	4240	mg/kg	Y	Y	J	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	7439-92-1	LEAD	1/20/92	2.9	mg/kg	Y	Y		1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	7439-95-4	MAGNESIUM	1/20/92	4250	mg/kg	Y	Y		1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	7439-96-5	MANGANESE	1/20/92	188	mg/kg	Y	Y		1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	7439-97-6	MERCURY	1/20/92	0.18	mg/kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	75-09-2	METHYLENE CHLORIDE	1/20/92	55000	ug/kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	7440-02-0	NICKEL	1/20/92	5.8	mg/kg	Y	Y	J	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	7440-09-7	POTASSIUM	1/20/92	10000	mg/kg	Y	Y		1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	7782-49-2	SELENIUM	1/20/92	1.1	mg/kg	Y	N	UJ	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	7440-22-4	SILVER	1/20/92	1.1	mg/kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	7440-23-5	SODIUM	1/20/92	7440	mg/kg	Y	Y		1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	100-42-5	STYRENE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	127-18-4	TETRACHLOROETHENE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	7440-28-0	THALLIUM	1/20/92	0.35	mg/kg	Y	N	UJ	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	108-88-3	TOLUENE	1/20/92	55000	ug/kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	TSO	TOTAL SOLIDS	1/20/92	57	%	Y	Y		1117796.4	922563.9	28	30	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B10	WA9293	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	79-01-6	TRICHLOROETHENE	1/20/92	55000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	7440-62-2	VANADIUM	1/20/92	6.7	mg/kg	Y	Y		1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B10	WA9293	75-01-4	VINYL CHLORIDE	1/20/92	110000	ug/Kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	1330-20-7	XYLENES, TOTAL	1/20/92	55000	ug/kg	Y	N	U	1117796.4	922563.9	28	30	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B10	WA9293	7440-66-6	ZINC	1/20/92	16.4	mg/kg	Y	N	R	1117796.4	922563.9	28	30	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	71-55-6	1,1,1-TRICHLOROETHANE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	79-00-5	1,1,2-TRICHLOROETHANE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	75-34-3	1,1-DICHLOROETHANE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	75-35-4	1,1-DICHLOROETHENE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	120-82-1	1,2,4-TRICHLOROBENZENE	1/22/92	78	ug/Kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	95-50-1	1,2-DICHLOROBENZENE	1/22/92	260	ug/kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	107-06-2	1,2-DICHLOROETHANE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	78-87-5	1,2-DICHLOROPROPANE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	541-73-1	1,3-DICHLOROBENZENE	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	106-46-7	1,4-DICHLOROBENZENE	1/22/92	290	ug/kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	95-95-4	2,4,5-TRICHLOROPHENOL	1/22/92	2300	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	88-06-2	2,4,6-TRICHLOROPHENOL	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	120-83-2	2,4-DICHLOROPHENOL	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	105-67-9	2,4-DIMETHYLPHENOL	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	51-28-5	2,4-DINITROPHENOL	1/22/92	2300	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	121-14-2	2,4-DINITROTOLUENE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	606-20-2	2,6-DINITROTOLUENE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	78-93-3	2-BUTANONE	1/22/92	13	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	91-58-7	2-CHLORONAPHTHALENE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	95-57-8	2-CHLOROPHENOL	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	591-78-6	2-HEXANONE	1/22/92	13	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	91-57-6	2-METHYLNAPHTHALENE	1/22/92	130	ug/kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	95-48-7	2-METHYLPHENOL	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	88-74-4	2-NITROANILINE	1/22/92	2300	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	88-75-5	2-NITROPHENOL	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	91-94-1	3,3'-DICHLOROBENZIDINE	1/22/92	900	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	99-09-2	3-NITROANILINE	1/22/92	2300	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/22/92	2300	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B2	WA9294	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	59-50-7	4-CHLORO-3-METHYLPHENOL	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	106-47-8	4-CHLOROANILINE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	108-10-1	4-METHYL-2-PENTANONE	1/22/92	13	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	106-44-5	4-METHYLPHENOL	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	100-01-6	4-NITROANILINE	1/22/92	2300	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	100-02-7	4-NITROPHENOL	1/22/92	2300	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	83-32-9	ACENAPHTHENE	1/22/92	130	ug/kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	208-96-8	ACENAPHTHYLENE	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	67-64-1	ACETONE	1/22/92	110	ug/Kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	7429-90-5	ALUMINUM	1/22/92	2130	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	120-12-7	ANTHRACENE	1/22/92	83	ug/kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	7440-36-0	ANTIMONY	1/22/92	7.5	mg/kg	Y	N	UJ	1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	7440-38-2	ARSENIC	1/22/92	4.7	mg/kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	7440-39-3	BARIUM	1/22/92	65.4	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	71-43-2	BENZENE	1/22/92	48	ug/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	56-55-3	BENZO(A)ANTHRACENE	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	50-32-8	BENZO(A)PYRENE	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	205-99-2	BENZO(B)FLUORANTHENE	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	191-24-2	BENZO(G,H,I)PERYLENE	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	207-08-9	BENZO(K)FLUORANTHENE	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	65-85-0	BENZOIC ACID	1/22/92	2300	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	100-51-6	BENZYL ALCOHOL	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	7440-41-7	BERYLLIUM	1/22/92	0.27	mg/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	75-27-4	BROMODICHLOROMETHANE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	75-25-2	BROMOFORM	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	74-83-9	BROMOMETHANE	1/22/92	13	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	85-68-7	BUTYLBENZYL PHTHALATE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	7440-43-9	CADMIUM	1/22/92	0.81	mg/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	7440-70-2	CALCIUM	1/22/92	11300	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	75-15-0	CARBON DISULFIDE	1/22/92	2	ug/Kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	56-23-5	CARBON TETRACHLORIDE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	108-90-7	CHLOROBENZENE	1/22/92	5	ug/Kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	124-48-1	CHLORODIBROMOMETHANE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	75-00-3	CHLOROETHANE	1/22/92	13	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	67-66-3	CHLOROFORM	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	74-87-3	CHLOROMETHANE	1/22/92	13	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	7440-47-3	CHROMIUM	1/22/92	11.7	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	218-01-9	CHRYSENE	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	7440-48-4	COBALT	1/22/92	8.3	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	7440-50-8	COPPER	1/22/92	47.8	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	57-12-5	CYANIDE	1/22/92	0.68	mg/kg	Y	N	UJ	1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	53-70-3	DIBENZO(A,H)ANTHRACENE	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	132-64-9	DIBENZOFURAN	1/22/92	64	ug/kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	84-66-2	DIETHYL PHTHALATE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	131-11-3	DIMETHYL PHTHALATE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	84-74-2	DI-N-BUTYL PHTHALATE	1/22/92	53	ug/Kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	117-84-0	DI-N-OCTYL PHTHALATE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	100-41-4	ETHYLBENZENE	1/22/92	7	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	206-44-0	FLUORANTHENE	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	86-73-7	FLUORENE	1/22/92	98	ug/kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	118-74-1	HEXACHLOROBENZENE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	87-68-3	HEXACHLOROBUTADIENE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	67-72-1	HEXACHLOROETHANE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	193-39-5	INDENO(1,2,3-CD)PYRENE	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	7439-89-6	IRON	1/22/92	4100	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	78-59-1	ISOPHORONE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	7439-92-1	LEAD	1/22/92	4.6	mg/kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	7439-95-4	MAGNESIUM	1/22/92	872	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	7439-96-5	MANGANESE	1/22/92	22.2	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	7439-97-6	MERCURY	1/22/92	3.4	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B2	WA9294	75-09-2	METHYLENE CHLORIDE	1/22/92	7	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	91-20-3	NAPHTHALENE	1/22/92	630	ug/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	7440-02-0	NICKEL	1/22/92	30.9	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	98-95-3	NITROBENZENE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	86-30-6	N-NITROSODIPHENYLAMINE	1/22/92	450	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	87-86-5	PENTACHLOROPHENOL	1/22/92	2300	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	85-01-8	PHENANTHRENE	1/22/92	80	ug/kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	108-95-2	PHENOL	1/22/92	3100	ug/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	7440-09-7	POTASSIUM	1/22/92	2260	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	129-00-0	PYRENE	1/22/92	450	ug/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9294	7782-49-2	SELENIUM	1/22/92	0.98	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	7440-22-4	SILVER	1/22/92	0.81	mg/kg	Y	N	UJ	1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	7440-23-5	SODIUM	1/22/92	1020	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	100-42-5	STYRENE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	127-18-4	TETRACHLOROETHENE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	7440-28-0	THALLIUM	1/22/92	0.27	mg/kg	Y	N	UJ	1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	108-88-3	TOLUENE	1/22/92	6	ug/kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	TSO	TOTAL SOLIDS	1/22/92	74	%	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B2	WA9294	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	79-01-6	TRICHLOROETHENE	1/22/92	7	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	7440-62-2	VANADIUM	1/22/92	18.3	mg/kg	Y	Y		1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9294	75-01-4	VINYL CHLORIDE	1/22/92	13	ug/Kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	1330-20-7	XYLENES, TOTAL	1/22/92	2	ug/kg	Y	Y	J	1117615.7	922060.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9294	7440-66-6	ZINC	1/22/92	11.6	mg/kg	Y	N	U	1117615.7	922060.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	71-55-6	1,1,1-TRICHLOROETHANE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	79-00-5	1,1,2-TRICHLOROETHANE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	75-34-3	1,1-DICHLOROETHANE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	75-35-4	1,1-DICHLOROETHENE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	120-82-1	1,2,4-TRICHLOROBENZENE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	95-50-1	1,2-DICHLOROBENZENE	1/22/92	180	ug/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	107-06-2	1,2-DICHLOROETHANE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	78-87-5	1,2-DICHLOROPROPANE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	541-73-1	1,3-DICHLOROBENZENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	106-46-7	1,4-DICHLOROBENZENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	95-95-4	2,4,5-TRICHLOROPHENOL	1/22/92	5400	ug/Kg	Y	N	R	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	88-06-2	2,4,6-TRICHLOROPHENOL	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	120-83-2	2,4-DICHLOROPHENOL	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	105-67-9	2,4-DIMETHYLPHENOL	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	51-28-5	2,4-DINITROPHENOL	1/22/92	5400	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	121-14-2	2,4-DINITROTOLUENE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	606-20-2	2,6-DINITROTOLUENE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	78-93-3	2-BUTANONE	1/22/92	32	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	91-58-7	2-CHLORONAPHTHALENE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	95-57-8	2-CHLOROPHENOL	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	591-78-6	2-HEXANONE	1/22/92	32	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	91-57-6	2-METHYLNAPHTHALENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	95-48-7	2-METHYLPHENOL	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	88-74-4	2-NITROANILINE	1/22/92	5400	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	88-75-5	2-NITROPHENOL	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	91-94-1	3,3'-DICHLOROBENZIDINE	1/22/92	2200	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	99-09-2	3-NITROANILINE	1/22/92	5400	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/22/92	5400	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	59-50-7	4-CHLORO-3-METHYLPHENOL	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	106-47-8	4-CHLOROANILINE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	108-10-1	4-METHYL-2-PENTANONE	1/22/92	32	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	106-44-5	4-METHYLPHENOL	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	100-01-6	4-NITROANILINE	1/22/92	5400	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	100-02-7	4-NITROPHENOL	1/22/92	5400	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	83-32-9	ACENAPHTHENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	208-96-8	ACENAPHTHYLENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	67-64-1	ACETONE	1/22/92	160	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B2	WA9295	7429-90-5	ALUMINUM	1/22/92	8160	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	120-12-7	ANTHRACENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	7440-36-0	ANTIMONY	1/22/92	16.7	mg/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	7440-38-2	ARSENIC	1/22/92	22.2	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	7440-39-3	BARIUM	1/22/92	30.3	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	71-43-2	BENZENE	1/22/92	3	ug/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	56-55-3	BENZO(A)ANTHRACENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	50-32-8	BENZO(A)PYRENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	205-99-2	BENZO(B)FLUORANTHENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	191-24-2	BENZO(G,H,I)PERYLENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	207-08-9	BENZO(K)FLUORANTHENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	65-85-0	BENZOIC ACID	1/22/92	5400	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	100-51-6	BENZYL ALCOHOL	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	7440-41-7	BERYLLIUM	1/22/92	0.67	mg/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	75-27-4	BROMODICHLOROMETHANE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	75-25-2	BROMOFORM	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	74-83-9	BROMOMETHANE	1/22/92	32	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	85-68-7	BUTYLBENZYL PHTHALATE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	7440-43-9	CADMIUM	1/22/92	2	mg/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	7440-70-2	CALCIUM	1/22/92	244000	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	75-15-0	CARBON DISULFIDE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	56-23-5	CARBON TETRACHLORIDE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	108-90-7	CHLOROBENZENE	1/22/92	16	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	124-48-1	CHLORODIBROMOMETHANE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	75-00-3	CHLOROETHANE	1/22/92	32	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	67-66-3	CHLOROFORM	1/22/92	14	ug/Kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	74-87-3	CHLOROMETHANE	1/22/92	32	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	7440-47-3	CHROMIUM	1/22/92	10.5	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	218-01-9	CHRYSENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	7440-48-4	COBALT	1/22/92	2.7	mg/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	7440-50-8	COPPER	1/22/92	26.3	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	57-12-5	CYANIDE	1/22/92	1.7	mg/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	53-70-3	DIBENZO(A,H)ANTHRACENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	132-64-9	DIBENZOFURAN	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	84-66-2	DIETHYL PHTHALATE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	131-11-3	DIMETHYL PHTHALATE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	84-74-2	DI-N-BUTYL PHTHALATE	1/22/92	130	ug/Kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	117-84-0	DI-N-OCTYL PHTHALATE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	100-41-4	ETHYLBENZENE	1/22/92	16	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	206-44-0	FLUORANTHENE	1/22/92	130	ug/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	86-73-7	FLUORENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	118-74-1	HEXACHLOROBENZENE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	87-68-3	HEXACHLOROBUTADIENE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	67-72-1	HEXACHLOROETHANE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	193-39-5	INDENO(1,2,3-CD)PYRENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	7439-89-6	IRON	1/22/92	9590	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	78-59-1	ISOPHORONE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	7439-92-1	LEAD	1/22/92	7.8	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	7439-95-4	MAGNESIUM	1/22/92	45700	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	7439-96-5	MANGANESE	1/22/92	323	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	7439-97-6	MERCURY	1/22/92	19.9	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	75-09-2	METHYLENE CHLORIDE	1/22/92	16	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	91-20-3	NAPHTHALENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	7440-02-0	NICKEL	1/22/92	8.4	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	98-95-3	NITROBENZENE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	86-30-6	N-NITROSODIPHENYLAMINE	1/22/92	1100	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	87-86-5	PENTACHLOROPHENOL	1/22/92	5400	ug/Kg	Y	N	R	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	85-01-8	PHENANTHRENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	108-95-2	PHENOL	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B2	WA9295	7440-09-7	POTASSIUM	1/22/92	997	mg/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	129-00-0	PYRENE	1/22/92	1100	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B2	WA9295	7782-49-2	SELENIUM	1/22/92	2	mg/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	7440-22-4	SILVER	1/22/92	2	mg/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	7440-23-5	SODIUM	1/22/92	1330	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	100-42-5	STYRENE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	127-18-4	TETRACHLOROETHENE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	7440-28-0	THALLIUM	1/22/92	0.67	mg/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	108-88-3	TOLUENE	1/22/92	16	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	TSO	TOTAL SOLIDS	1/22/92	30	%	Y	Y		1117615.7	922060.7	4	6	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B2	WA9295	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	79-01-6	TRICHLOROETHENE	1/22/92	16	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	7440-62-2	VANADIUM	1/22/92	25.4	mg/kg	Y	Y	J	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B2	WA9295	75-01-4	VINYL CHLORIDE	1/22/92	32	ug/Kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	1330-20-7	XYLENES, TOTAL	1/22/92	16	ug/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B2	WA9295	7440-66-6	ZINC	1/22/92	26.4	mg/kg	Y	N	UJ	1117615.7	922060.7	4	6	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9297	120-82-1	1,2,4-TRICHLOROBENZENE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	95-50-1	1,2-DICHLOROBENZENE	1/21/92	66000	ug/kg	Y	Y		1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	541-73-1	1,3-DICHLOROBENZENE	1/21/92	16000	ug/kg	Y	Y	J	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	106-46-7	1,4-DICHLOROBENZENE	1/21/92	100000	ug/kg	Y	Y		1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	95-95-4	2,4,5-TRICHLOROPHENOL	1/21/92	250000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	88-06-2	2,4,6-TRICHLOROPHENOL	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	120-83-2	2,4-DICHLOROPHENOL	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	105-67-9	2,4-DIMETHYLPHENOL	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	51-28-5	2,4-DINITROPHENOL	1/21/92	250000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	121-14-2	2,4-DINITROTOLUENE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	606-20-2	2,6-DINITROTOLUENE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	91-58-7	2-CHLORONAPHTHALENE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	95-57-8	2-CHLOROPHENOL	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	91-57-6	2-METHYLNAPHTHALENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	95-48-7	2-METHYLPHENOL	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	88-74-4	2-NITROANILINE	1/21/92	250000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	88-75-5	2-NITROPHENOL	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	91-94-1	3,3'-DICHLOROBENZIDINE	1/21/92	100000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	99-09-2	3-NITROANILINE	1/21/92	250000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/21/92	250000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	59-50-7	4-CHLORO-3-METHYLPHENOL	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	106-47-8	4-CHLOROANILINE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	106-44-5	4-METHYLPHENOL	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	100-01-6	4-NITROANILINE	1/21/92	250000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	100-02-7	4-NITROPHENOL	1/21/92	250000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	83-32-9	ACENAPHTHENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	208-96-8	ACENAPHTHYLENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	120-12-7	ANTHRACENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	56-55-3	BENZO(A)ANTHRACENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	50-32-8	BENZO(A)PYRENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	205-99-2	BENZO(B)FLUORANTHENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	191-24-2	BENZO(G,H,I)PERYLENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	207-08-9	BENZO(K)FLUORANTHENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	65-85-0	BENZOIC ACID	1/21/92	250000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	100-51-6	BENZYL ALCOHOL	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	85-68-7	BUTYLBENZYL PHTHALATE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	218-01-9	CHRYSENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	53-70-3	DIBENZO(A,H)ANTHRACENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	132-64-9	DIBENZOFURAN	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	84-66-2	DIETHYL PHTHALATE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	131-11-3	DIMETHYL PHTHALATE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	84-74-2	DI-N-BUTYL PHTHALATE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	117-84-0	DI-N-OCTYL PHTHALATE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	206-44-0	FLUORANTHENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	86-73-7	FLUORENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	118-74-1	HEXACHLOROBENZENE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	87-68-3	HEXACHLOROBUTADIENE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B3	WA9297	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	67-72-1	HEXACHLOROETHANE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	193-39-5	INDENO(1,2,3-CD)PYRENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	78-59-1	ISOPHORONE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	91-20-3	NAPHTHALENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	98-95-3	NITROBENZENE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	86-30-6	N-NITROSODIPHENYLAMINE	1/21/92	50000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	87-86-5	PENTACHLOROPHENOL	1/21/92	250000	ug/Kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	85-01-8	PHENANTHRENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	108-95-2	PHENOL	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9297	129-00-0	PYRENE	1/21/92	50000	ug/kg	Y	N	U	1117913.7	922576.5	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9298	71-55-6	1,1,1-TRICHLOROETHANE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	79-00-5	1,1,2-TRICHLOROETHANE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	75-34-3	1,1-DICHLOROETHANE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	75-35-4	1,1-DICHLOROETHENE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	107-06-2	1,2-DICHLOROETHANE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	78-87-5	1,2-DICHLOROPROPANE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	78-93-3	2-BUTANONE	1/21/92	3700	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	591-78-6	2-HEXANONE	1/21/92	3700	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	108-10-1	4-METHYL-2-PENTANONE	1/21/92	3700	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	67-64-1	ACETONE	1/21/92	3700	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	7429-90-5	ALUMINUM	1/21/92	2620	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7440-36-0	ANTIMONY	1/21/92	4.2	mg/kg	Y	N	UJ	1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7440-38-2	ARSENIC	1/21/92	0.78	mg/kg	Y	Y	J	1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7440-39-3	BARIUM	1/21/92	92.8	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	71-43-2	BENZENE	1/21/92	450	ug/kg	Y	Y	J	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	7440-41-7	BERYLLIUM	1/21/92	0.31	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	75-27-4	BROMODICHLOROMETHANE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	75-25-2	BROMOFORM	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	74-83-9	BROMOMETHANE	1/21/92	3700	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	7440-43-9	CADMIUM	1/21/92	0.9	mg/kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7440-70-2	CALCIUM	1/21/92	278000	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	75-15-0	CARBON DISULFIDE	1/21/92	1900	ug/kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	56-23-5	CARBON TETRACHLORIDE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	108-90-7	CHLOROBENZENE	1/21/92	31000	ug/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	124-48-1	CHLORODIBROMOMETHANE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	75-00-3	CHLOROETHANE	1/21/92	3700	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	67-66-3	CHLOROFORM	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	74-87-3	CHLOROMETHANE	1/21/92	3700	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	7440-47-3	CHROMIUM	1/21/92	3.6	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	7440-48-4	COBALT	1/21/92	1.2	mg/kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7440-50-8	COPPER	1/21/92	3.8	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	57-12-5	CYANIDE	1/21/92	0.75	mg/kg	Y	N	UJ	1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	100-41-4	ETHYLBENZENE	1/21/92	1900	ug/kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	7439-89-6	IRON	1/21/92	2580	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7439-92-1	LEAD	1/21/92	22.8	mg/kg	Y	Y	J	1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7439-95-4	MAGNESIUM	1/21/92	3680	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7439-96-5	MANGANESE	1/21/92	210	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7439-97-6	MERCURY	1/21/92	7.2	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	75-09-2	METHYLENE CHLORIDE	1/21/92	1900	ug/kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	7440-02-0	NICKEL	1/21/92	3.3	mg/kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7440-09-7	POTASSIUM	1/21/92	1410	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7782-49-2	SELENIUM	1/21/92	0.9	mg/kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7440-22-4	SILVER	1/21/92	0.9	mg/kg	Y	N	UJ	1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	7440-23-5	SODIUM	1/21/92	3370	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	100-42-5	STYRENE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	127-18-4	TETRACHLOROETHENE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	7440-28-0	THALLIUM	1/21/92	0.3	mg/kg	Y	N	UJ	1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9298	108-88-3	TOLUENE	1/21/92	1900	ug/kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	TSO	TOTAL SOLIDS	1/21/92	67	%	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B3	WA9298	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	79-01-6	TRICHLOROETHENE	1/21/92	1900	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	7440-62-2	VANADIUM	1/21/92	7.5	mg/kg	Y	Y		1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B3	WA9298	75-01-4	VINYL CHLORIDE	1/21/92	3700	ug/Kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	1330-20-7	XYLENES, TOTAL	1/21/92	1900	ug/kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9298	7440-66-6	ZINC	1/21/92	11.4	mg/kg	Y	N	U	1117913.7	922576.5	26	28	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	71-55-6	1,1,1-TRICHLOROETHANE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	79-00-5	1,1,2-TRICHLOROETHANE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	75-34-3	1,1-DICHLOROETHANE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	75-35-4	1,1-DICHLOROETHENE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	120-82-1	1,2,4-TRICHLOROBENZENE	1/21/92	8800	ug/Kg	Y	Y	J	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	95-50-1	1,2-DICHLOROBENZENE	1/21/92	370000	ug/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	107-06-2	1,2-DICHLOROETHANE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	78-87-5	1,2-DICHLOROPROPANE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	541-73-1	1,3-DICHLOROBENZENE	1/21/92	130000	ug/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	106-46-7	1,4-DICHLOROBENZENE	1/21/92	620000	ug/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	95-95-4	2,4,5-TRICHLOROPHENOL	1/21/92	270000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	88-06-2	2,4,6-TRICHLOROPHENOL	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	120-83-2	2,4-DICHLOROPHENOL	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	105-67-9	2,4-DIMETHYLPHENOL	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	51-28-5	2,4-DINITROPHENOL	1/21/92	270000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	121-14-2	2,4-DINITROTOLUENE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	606-20-2	2,6-DINITROTOLUENE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	78-93-3	2-BUTANONE	1/21/92	4100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	91-58-7	2-CHLORONAPHTHALENE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	95-57-8	2-CHLOROPHENOL	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	591-78-6	2-HEXANONE	1/21/92	4100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	91-57-6	2-METHYLNAPHTHALENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	95-48-7	2-METHYLPHENOL	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	88-74-4	2-NITROANILINE	1/21/92	270000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	88-75-5	2-NITROPHENOL	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	91-94-1	3,3'-DICHLOROBENZIDINE	1/21/92	110000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	99-09-2	3-NITROANILINE	1/21/92	27000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/21/92	270000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	59-50-7	4-CHLORO-3-METHYLPHENOL	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	106-47-8	4-CHLOROANILINE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	108-10-1	4-METHYL-2-PENTANONE	1/21/92	4100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	106-44-5	4-METHYLPHENOL	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	100-01-6	4-NITROANILINE	1/21/92	270000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	100-02-7	4-NITROPHENOL	1/21/92	270000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	83-32-9	ACENAPHTHENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	208-96-8	ACENAPHTHYLENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	67-64-1	ACETONE	1/21/92	4100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	7429-90-5	ALUMINUM	1/21/92	27100	mg/kg	Y	Y	J	1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	120-12-7	ANTHRACENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	7440-36-0	ANTIMONY	1/21/92	4.6	mg/kg	Y	N	UJ	1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	7440-38-2	ARSENIC	1/21/92	5.9	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	7440-39-3	BARIUM	1/21/92	117	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	71-43-2	BENZENE	1/21/92	470	ug/kg	Y	Y	J	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	56-55-3	BENZO(A)ANTHRACENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	50-32-8	BENZO(A)PYRENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	205-99-2	BENZO(B)FLUORANTHENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	191-24-2	BENZO(G,H,I)PERYLENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	207-08-9	BENZO(K)FLUORANTHENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	65-85-0	BENZOIC ACID	1/21/92	270000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	100-51-6	BENZYL ALCOHOL	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	7440-41-7	BERYLLIUM	1/21/92	1.6	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	75-27-4	BROMODICHLOROMETHANE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	75-25-2	BROMOFORM	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	74-83-9	BROMOMETHANE	1/21/92	4100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	85-68-7	BUTYLBENZYL PHTHALATE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	7440-43-9	CADMIUM	1/21/92	0.98	mg/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B3	WA9296	7440-70-2	CALCIUM	1/21/92	27000	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	75-15-0	CARBON DISULFIDE	1/21/92	2100	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	56-23-5	CARBON TETRACHLORIDE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	108-90-7	CHLOROBENZENE	1/21/92	19000	ug/kg	Y	Y	J	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	124-48-1	CHLORODIBROMOMETHANE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	75-00-3	CHLOROETHANE	1/21/92	4100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	67-66-3	CHLOROFORM	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	74-87-3	CHLOROMETHANE	1/21/92	4100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	7440-47-3	CHROMIUM	1/21/92	16.2	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	218-01-9	CHRYSENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	7440-48-4	COBALT	1/21/92	11.7	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	7440-50-8	COPPER	1/21/92	80.2	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	57-12-5	CYANIDE	1/21/92	0.82	mg/kg	Y	N	UJ	1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	53-70-3	DIBENZO(A,H)ANTHRACENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	132-64-9	DIBENZOFURAN	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	84-66-2	DIETHYL PHTHALATE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	131-11-3	DIMETHYL PHTHALATE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	84-74-2	DI-N-BUTYL PHTHALATE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	117-84-0	DI-N-OCTYL PHTHALATE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	100-41-4	ETHYLBENZENE	1/21/92	2100	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	206-44-0	FLUORANTHENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	86-73-7	FLUORENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	118-74-1	HEXACHLOROBENZENE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	87-68-3	HEXACHLOROBUTADIENE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	67-72-1	HEXACHLOROETHANE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	193-39-5	INDENO(1,2,3-CD)PYRENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	7439-89-6	IRON	1/21/92	13300	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	78-59-1	ISOPHORONE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	7439-92-1	LEAD	1/21/92	3.1	mg/kg	Y	Y	J	1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	7439-95-4	MAGNESIUM	1/21/92	3570	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	7439-96-5	MANGANESE	1/21/92	91.6	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	7439-97-6	MERCURY	1/21/92	5.8	mg/kg	Y	Y	J	1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	75-09-2	METHYLENE CHLORIDE	1/21/92	2100	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	91-20-3	NAPHTHALENE	1/21/92	5900	ug/kg	Y	Y	J	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	7440-02-0	NICKEL	1/21/92	24.6	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	98-95-3	NITROBENZENE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	86-30-6	N-NITROSODIPHENYLAMINE	1/21/92	55000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	87-86-5	PENTACHLOROPHENOL	1/21/92	270000	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	85-01-8	PHENANTHRENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	108-95-2	PHENOL	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	7440-09-7	POTASSIUM	1/21/92	16100	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	129-00-0	PYRENE	1/21/92	55000	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B3	WA9296	7782-49-2	SELENIUM	1/21/92	0.98	mg/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	7440-22-4	SILVER	1/21/92	0.98	mg/kg	Y	N	UJ	1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	7440-23-5	SODIUM	1/21/92	9200	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	100-42-5	STYRENE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	127-18-4	TETRACHLOROETHENE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	7440-28-0	THALLIUM	1/21/92	0.33	mg/kg	Y	N	UJ	1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	108-88-3	TOLUENE	1/21/92	2100	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	TSO	TOTAL SOLIDS	1/21/92	61	%	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B3	WA9296	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	79-01-6	TRICHLOROETHENE	1/21/92	2100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	7440-62-2	VANADIUM	1/21/92	53.6	mg/kg	Y	Y		1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3	WA9296	75-01-4	VINYL CHLORIDE	1/21/92	4100	ug/Kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	1330-20-7	XYLENES, TOTAL	1/21/92	2100	ug/kg	Y	N	U	1117913.7	922576.5	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B3	WA9296	7440-66-6	ZINC	1/21/92	94.1	mg/kg	Y	Y	J	1117913.7	922576.5	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B3A	WA9299	7439-97-6	MERCURY	10/13/97	0.2	mg/kg	Y	N	U	1117935.8	922606	26	28	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-WA-B3A	WA9299	TSO	TOTAL SOLIDS	10/13/97	63.1	%	Y	Y		1117935.8	922606	26	28	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-WA-B3A	WA9301	7439-97-6	MERCURY	10/14/97	0.1	mg/kg	Y	N	U	1117935.8	922606	98	99	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-WA-B3A	WA9301	TSO	TOTAL SOLIDS	10/14/97	89.7	%	Y	Y		1117935.8	922606	98	99	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-WA-B3A	WA9300	7439-97-6	MERCURY	10/13/97	10	mg/kg	Y	Y		1117935.8	922606	4	6	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-WA-B3A	WA9300	TSO	TOTAL SOLIDS	10/13/97	90.5	%	Y	Y		1117935.8	922606	4	6	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-WA-B3B	WA9303	7439-97-6	MERCURY	10/14/97	1.8	mg/kg	Y	Y		1117905.6	922625.2	24	26	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-WA-B3B	WA9303	TSO	TOTAL SOLIDS	10/14/97	66.2	%	Y	Y		1117905.6	922625.2	24	26	SB	SOIL	Soil	2540-G

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B3B	WA9304	7439-97-6	MERCURY	10/15/97	0.1	mg/kg	Y	N	U	1117905.6	922625.2	100	102	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-WA-B3B	WA9304	TSO	TOTAL SOLIDS	10/15/97	90	%	Y	Y		1117905.6	922625.2	100	102	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-WA-B3B	WA9302	7439-97-6	MERCURY	10/14/97	2.6	mg/kg	Y	Y		1117905.6	922625.2	16	18	SB	SOIL	Soil	7471A/NONE
Plant Area	Soil	WA-WA-B3B	WA9302	TSO	TOTAL SOLIDS	10/14/97	54.9	%	Y	Y		1117905.6	922625.2	16	18	SB	SOIL	Soil	2540-G
Plant Area	Soil	WA-WA-B4	WA9305	71-55-6	1,1,1-TRICHLOROETHANE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	79-00-5	1,1,2-TRICHLOROETHANE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	75-34-3	1,1-DICHLOROETHANE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	75-35-4	1,1-DICHLOROETHENE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	120-82-1	1,2,4-TRICHLOROBENZENE	1/17/92	61000	ug/Kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	95-50-1	1,2-DICHLOROBENZENE	1/17/92	1200000	ug/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	107-06-2	1,2-DICHLOROETHANE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	78-87-5	1,2-DICHLOROPROPANE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	541-73-1	1,3-DICHLOROBENZENE	1/17/92	760000	ug/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	106-46-7	1,4-DICHLOROBENZENE	1/17/92	4600000	ug/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	95-95-4	2,4,5-TRICHLOROPHENOL	1/17/92	460000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	88-06-2	2,4,6-TRICHLOROPHENOL	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	120-83-2	2,4-DICHLOROPHENOL	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	105-67-9	2,4-DIMETHYLPHENOL	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	51-28-5	2,4-DINITROPHENOL	1/17/92	460000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	121-14-2	2,4-DINITROTOLUENE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	606-20-2	2,6-DINITROTOLUENE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	78-93-3	2-BUTANONE	1/17/92	68000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	91-58-7	2-CHLORONAPHTHALENE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	95-57-8	2-CHLOROPHENOL	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	591-78-6	2-HEXANONE	1/17/92	68000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	91-57-6	2-METHYLNAPHTHALENE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	95-48-7	2-METHYLPHENOL	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	88-74-4	2-NITROANILINE	1/17/92	460000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	88-75-5	2-NITROPHENOL	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	91-94-1	3,3'-DICHLOROBENZIDINE	1/17/92	190000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	99-09-2	3-NITROANILINE	1/17/92	460000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/17/92	460000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	59-50-7	4-CHLORO-3-METHYLPHENOL	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	106-47-8	4-CHLOROANILINE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	108-10-1	4-METHYL-2-PENTANONE	1/17/92	68000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	106-44-5	4-METHYLPHENOL	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	100-01-6	4-NITROANILINE	1/17/92	460000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	100-02-7	4-NITROPHENOL	1/17/92	460000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	83-32-9	ACENAPHTHENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	208-96-8	ACENAPHTHYLENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	67-64-1	ACETONE	1/17/92	68000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	7429-90-5	ALUMINUM	1/17/92	7150	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	120-12-7	ANTHRACENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	7440-36-0	ANTIMONY	1/17/92	12.2	mg/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	7440-38-2	ARSENIC	1/17/92	5.2	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	7440-39-3	BARIUM	1/17/92	38.5	mg/kg	Y	N	R	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	71-43-2	BENZENE	1/17/92	40000	ug/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	56-55-3	BENZO(A)ANTHRACENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	50-32-8	BENZO(A)PYRENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	205-99-2	BENZO(B)FLUORANTHENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	191-24-2	BENZO(G,H,I)PERYLENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	207-08-9	BENZO(K)FLUORANTHENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	65-85-0	BENZOIC ACID	1/17/92	460000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	100-51-6	BENZYL ALCOHOL	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	7440-41-7	BERYLLIUM	1/17/92	0.56	mg/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	75-27-4	BROMODICHLOROMETHANE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	75-25-2	BROMOFORM	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	74-83-9	BROMOMETHANE	1/17/92	68000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	85-68-7	BUTYLBENZYL PHTHALATE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B4	WA9305	7440-43-9	CADMIUM	1/17/92	1.7	mg/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	7440-70-2	CALCIUM	1/17/92	221000	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	75-15-0	CARBON DISULFIDE	1/17/92	34000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	56-23-5	CARBON TETRACHLORIDE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	108-90-7	CHLOROBENZENE	1/17/92	480000	ug/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	124-48-1	CHLORODIBROMOMETHANE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	75-00-3	CHLOROETHANE	1/17/92	68000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	67-66-3	CHLOROFORM	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	74-87-3	CHLOROMETHANE	1/17/92	68000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	7440-47-3	CHROMIUM	1/17/92	8.7	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	218-01-9	CHRYSENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	7440-48-4	COBALT	1/17/92	2.2	mg/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	7440-50-8	COPPER	1/17/92	9.2	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	57-12-5	CYANIDE	1/17/92	14.6	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	53-70-3	DIBENZO(A,H)ANTHRACENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	132-64-9	DIBENZOFURAN	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	84-66-2	DIETHYL PHTHALATE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	131-11-3	DIMETHYL PHTHALATE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	84-74-2	DI-N-BUTYL PHTHALATE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	117-84-0	DI-N-OCTYL PHTHALATE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	100-41-4	ETHYLBENZENE	1/17/92	34000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	206-44-0	FLUORANTHENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	86-73-7	FLUORENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	118-74-1	HEXACHLOROBENZENE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	87-68-3	HEXACHLOROBUTADIENE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	67-72-1	HEXACHLOROETHANE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	193-39-5	INDENO(1,2,3-CD)PYRENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	7439-89-6	IRON	1/17/92	7620	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	78-59-1	ISOPHORONE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	7439-92-1	LEAD	1/17/92	14.9	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	7439-95-4	MAGNESIUM	1/17/92	34400	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	7439-96-5	MANGANESE	1/17/92	212	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	7439-97-6	MERCURY	1/17/92	0.85	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	75-09-2	METHYLENE CHLORIDE	1/17/92	34000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	91-20-3	NAPHTHALENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	7440-02-0	NICKEL	1/17/92	6.1	mg/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	98-95-3	NITROBENZENE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	86-30-6	N-NITROSODIPHENYLAMINE	1/17/92	93000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	87-86-5	PENTACHLOROPHENOL	1/17/92	460000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	85-01-8	PHENANTHRENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	108-95-2	PHENOL	1/17/92	23000	ug/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	7440-09-7	POTASSIUM	1/17/92	10400	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	129-00-0	PYRENE	1/17/92	93000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9305	7782-49-2	SELENIUM	1/17/92	1.7	mg/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	7440-22-4	SILVER	1/17/92	1.7	mg/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	7440-23-5	SODIUM	1/17/92	11200	mg/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	100-42-5	STYRENE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	127-18-4	TETRACHLOROETHENE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	7440-28-0	THALLIUM	1/17/92	5.6	mg/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	108-88-3	TOLUENE	1/17/92	34000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	TSO	TOTAL SOLIDS	1/17/92	36	%	Y	Y		1117868.5	922644.7	24	26	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B4	WA9305	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	79-01-6	TRICHLOROETHENE	1/17/92	34000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	7440-62-2	VANADIUM	1/17/92	16.1	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9305	75-01-4	VINYL CHLORIDE	1/17/92	68000	ug/Kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	1330-20-7	XYLENES, TOTAL	1/17/92	34000	ug/kg	Y	N	UJ	1117868.5	922644.7	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9305	7440-66-6	ZINC	1/17/92	44.8	mg/kg	Y	Y	J	1117868.5	922644.7	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	71-55-6	1,1,1-TRICHLOROETHANE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	79-00-5	1,1,2-TRICHLOROETHANE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	75-34-3	1,1-DICHLOROETHANE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	75-35-4	1,1-DICHLOROETHENE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	120-82-1	1,2,4-TRICHLOROBENZENE	1/17/92	4500	ug/Kg	Y	Y	J	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	95-50-1	1,2-DICHLOROBENZENE	1/17/92	120000	ug/kg	Y	Y		1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B4	WA9306	107-06-2	1,2-DICHLOROETHANE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	78-87-5	1,2-DICHLOROPROPANE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	541-73-1	1,3-DICHLOROBENZENE	1/17/92	23000	ug/kg	Y	Y	J	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	106-46-7	1,4-DICHLOROBENZENE	1/17/92	340000	ug/kg	Y	Y		1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	95-95-4	2,4,5-TRICHLOROPHENOL	1/17/92	250000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	88-06-2	2,4,6-TRICHLOROPHENOL	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	120-83-2	2,4-DICHLOROPHENOL	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	105-67-9	2,4-DIMETHYLPHENOL	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	51-28-5	2,4-DINITROPHENOL	1/17/92	250000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	121-14-2	2,4-DINITROTOLUENE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	606-20-2	2,6-DINITROTOLUENE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	78-93-3	2-BUTANONE	1/17/92	7600	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	91-58-7	2-CHLORONAPHTHALENE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	95-57-8	2-CHLOROPHENOL	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	591-78-6	2-HEXANONE	1/17/92	7600	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	91-57-6	2-METHYLNAPHTHALENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	95-48-7	2-METHYLPHENOL	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	88-74-4	2-NITROANILINE	1/17/92	250000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	88-75-5	2-NITROPHENOL	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	91-94-1	3,3'-DICHLOROBENZIDINE	1/17/92	100000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	99-09-2	3-NITROANILINE	1/17/92	250000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/17/92	250000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	59-50-7	4-CHLORO-3-METHYLPHENOL	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	106-47-8	4-CHLOROANILINE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	108-10-1	4-METHYL-2-PENTANONE	1/17/92	7600	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	106-44-5	4-METHYLPHENOL	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	100-01-6	4-NITROANILINE	1/17/92	250000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	100-02-7	4-NITROPHENOL	1/17/92	250000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	83-32-9	ACENAPHTHENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	208-96-8	ACENAPHTHYLENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	67-64-1	ACETONE	1/17/92	7600	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	7429-90-5	ALUMINUM	1/17/92	767	mg/kg	Y	Y		1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	120-12-7	ANTHRACENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	7440-36-0	ANTIMONY	1/17/92	4.6	mg/kg	Y	N	UJ	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	7440-38-2	ARSENIC	1/17/92	0.61	mg/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	7440-39-3	BARIUM	1/17/92	98.3	mg/kg	Y	Y	J	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	71-43-2	BENZENE	1/17/92	3500	ug/kg	Y	Y	J	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	56-55-3	BENZO(A)ANTHRACENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	50-32-8	BENZO(A)PYRENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	205-99-2	BENZO(B)FLUORANTHENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	191-24-2	BENZO(G,H,I)PERYLENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	207-08-9	BENZO(K)FLUORANTHENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	65-85-0	BENZOIC ACID	1/17/92	250000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	100-51-6	BENZYL ALCOHOL	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	7440-41-7	BERYLLIUM	1/17/92	0.3	mg/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	75-27-4	BROMODICHLOROMETHANE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	75-25-2	BROMOFORM	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	74-83-9	BROMOMETHANE	1/17/92	7600	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	85-68-7	BUTYLBENZYL PHTHALATE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	7440-43-9	CADMIUM	1/17/92	0.91	mg/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	7440-70-2	CALCIUM	1/17/92	310000	mg/kg	Y	Y		1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	75-15-0	CARBON DISULFIDE	1/17/92	3800	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	56-23-5	CARBON TETRACHLORIDE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	108-90-7	CHLOROBENZENE	1/17/92	59000	ug/kg	Y	Y		1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	124-48-1	CHLORODIBROMOMETHANE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	75-00-3	CHLOROETHANE	1/17/92	7600	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	67-66-3	CHLOROFORM	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	74-87-3	CHLOROMETHANE	1/17/92	7600	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	7440-47-3	CHROMIUM	1/17/92	2.6	mg/kg	Y	Y		1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	218-01-9	CHRYSENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B4	WA9306	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	7440-48-4	COBALT	1/17/92	1.2	mg/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	7440-50-8	COPPER	1/17/92	1.6	mg/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	57-12-5	CYANIDE	1/17/92	0.76	mg/kg	Y	N	R	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	53-70-3	DIBENZO(A,H)ANTHRACENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	132-64-9	DIBENZOFURAN	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	84-66-2	DIETHYL PHTHALATE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	131-11-3	DIMETHYL PHTHALATE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	84-74-2	DI-N-BUTYL PHTHALATE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	117-84-0	DI-N-OCTYL PHTHALATE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	100-41-4	ETHYLBENZENE	1/17/92	3800	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	206-44-0	FLUORANTHENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	86-73-7	FLUORENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	118-74-1	HEXACHLOROBENZENE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	87-68-3	HEXACHLOROBUTADIENE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	67-72-1	HEXACHLOROETHANE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	193-39-5	INDENO(1,2,3-CD)PYRENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	7439-89-6	IRON	1/17/92	1550	mg/kg	Y	Y	J	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	78-59-1	ISOPHORONE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	7439-92-1	LEAD	1/17/92	1.5	mg/kg	Y	Y		1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	7439-95-4	MAGNESIUM	1/17/92	2840	mg/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	7439-96-5	MANGANESE	1/17/92	101	mg/kg	Y	Y		1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	7439-97-6	MERCURY	1/17/92	0.15	mg/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	75-09-2	METHYLENE CHLORIDE	1/17/92	3800	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	91-20-3	NAPHTHALENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	7440-02-0	NICKEL	1/17/92	3.3	mg/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	98-95-3	NITROBENZENE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	86-30-6	N-NITROSODIPHENYLAMINE	1/17/92	51000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	87-86-5	PENTACHLOROPHENOL	1/17/92	250000	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	85-01-8	PHENANTHRENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	108-95-2	PHENOL	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	7440-09-7	POTASSIUM	1/17/92	309	mg/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	129-00-0	PYRENE	1/17/92	51000	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B4	WA9306	7782-49-2	SELENIUM	1/17/92	0.91	mg/kg	Y	N	UJ	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	7440-22-4	SILVER	1/17/92	0.91	mg/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	7440-23-5	SODIUM	1/17/92	5370	mg/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	100-42-5	STYRENE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	127-18-4	TETRACHLOROETHENE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	7440-28-0	THALLIUM	1/17/92	0.3	mg/kg	Y	N	UJ	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	108-88-3	TOLUENE	1/17/92	380	ug/kg	Y	Y	J	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	TSO	TOTAL SOLIDS	1/17/92	66	%	Y	Y		1117868.5	922644.7	30	32	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B4	WA9306	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	79-01-6	TRICHLOROETHENE	1/17/92	3800	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	7440-62-2	VANADIUM	1/17/92	2.5	mg/kg	Y	Y		1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B4	WA9306	75-01-4	VINYL CHLORIDE	1/17/92	7600	ug/Kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	1330-20-7	XYLENES, TOTAL	1/17/92	3800	ug/kg	Y	N	U	1117868.5	922644.7	30	32	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B4	WA9306	7440-66-6	ZINC	1/17/92	6.4	mg/kg	Y	N	R	1117868.5	922644.7	30	32	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	71-55-6	1,1,1-TRICHLOROETHANE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	79-00-5	1,1,2-TRICHLOROETHANE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	75-34-3	1,1-DICHLOROETHANE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	75-35-4	1,1-DICHLOROETHENE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	120-82-1	1,2,4-TRICHLOROBENZENE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	95-50-1	1,2-DICHLOROBENZENE	1/30/92	12000	ug/kg	Y	Y	J	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	107-06-2	1,2-DICHLOROETHANE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	78-87-5	1,2-DICHLOROPROPANE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	541-73-1	1,3-DICHLOROBENZENE	1/30/92	990	ug/kg	Y	Y	J	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	106-46-7	1,4-DICHLOROBENZENE	1/30/92	47000	ug/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	95-95-4	2,4,5-TRICHLOROPHENOL	1/30/92	220000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	88-06-2	2,4,6-TRICHLOROPHENOL	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	120-83-2	2,4-DICHLOROPHENOL	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	105-67-9	2,4-DIMETHYLPHENOL	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	51-28-5	2,4-DINITROPHENOL	1/30/92	220000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B5	WA9307	121-14-2	2,4-DINITROTOLUENE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	606-20-2	2,6-DINITROTOLUENE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	78-93-3	2-BUTANONE	1/30/92	6600	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	91-58-7	2-CHLORONAPHTHALENE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	95-57-8	2-CHLOROPHENOL	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	591-78-6	2-HEXANONE	1/30/92	6600	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	91-57-6	2-METHYLNAPHTHALENE	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	95-48-7	2-METHYLPHENOL	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	88-74-4	2-NITROANILINE	1/30/92	220000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	88-75-5	2-NITROPHENOL	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	91-94-1	3,3'-DICHLOROBENZIDINE	1/30/92	88000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	99-09-2	3-NITROANILINE	1/30/92	220000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/30/92	220000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	59-50-7	4-CHLORO-3-METHYLPHENOL	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	106-47-8	4-CHLOROANILINE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	108-10-1	4-METHYL-2-PENTANONE	1/30/92	6600	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	106-44-5	4-METHYLPHENOL	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	100-01-6	4-NITROANILINE	1/30/92	220000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	100-02-7	4-NITROPHENOL	1/30/92	220000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	83-32-9	ACENAPHTHENE	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	208-96-8	ACENAPHTHYLENE	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	67-64-1	ACETONE	1/30/92	6600	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	7429-90-5	ALUMINUM	1/30/92	8580	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	120-12-7	ANTHRACENE	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	7440-36-0	ANTIMONY	1/30/92	3.7	mg/kg	Y	N	UJ	1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	7440-38-2	ARSENIC	1/30/92	6.2	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	7440-39-3	BARIUM	1/30/92	958	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	71-43-2	BENZENE	1/30/92	1900	ug/kg	Y	Y	J	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	56-55-3	BENZO(A)ANTHRACENE	1/30/92	1000	ug/kg	Y	Y	J	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	50-32-8	BENZO(A)PYRENE	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	205-99-2	BENZO(B)FLUORANTHENE	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	191-24-2	BENZO(G,H,I)PERYLENE	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	207-08-9	BENZO(K)FLUORANTHENE	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	65-85-0	BENZOIC ACID	1/30/92	220000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	100-51-6	BENZYL ALCOHOL	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	7440-41-7	BERYLLIUM	1/30/92	1.1	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	75-27-4	BROMODICHLOROMETHANE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	75-25-2	BROMOFORM	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	74-83-9	BROMOMETHANE	1/30/92	6600	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	85-68-7	BUTYLBENZYL PHTHALATE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	7440-43-9	CADMIUM	1/30/92	0.79	mg/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	7440-70-2	CALCIUM	1/30/92	144000	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	75-15-0	CARBON DISULFIDE	1/30/92	3300	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	56-23-5	CARBON TETRACHLORIDE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	108-90-7	CHLOROBENZENE	1/30/92	78000	ug/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	124-48-1	CHLORODIBROMOMETHANE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	75-00-3	CHLOROETHANE	1/30/92	6600	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	67-66-3	CHLOROFORM	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	74-87-3	CHLOROMETHANE	1/30/92	6600	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	7440-47-3	CHROMIUM	1/30/92	13.2	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	218-01-9	CHRYSENE	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	7440-48-4	COBALT	1/30/92	5.2	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	7440-50-8	COPPER	1/30/92	19.7	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	57-12-5	CYANIDE	1/30/92	0.66	mg/kg	Y	N	UJ	1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	53-70-3	DIBENZO(A,H)ANTHRACENE	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	132-64-9	DIBENZOFURAN	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	84-66-2	DIETHYL PHTHALATE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	131-11-3	DIMETHYL PHTHALATE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	84-74-2	DI-N-BUTYL PHTHALATE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	117-84-0	DI-N-OCTYL PHTHALATE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	100-41-4	ETHYLBENZENE	1/30/92	3300	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B5	WA9307	206-44-0	FLUORANTHENE	1/30/92	1800	ug/kg	Y	Y	J	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	86-73-7	FLUORENE	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	118-74-1	HEXACHLOROBENZENE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	87-68-3	HEXACHLOROBUTADIENE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	67-72-1	HEXACHLOROETHANE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	193-39-5	INDENO(1,2,3-CD)PYRENE	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	7439-89-6	IRON	1/30/92	10600	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	78-59-1	ISOPHORONE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	7439-92-1	LEAD	1/30/92	2.7	mg/kg	Y	Y	J	1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	7439-95-4	MAGNESIUM	1/30/92	5030	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	7439-96-5	MANGANESE	1/30/92	58.4	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	7439-97-6	MERCURY	1/30/92	1.1	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	75-09-2	METHYLENE CHLORIDE	1/30/92	3300	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	91-20-3	NAPHTHALENE	1/30/92	740	ug/kg	Y	Y	J	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	7440-02-0	NICKEL	1/30/92	18.3	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	98-95-3	NITROBENZENE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	86-30-6	N-NITROSODIPHENYLAMINE	1/30/92	44000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	87-86-5	PENTACHLOROPHENOL	1/30/92	220000	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	85-01-8	PHENANTHRENE	1/30/92	940	ug/kg	Y	Y	J	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	108-95-2	PHENOL	1/30/92	44000	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	7440-09-7	POTASSIUM	1/30/92	1430	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	129-00-0	PYRENE	1/30/92	1200	ug/kg	Y	Y	J	1117650	922539.3	10	12	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9307	7782-49-2	SELENIUM	1/30/92	0.79	mg/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	7440-22-4	SILVER	1/30/92	0.79	mg/kg	Y	N	UJ	1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	7440-23-5	SODIUM	1/30/92	1550	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	100-42-5	STYRENE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	127-18-4	TETRACHLOROETHENE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	7440-28-0	THALLIUM	1/30/92	0.26	mg/kg	Y	N	UJ	1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	108-88-3	TOLUENE	1/30/92	3300	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	TSO	TOTAL SOLIDS	1/30/92	76	%	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B5	WA9307	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	79-01-6	TRICHLOROETHENE	1/30/92	3300	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	7440-62-2	VANADIUM	1/30/92	18.7	mg/kg	Y	Y		1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9307	75-01-4	VINYL CHLORIDE	1/30/92	6600	ug/Kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	1330-20-7	XYLENES, TOTAL	1/30/92	3300	ug/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9307	7440-66-6	ZINC	1/30/92	28.6	mg/kg	Y	N	U	1117650	922539.3	10	12	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	71-55-6	1,1,1-TRICHLOROETHANE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	79-00-5	1,1,2-TRICHLOROETHANE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	75-34-3	1,1-DICHLOROETHANE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	75-35-4	1,1-DICHLOROETHENE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	120-82-1	1,2,4-TRICHLOROBENZENE	1/30/92	13000	ug/Kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	95-50-1	1,2-DICHLOROBENZENE	1/30/92	79000	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	107-06-2	1,2-DICHLOROETHANE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	78-87-5	1,2-DICHLOROPROPANE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	541-73-1	1,3-DICHLOROBENZENE	1/30/92	3500	ug/Kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	106-46-7	1,4-DICHLOROBENZENE	1/30/92	170000	ug/Kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	95-95-4	2,4,5-TRICHLOROPHENOL	1/30/92	360000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	88-06-2	2,4,6-TRICHLOROPHENOL	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	120-83-2	2,4-DICHLOROPHENOL	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	105-67-9	2,4-DIMETHYLPHENOL	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	51-28-5	2,4-DINITROPHENOL	1/30/92	360000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	121-14-2	2,4-DINITROTOLUENE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	606-20-2	2,6-DINITROTOLUENE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	78-93-3	2-BUTANONE	1/30/92	14000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	91-58-7	2-CHLORONAPHTHALENE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	95-57-8	2-CHLOROPHENOL	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	591-78-6	2-HEXANONE	1/30/92	14000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	91-57-6	2-METHYLNAPHTHALENE	1/30/92	7700	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	95-48-7	2-METHYLPHENOL	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	88-74-4	2-NITROANILINE	1/30/92	360000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	88-75-5	2-NITROPHENOL	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	91-94-1	3,3'-DICHLOROBENZIDINE	1/30/92	140000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B5	WA9308	99-09-2	3-NITROANILINE	1/30/92	360000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/30/92	360000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	59-50-7	4-CHLORO-3-METHYLPHENOL	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	106-47-8	4-CHLOROANILINE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	108-10-1	4-METHYL-2-PENTANONE	1/30/92	2100	ug/Kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	106-44-5	4-METHYLPHENOL	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	100-01-6	4-NITROANILINE	1/30/92	360000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	100-02-7	4-NITROPHENOL	1/30/92	360000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	83-32-9	ACENAPHTHENE	1/30/92	72000	ug/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	208-96-8	ACENAPHTHYLENE	1/30/92	6800	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	67-64-1	ACETONE	1/30/92	14000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	7429-90-5	ALUMINUM	1/30/92	22400	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	120-12-7	ANTHRACENE	1/30/92	8200	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	7440-36-0	ANTIMONY	1/30/92	10.1	mg/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	7440-38-2	ARSENIC	1/30/92	23.8	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	7440-39-3	BARIUM	1/30/92	162	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	71-43-2	BENZENE	1/30/92	4300	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	56-55-3	BENZO(A)ANTHRACENE	1/30/92	9600	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	50-32-8	BENZO(A)PYRENE	1/30/92	5500	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	205-99-2	BENZO(B)FLUORANTHENE	1/30/92	72000	ug/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	191-24-2	BENZO(G,H,I)PERYLENE	1/30/92	72000	ug/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	207-08-9	BENZO(K)FLUORANTHENE	1/30/92	12000	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	65-85-0	BENZOIC ACID	1/30/92	360000	ug/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	100-51-6	BENZYL ALCOHOL	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	7440-41-7	BERYLLIUM	1/30/92	0.43	mg/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	75-27-4	BROMODICHLOROMETHANE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	75-25-2	BROMOFORM	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	74-83-9	BROMOMETHANE	1/30/92	14000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	85-68-7	BUTYLBENZYL PHTHALATE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	7440-43-9	CADMIUM	1/30/92	1.3	mg/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	7440-70-2	CALCIUM	1/30/92	128000	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	75-15-0	CARBON DISULFIDE	1/30/92	6800	ug/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	56-23-5	CARBON TETRACHLORIDE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	108-90-7	CHLOROBENZENE	1/30/92	230000	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	124-48-1	CHLORODIBROMOMETHANE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	75-00-3	CHLOROETHANE	1/30/92	14000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	67-66-3	CHLOROFORM	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	74-87-3	CHLOROMETHANE	1/30/92	14000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	7440-47-3	CHROMIUM	1/30/92	24.7	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	218-01-9	CHRYSENE	1/30/92	8300	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	7440-48-4	COBALT	1/30/92	7.8	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	7440-50-8	COPPER	1/30/92	23.9	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	57-12-5	CYANIDE	1/30/92	1.1	mg/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	53-70-3	DIBENZO(A,H)ANTHRACENE	1/30/92	72000	ug/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	132-64-9	DIBENZOFURAN	1/30/92	6800	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	84-66-2	DIETHYL PHTHALATE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	131-11-3	DIMETHYL PHTHALATE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	84-74-2	DI-N-BUTYL PHTHALATE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	117-84-0	DI-N-OCTYL PHTHALATE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	100-41-4	ETHYLBENZENE	1/30/92	6800	ug/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	206-44-0	FLUORANTHENE	1/30/92	29000	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	86-73-7	FLUORENE	1/30/92	6500	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	118-74-1	HEXACHLOROBENZENE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	87-68-3	HEXACHLOROBUTADIENE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	67-72-1	HEXACHLOROETHANE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	193-39-5	INDENO(1,2,3-CD)PYRENE	1/30/92	2700	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	7439-89-6	IRON	1/30/92	16600	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	78-59-1	ISOPHORONE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	7439-92-1	LEAD	1/30/92	110	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	7439-95-4	MAGNESIUM	1/30/92	26100	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B5	WA9308	7439-96-5	MANGANESE	1/30/92	353	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	7439-97-6	MERCURY	1/30/92	1.5	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	75-09-2	METHYLENE CHLORIDE	1/30/92	6800	ug/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	91-20-3	NAPHTHALENE	1/30/92	43000	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	7440-02-0	NICKEL	1/30/92	17.6	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	98-95-3	NITROBENZENE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	86-30-6	N-NITROSODIPHENYLAMINE	1/30/92	72000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	87-86-5	PENTACHLOROPHENOL	1/30/92	360000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	85-01-8	PHENANTHRENE	1/30/92	42000	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	108-95-2	PHENOL	1/30/92	72000	ug/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	7440-09-7	POTASSIUM	1/30/92	6680	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	129-00-0	PYRENE	1/30/92	17000	ug/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B5	WA9308	7782-49-2	SELENIUM	1/30/92	2.1	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	7440-22-4	SILVER	1/30/92	1.9	mg/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	7440-23-5	SODIUM	1/30/92	11600	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	100-42-5	STYRENE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	127-18-4	TETRACHLOROETHENE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	7440-28-0	THALLIUM	1/30/92	4.3	mg/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	108-88-3	TOLUENE	1/30/92	6800	ug/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	TSO	TOTAL SOLIDS	1/30/92	46	%	Y	Y		1117650	922539.3	18	20	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B5	WA9308	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	79-01-6	TRICHLOROETHENE	1/30/92	6800	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	7440-62-2	VANADIUM	1/30/92	46.7	mg/kg	Y	Y	J	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B5	WA9308	75-01-4	VINYL CHLORIDE	1/30/92	14000	ug/Kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	1330-20-7	XYLENES, TOTAL	1/30/92	6800	ug/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B5	WA9308	7440-66-6	ZINC	1/30/92	52.6	mg/kg	Y	N	UJ	1117650	922539.3	18	20	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	71-55-6	1,1,1-TRICHLOROETHANE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	79-00-5	1,1,2-TRICHLOROETHANE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	75-34-3	1,1-DICHLOROETHANE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	75-35-4	1,1-DICHLOROETHENE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	120-82-1	1,2,4-TRICHLOROBENZENE	1/15/92	540000	ug/Kg	Y	Y		1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	95-50-1	1,2-DICHLOROBENZENE	1/15/92	6800000	ug/Kg	Y	Y		1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	107-06-2	1,2-DICHLOROETHANE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	78-87-5	1,2-DICHLOROPROPANE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	541-73-1	1,3-DICHLOROBENZENE	1/15/92	2000000	ug/kg	Y	Y		1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	106-46-7	1,4-DICHLOROBENZENE	1/15/92	5500000	ug/kg	Y	Y		1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	95-95-4	2,4,5-TRICHLOROPHENOL	1/15/92	230000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	88-06-2	2,4,6-TRICHLOROPHENOL	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	120-83-2	2,4-DICHLOROPHENOL	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	105-67-9	2,4-DIMETHYLPHENOL	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	51-28-5	2,4-DINITROPHENOL	1/15/92	230000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	121-14-2	2,4-DINITROTOLUENE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	606-20-2	2,6-DINITROTOLUENE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	78-93-3	2-BUTANONE	1/15/92	170000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	91-58-7	2-CHLORONAPHTHALENE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	95-57-8	2-CHLOROPHENOL	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	591-78-6	2-HEXANONE	1/15/92	170000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	91-57-6	2-METHYLNAPHTHALENE	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	95-48-7	2-METHYLPHENOL	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	88-74-4	2-NITROANILINE	1/15/92	230000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	88-75-5	2-NITROPHENOL	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	91-94-1	3,3'-DICHLOROBENZIDINE	1/15/92	910000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	99-09-2	3-NITROANILINE	1/15/92	230000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/15/92	230000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	59-50-7	4-CHLORO-3-METHYLPHENOL	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	106-47-8	4-CHLOROANILINE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	108-10-1	4-METHYL-2-PENTANONE	1/15/92	170000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	106-44-5	4-METHYLPHENOL	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	100-01-6	4-NITROANILINE	1/15/92	230000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	100-02-7	4-NITROPHENOL	1/15/92	230000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	83-32-9	ACENAPHTHENE	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B6	WA9310	208-96-8	ACENAPHTHYLENE	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	67-64-1	ACETONE	1/15/92	170000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	7429-90-5	ALUMINUM	1/15/92	5170	mg/kg	Y	Y		1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	120-12-7	ANTHRACENE	1/15/92	590	ug/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	7440-36-0	ANTIMONY	1/15/92	14.7	mg/kg	Y	N	UJ	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	7440-38-2	ARSENIC	1/15/92	4.4	mg/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	7440-39-3	BARIUM	1/15/92	770	mg/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	71-43-2	BENZENE	1/15/92	8900	ug/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	56-55-3	BENZO(A)ANTHRACENE	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	50-32-8	BENZO(A)PYRENE	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	205-99-2	BENZO(B)FLUORANTHENE	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	191-24-2	BENZO(G,H,I)PERYLENE	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	207-08-9	BENZO(K)FLUORANTHENE	1/15/92	1600	ug/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	65-85-0	BENZOIC ACID	1/15/92	230000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	100-51-6	BENZYL ALCOHOL	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	7440-41-7	BERYLLIUM	1/15/92	0.27	mg/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	75-27-4	BROMODICHLOROMETHANE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	75-25-2	BROMOFORM	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	74-83-9	BROMOMETHANE	1/15/92	170000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	85-68-7	BUTYLBENZYL PHTHALATE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	7440-43-9	CADMIUM	1/15/92	0.82	mg/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	7440-70-2	CALCIUM	1/15/92	126000	mg/kg	Y	Y		1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	75-15-0	CARBON DISULFIDE	1/15/92	86000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	56-23-5	CARBON TETRACHLORIDE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	108-90-7	CHLOROBENZENE	1/15/92	2000000	ug/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	124-48-1	CHLORODIBROMOMETHANE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	75-00-3	CHLOROETHANE	1/15/92	170000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	67-66-3	CHLOROFORM	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	74-87-3	CHLOROMETHANE	1/15/92	170000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	7440-47-3	CHROMIUM	1/15/92	8.2	mg/kg	Y	Y		1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	218-01-9	CHRYSENE	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	7440-48-4	COBALT	1/15/92	4.6	mg/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	7440-50-8	COPPER	1/15/92	14.8	mg/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	57-12-5	CYANIDE	1/15/92	0.68	mg/kg	Y	N	R	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	53-70-3	DIBENZO(A,H)ANTHRACENE	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	132-64-9	DIBENZOFURAN	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	84-66-2	DIETHYL PHTHALATE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	131-11-3	DIMETHYL PHTHALATE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	84-74-2	DI-N-BUTYL PHTHALATE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	117-84-0	DI-N-OCTYL PHTHALATE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	100-41-4	ETHYLBENZENE	1/15/92	86000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	206-44-0	FLUORANTHENE	1/15/92	2400	ug/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	86-73-7	FLUORENE	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	118-74-1	HEXACHLOROBENZENE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	87-68-3	HEXACHLOROBUTADIENE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	67-72-1	HEXACHLOROETHANE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	193-39-5	INDENO(1,2,3-CD)PYRENE	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	7439-89-6	IRON	1/15/92	6860	mg/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	78-59-1	ISOPHORONE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	7439-92-1	LEAD	1/15/92	30.7	mg/kg	Y	Y		1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	7439-95-4	MAGNESIUM	1/15/92	28500	mg/kg	Y	Y		1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	7439-96-5	MANGANESE	1/15/92	136	mg/kg	Y	Y		1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	7439-97-6	MERCURY	1/15/92	1.2	mg/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	75-09-2	METHYLENE CHLORIDE	1/15/92	86000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	91-20-3	NAPHTHALENE	1/15/92	16000	ug/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	7440-02-0	NICKEL	1/15/92	14.8	mg/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	98-95-3	NITROBENZENE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	86-30-6	N-NITROSODIPHENYLAMINE	1/15/92	46000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	87-86-5	PENTACHLOROPHENOL	1/15/92	230000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	85-01-8	PHENANTHRENE	1/15/92	4000	ug/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	108-95-2	PHENOL	1/15/92	46000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B6	WA9310	7440-09-7	POTASSIUM	1/15/92	173	mg/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	129-00-0	PYRENE	1/15/92	1700	ug/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9310	7782-49-2	SELENIUM	1/15/92	0.82	mg/kg	Y	N	UJ	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	7440-22-4	SILVER	1/15/92	0.82	mg/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	7440-23-5	SODIUM	1/15/92	885	mg/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	100-42-5	STYRENE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	127-18-4	TETRACHLOROETHENE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	7440-28-0	THALLIUM	1/15/92	2.7	mg/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	108-88-3	TOLUENE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	TSO	TOTAL SOLIDS	1/15/92	73	%	Y	Y		1117697.3	922775.3	22	24	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B6	WA9310	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	79-01-6	TRICHLOROETHENE	1/15/92	86000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	7440-62-2	VANADIUM	1/15/92	23.6	mg/kg	Y	Y		1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9310	75-01-4	VINYL CHLORIDE	1/15/92	170000	ug/Kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	1330-20-7	XYLENES, TOTAL	1/15/92	86000	ug/kg	Y	N	U	1117697.3	922775.3	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9310	7440-66-6	ZINC	1/15/92	321	mg/kg	Y	Y	J	1117697.3	922775.3	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	71-55-6	1,1,1-TRICHLOROETHANE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	79-00-5	1,1,2-TRICHLOROETHANE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	75-34-3	1,1-DICHLOROETHANE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	75-35-4	1,1-DICHLOROETHENE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	120-82-1	1,2,4-TRICHLOROBENZENE	1/15/92	360000	ug/Kg	Y	Y	J	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	95-50-1	1,2-DICHLOROBENZENE	1/15/92	2200000	ug/kg	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	107-06-2	1,2-DICHLOROETHANE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	78-87-5	1,2-DICHLOROPROPANE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	541-73-1	1,3-DICHLOROBENZENE	1/15/92	290000	ug/kg	Y	Y	J	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	106-46-7	1,4-DICHLOROBENZENE	1/15/92	830000	ug/kg	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	95-95-4	2,4,5-TRICHLOROPHENOL	1/15/92	2500000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	88-06-2	2,4,6-TRICHLOROPHENOL	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	120-83-2	2,4-DICHLOROPHENOL	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	105-67-9	2,4-DIMETHYLPHENOL	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	51-28-5	2,4-DINITROPHENOL	1/15/92	2500000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	121-14-2	2,4-DINITROTOLUENE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	606-20-2	2,6-DINITROTOLUENE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	78-93-3	2-BUTANONE	1/15/92	18000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	91-58-7	2-CHLORONAPHTHALENE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	95-57-8	2-CHLOROPHENOL	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	591-78-6	2-HEXANONE	1/15/92	18000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	91-57-6	2-METHYLNAPHTHALENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	95-48-7	2-METHYLPHENOL	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	88-74-4	2-NITROANILINE	1/15/92	2500000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	88-75-5	2-NITROPHENOL	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	91-94-1	3,3'-DICHLOROBENZIDINE	1/15/92	980000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	99-09-2	3-NITROANILINE	1/15/92	2500000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/15/92	2500000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	59-50-7	4-CHLORO-3-METHYLPHENOL	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	106-47-8	4-CHLOROANILINE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	108-10-1	4-METHYL-2-PENTANONE	1/15/92	18000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	106-44-5	4-METHYLPHENOL	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	100-01-6	4-NITROANILINE	1/15/92	2500000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	100-02-7	4-NITROPHENOL	1/15/92	2500000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	83-32-9	ACENAPHTHENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	208-96-8	ACENAPHTHYLENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	67-64-1	ACETONE	1/15/92	18000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	7429-90-5	ALUMINUM	1/15/92	10400	mg/kg	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	120-12-7	ANTHRACENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	7440-36-0	ANTIMONY	1/15/92	8.8	mg/kg	Y	N	UJ	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	7440-38-2	ARSENIC	1/15/92	12.3	mg/kg	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	7440-39-3	BARIUM	1/15/92	88.2	mg/kg	Y	Y	J	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	71-43-2	BENZENE	1/15/92	9200	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	56-55-3	BENZO(A)ANTHRACENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	50-32-8	BENZO(A)PYRENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	205-99-2	BENZO(B)FLUORANTHENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B6	WA9309	191-24-2	BENZO(G,H,I)PERYLENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	207-08-9	BENZO(K)FLUORANTHENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	65-85-0	BENZOIC ACID	1/15/92	2500000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	100-51-6	BENZYL ALCOHOL	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	7440-41-7	BERYLLIUM	1/15/92	0.93	mg/kg	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	75-27-4	BROMODICHLOROMETHANE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	75-25-2	BROMOFORM	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	74-83-9	BROMOMETHANE	1/15/92	18000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	85-68-7	BUTYLBENZYL PHTHALATE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	7440-43-9	CADMIUM	1/15/92	0.88	mg/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	7440-70-2	CALCIUM	1/15/92	189000	mg/kg	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	75-15-0	CARBON DISULFIDE	1/15/92	9200	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	56-23-5	CARBON TETRACHLORIDE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	108-90-7	CHLOROBENZENE	1/15/92	150000	ug/kg	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	124-48-1	CHLORODIBROMOMETHANE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	75-00-3	CHLOROETHANE	1/15/92	18000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	67-66-3	CHLOROFORM	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	74-87-3	CHLOROMETHANE	1/15/92	18000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	7440-47-3	CHROMIUM	1/15/92	10.7	mg/kg	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	218-01-9	CHRYSENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	7440-48-4	COBALT	1/15/92	6.1	mg/kg	Y	Y	J	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	7440-50-8	COPPER	1/15/92	62.5	mg/kg	Y	Y	J	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	57-12-5	CYANIDE	1/15/92	0.74	mg/kg	Y	N	R	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	53-70-3	DIBENZO(A,H)ANTHRACENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	132-64-9	DIBENZOFURAN	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	84-66-2	DIETHYL PHTHALATE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	131-11-3	DIMETHYL PHTHALATE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	84-74-2	DI-N-BUTYL PHTHALATE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	117-84-0	DI-N-OCTYL PHTHALATE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	100-41-4	ETHYLBENZENE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	206-44-0	FLUORANTHENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	86-73-7	FLUORENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	118-74-1	HEXACHLOROBENZENE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	87-68-3	HEXACHLOROBUTADIENE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	67-72-1	HEXACHLOROETHANE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	193-39-5	INDENO(1,2,3-CD)PYRENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	7439-89-6	IRON	1/15/92	10100	mg/kg	Y	Y	J	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	78-59-1	ISOPHORONE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	7439-92-1	LEAD	1/15/92	32.1	mg/kg	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	7439-95-4	MAGNESIUM	1/15/92	18900	mg/kg	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	7439-96-5	MANGANESE	1/15/92	363	mg/kg	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	7439-97-6	MERCURY	1/15/92	10.5	mg/kg	Y	Y	J	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	75-09-2	METHYLENE CHLORIDE	1/15/92	9200	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	91-20-3	NAPHTHALENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	7440-02-0	NICKEL	1/15/92	12	mg/kg	Y	Y	J	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	98-95-3	NITROBENZENE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	86-30-6	N-NITROSODIPHENYLAMINE	1/15/92	490000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	87-86-5	PENTACHLOROPHENOL	1/15/92	2500000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	85-01-8	PHENANTHRENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	108-95-2	PHENOL	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	7440-09-7	POTASSIUM	1/15/92	863	mg/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	129-00-0	PYRENE	1/15/92	490000	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B6	WA9309	7782-49-2	SELENIUM	1/15/92	0.88	mg/kg	Y	N	UJ	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	7440-22-4	SILVER	1/15/92	0.88	mg/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	7440-23-5	SODIUM	1/15/92	1280	mg/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	100-42-5	STYRENE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	127-18-4	TETRACHLOROETHENE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	7440-28-0	THALLIUM	1/15/92	0.29	mg/kg	Y	N	UJ	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	108-88-3	TOLUENE	1/15/92	9200	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	TSO	TOTAL SOLIDS	1/15/92	68	%	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B6	WA9309	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B6	WA9309	79-01-6	TRICHLOROETHENE	1/15/92	9200	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	7440-62-2	VANADIUM	1/15/92	23.9	mg/kg	Y	Y		1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B6	WA9309	75-01-4	VINYL CHLORIDE	1/15/92	18000	ug/Kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	1330-20-7	XYLENES, TOTAL	1/15/92	9200	ug/kg	Y	N	U	1117697.3	922775.3	14	16	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B6	WA9309	7440-66-6	ZINC	1/15/92	65.4	mg/kg	Y	Y	J	1117697.3	922775.3	14	16	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9312	71-55-6	1,1,1-TRICHLOROETHANE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	79-00-5	1,1,2-TRICHLOROETHANE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	75-34-3	1,1-DICHLOROETHANE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	75-35-4	1,1-DICHLOROETHENE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	120-82-1	1,2,4-TRICHLOROBENZENE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	95-50-1	1,2-DICHLOROBENZENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	107-06-2	1,2-DICHLOROETHANE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	78-87-5	1,2-DICHLOROPROPANE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	541-73-1	1,3-DICHLOROBENZENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	106-46-7	1,4-DICHLOROBENZENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	95-95-4	2,4,5-TRICHLOROPHENOL	1/22/92	4400	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	88-06-2	2,4,6-TRICHLOROPHENOL	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	120-83-2	2,4-DICHLOROPHENOL	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	105-67-9	2,4-DIMETHYLPHENOL	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	51-28-5	2,4-DINITROPHENOL	1/22/92	4400	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	121-14-2	2,4-DINITROTOLUENE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	606-20-2	2,6-DINITROTOLUENE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	78-93-3	2-BUTANONE	1/22/92	690	ug/Kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	91-58-7	2-CHLORONAPHTHALENE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	95-57-8	2-CHLOROPHENOL	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	591-78-6	2-HEXANONE	1/22/92	8	ug/Kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	91-57-6	2-METHYLNAPHTHALENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	95-48-7	2-METHYLPHENOL	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	88-74-4	2-NITROANILINE	1/22/92	4400	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	88-75-5	2-NITROPHENOL	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	91-94-1	3,3'-DICHLOROBENZIDINE	1/22/92	1800	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	99-09-2	3-NITROANILINE	1/22/92	4400	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/22/92	4400	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	59-50-7	4-CHLORO-3-METHYLPHENOL	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	106-47-8	4-CHLOROANILINE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	108-10-1	4-METHYL-2-PENTANONE	1/22/92	130	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	106-44-5	4-METHYLPHENOL	1/22/92	960	ug/Kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	100-01-6	4-NITROANILINE	1/22/92	4400	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	100-02-7	4-NITROPHENOL	1/22/92	4400	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	83-32-9	ACENAPHTHENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	208-96-8	ACENAPHTHYLENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	67-64-1	ACETONE	1/22/92	3500	ug/Kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	120-12-7	ANTHRACENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	71-43-2	BENZENE	1/22/92	1600	ug/kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	56-55-3	BENZO(A)ANTHRACENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	50-32-8	BENZO(A)PYRENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	205-99-2	BENZO(B)FLUORANTHENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	191-24-2	BENZO(G,H,I)PERYLENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	207-08-9	BENZO(K)FLUORANTHENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	65-85-0	BENZOIC ACID	1/22/92	4400	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	100-51-6	BENZYL ALCOHOL	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	75-27-4	BROMODICHLOROMETHANE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	75-25-2	BROMOFORM	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	74-83-9	BROMOMETHANE	1/22/92	130	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	85-68-7	BUTYLBENZYL PHTHALATE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	75-15-0	CARBON DISULFIDE	1/22/92	10	ug/kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	56-23-5	CARBON TETRACHLORIDE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	108-90-7	CHLOROBENZENE	1/22/92	65	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	124-48-1	CHLORODIBROMOMETHANE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B7	WA9312	75-00-3	CHLOROETHANE	1/22/92	130	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	67-66-3	CHLOROFORM	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	74-87-3	CHLOROMETHANE	1/22/92	130	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	218-01-9	CHRYSENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	53-70-3	DIBENZO(A,H)ANTHRACENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	132-64-9	DIBENZOFURAN	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	84-66-2	DIETHYL PHTHALATE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	131-11-3	DIMETHYL PHTHALATE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	84-74-2	DI-N-BUTYL PHTHALATE	1/22/92	100	ug/Kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	117-84-0	DI-N-OCTYL PHTHALATE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	100-41-4	ETHYLBENZENE	1/22/92	65	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	206-44-0	FLUORANTHENE	1/22/92	290	ug/kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	86-73-7	FLUORENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	118-74-1	HEXACHLOROBENZENE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	87-68-3	HEXACHLOROBUTADIENE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	67-72-1	HEXACHLOROETHANE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	193-39-5	INDENO(1,2,3-CD)PYRENE	1/22/92	880	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	78-59-1	ISOPHORONE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	75-09-2	METHYLENE CHLORIDE	1/22/92	65	ug/kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	91-20-3	NAPHTHALENE	1/22/92	330	ug/kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	98-95-3	NITROBENZENE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	86-30-6	N-NITROSODIPHENYLAMINE	1/22/92	880	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	87-86-5	PENTACHLOROPHENOL	1/22/92	4400	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	85-01-8	PHENANTHRENE	1/22/92	440	ug/kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	108-95-2	PHENOL	1/22/92	8700	ug/kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	129-00-0	PYRENE	1/22/92	590	ug/kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9312	100-42-5	STYRENE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	127-18-4	TETRACHLOROETHENE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	108-88-3	TOLUENE	1/22/92	150	ug/kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	79-01-6	TRICHLOROETHENE	1/22/92	65	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	75-01-4	VINYL CHLORIDE	1/22/92	130	ug/Kg	Y	N	UJ	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9312	1330-20-7	XYLENES, TOTAL	1/22/92	19	ug/kg	Y	Y	J	1117740.4	922344.9	26	28	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9313	7429-90-5	ALUMINUM	1/22/92	6410	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-36-0	ANTIMONY	1/22/92	7.4	mg/kg	Y	N	UJ	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-38-2	ARSENIC	1/22/92	8.1	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-39-3	BARIUM	1/22/92	42.2	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-41-7	BERYLLIUM	1/22/92	0.53	mg/kg	Y	N	UJ	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-43-9	CADMIUM	1/22/92	1.6	mg/kg	Y	N	UJ	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-70-2	CALCIUM	1/22/92	209000	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-47-3	CHROMIUM	1/22/92	10.2	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-48-4	COBALT	1/22/92	3.2	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-50-8	COPPER	1/22/92	11.7	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	57-12-5	CYANIDE	1/22/92	1.3	mg/kg	Y	N	UJ	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7439-89-6	IRON	1/22/92	6770	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7439-92-1	LEAD	1/22/92	9.4	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7439-95-4	MAGNESIUM	1/22/92	16200	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7439-96-5	MANGANESE	1/22/92	189	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7439-97-6	MERCURY	1/22/92	1.3	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-02-0	NICKEL	1/22/92	8.6	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-09-7	POTASSIUM	1/22/92	11600	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7782-49-2	SELENIUM	1/22/92	1.6	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-22-4	SILVER	1/22/92	1.6	mg/kg	Y	N	UJ	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-23-5	SODIUM	1/22/92	16900	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-28-0	THALLIUM	1/22/92	0.53	mg/kg	Y	N	UJ	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	TSO	TOTAL SOLIDS	1/22/92	38	%	Y	Y		1117740.4	922344.9	32	34	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B7	WA9313	7440-62-2	VANADIUM	1/22/92	18.3	mg/kg	Y	Y	J	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9313	7440-66-6	ZINC	1/22/92	33.4	mg/kg	Y	N	UJ	1117740.4	922344.9	32	34	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	71-55-6	1,1,1-TRICHLOROETHANE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	79-00-5	1,1,2-TRICHLOROETHANE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	75-34-3	1,1-DICHLOROETHANE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	75-35-4	1,1-DICHLOROETHENE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	120-82-1	1,2,4-TRICHLOROBENZENE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B7	WA9311	95-50-1	1,2-DICHLOROBENZENE	1/22/92	5800	ug/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	107-06-2	1,2-DICHLOROETHANE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	78-87-5	1,2-DICHLOROPROPANE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	541-73-1	1,3-DICHLOROBENZENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	106-46-7	1,4-DICHLOROBENZENE	1/22/92	960	ug/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	95-95-4	2,4,5-TRICHLOROPHENOL	1/22/92	4000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	88-06-2	2,4,6-TRICHLOROPHENOL	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	120-83-2	2,4-DICHLOROPHENOL	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	105-67-9	2,4-DIMETHYLPHENOL	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	51-28-5	2,4-DINITROPHENOL	1/22/92	4000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	121-14-2	2,4-DINITROTOLUENE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	606-20-2	2,6-DINITROTOLUENE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	78-93-3	2-BUTANONE	1/22/92	3000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	91-58-7	2-CHLORONAPHTHALENE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	95-57-8	2-CHLOROPHENOL	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	591-78-6	2-HEXANONE	1/22/92	3000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	91-57-6	2-METHYLNAPHTHALENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	95-48-7	2-METHYLPHENOL	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	88-74-4	2-NITROANILINE	1/22/92	4000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	88-75-5	2-NITROPHENOL	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	91-94-1	3,3'-DICHLOROBENZIDINE	1/22/92	1600	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	99-09-2	3-NITROANILINE	1/22/92	4000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/22/92	4000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	59-50-7	4-CHLORO-3-METHYLPHENOL	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	106-47-8	4-CHLOROANILINE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	108-10-1	4-METHYL-2-PENTANONE	1/22/92	3000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	106-44-5	4-METHYLPHENOL	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	100-01-6	4-NITROANILINE	1/22/92	4000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	100-02-7	4-NITROPHENOL	1/22/92	4000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	83-32-9	ACENAPHTHENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	208-96-8	ACENAPHTHYLENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	67-64-1	ACETONE	1/22/92	3000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	7429-90-5	ALUMINUM	1/22/92	7360	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	120-12-7	ANTHRACENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	7440-36-0	ANTIMONY	1/22/92	9.9	mg/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	7440-38-2	ARSENIC	1/22/92	7.8	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	7440-39-3	BARIUM	1/22/92	23.2	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	71-43-2	BENZENE	1/22/92	470	ug/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	56-55-3	BENZO(A)ANTHRACENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	50-32-8	BENZO(A)PYRENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	205-99-2	BENZO(B)FLUORANTHENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	191-24-2	BENZO(G,H,I)PERYLENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	207-08-9	BENZO(K)FLUORANTHENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	65-85-0	BENZOIC ACID	1/22/92	4000	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	100-51-6	BENZYL ALCOHOL	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	7440-41-7	BERYLLIUM	1/22/92	0.48	mg/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	75-27-4	BROMODICHLOROMETHANE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	75-25-2	BROMOFORM	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	74-83-9	BROMOMETHANE	1/22/92	3000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	85-68-7	BUTYLBENZYL PHTHALATE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	7440-43-9	CADMIUM	1/22/92	1.4	mg/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	7440-70-2	CALCIUM	1/22/92	255000	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	75-15-0	CARBON DISULFIDE	1/22/92	1500	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	56-23-5	CARBON TETRACHLORIDE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	108-90-7	CHLOROBENZENE	1/22/92	1500	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	124-48-1	CHLORODIBROMOMETHANE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	75-00-3	CHLOROETHANE	1/22/92	3000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	67-66-3	CHLOROFORM	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	74-87-3	CHLOROMETHANE	1/22/92	3000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	7440-47-3	CHROMIUM	1/22/92	8	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B7	WA9311	218-01-9	CHRYSENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	7440-48-4	COBALT	1/22/92	3.3	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	7440-50-8	COPPER	1/22/92	12.7	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	57-12-5	CYANIDE	1/22/92	1.2	mg/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	53-70-3	DIBENZO(A,H)ANTHRACENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	132-64-9	DIBENZOFURAN	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	84-66-2	DIETHYL PHTHALATE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	131-11-3	DIMETHYL PHTHALATE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	84-74-2	DI-N-BUTYL PHTHALATE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	117-84-0	DI-N-OCTYL PHTHALATE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	100-41-4	ETHYLBENZENE	1/22/92	1500	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	206-44-0	FLUORANTHENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	86-73-7	FLUORENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	118-74-1	HEXACHLOROBENZENE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	87-68-3	HEXACHLOROBUTADIENE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	67-72-1	HEXACHLOROETHANE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	193-39-5	INDENO(1,2,3-CD)PYRENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	7439-89-6	IRON	1/22/92	6370	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	78-59-1	ISOPHORONE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	7439-92-1	LEAD	1/22/92	8.1	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	7439-95-4	MAGNESIUM	1/22/92	23400	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	7439-96-5	MANGANESE	1/22/92	174	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	7439-97-6	MERCURY	1/22/92	2	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	75-09-2	METHYLENE CHLORIDE	1/22/92	1500	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	91-20-3	NAPHTHALENE	1/22/92	640	ug/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	7440-02-0	NICKEL	1/22/92	7.6	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	98-95-3	NITROBENZENE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	86-30-6	N-NITROSODIPHENYLAMINE	1/22/92	790	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	87-86-5	PENTACHLOROPHENOL	1/22/92	4000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	85-01-8	PHENANTHRENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	108-95-2	PHENOL	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	7440-09-7	POTASSIUM	1/22/92	300	mg/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	129-00-0	PYRENE	1/22/92	790	ug/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B7	WA9311	7782-49-2	SELENIUM	1/22/92	1.4	mg/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	7440-22-4	SILVER	1/22/92	1.4	mg/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	7440-23-5	SODIUM	1/22/92	2020	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	100-42-5	STYRENE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	127-18-4	TETRACHLOROETHENE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	7440-28-0	THALLIUM	1/22/92	0.48	mg/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	108-88-3	TOLUENE	1/22/92	760	ug/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	TSO	TOTAL SOLIDS	1/22/92	42	%	Y	Y		1117740.4	922344.9	16	18	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B7	WA9311	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	79-01-6	TRICHLOROETHENE	1/22/92	1500	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	7440-62-2	VANADIUM	1/22/92	17.5	mg/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B7	WA9311	75-01-4	VINYL CHLORIDE	1/22/92	3000	ug/Kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	1330-20-7	XYLENES, TOTAL	1/22/92	670	ug/kg	Y	Y	J	1117740.4	922344.9	16	18	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B7	WA9311	7440-66-6	ZINC	1/22/92	16.7	mg/kg	Y	N	UJ	1117740.4	922344.9	16	18	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	71-55-6	1,1,1-TRICHLOROETHANE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	79-00-5	1,1,2-TRICHLOROETHANE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	75-34-3	1,1-DICHLOROETHANE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	75-35-4	1,1-DICHLOROETHENE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	120-82-1	1,2,4-TRICHLOROBENZENE	1/14/92	45000	ug/Kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	95-50-1	1,2-DICHLOROBENZENE	1/14/92	300000	ug/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	107-06-2	1,2-DICHLOROETHANE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	78-87-5	1,2-DICHLOROPROPANE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	541-73-1	1,3-DICHLOROBENZENE	1/14/92	6500	ug/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	106-46-7	1,4-DICHLOROBENZENE	1/14/92	420000	ug/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	95-95-4	2,4,5-TRICHLOROPHENOL	1/14/92	350000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	88-06-2	2,4,6-TRICHLOROPHENOL	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	120-83-2	2,4-DICHLOROPHENOL	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	105-67-9	2,4-DIMETHYLPHENOL	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B8	WA9314	51-28-5	2,4-DINITROPHENOL	1/14/92	350000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	121-14-2	2,4-DINITROTOLUENE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	606-20-2	2,6-DINITROTOLUENE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	78-93-3	2-BUTANONE	1/14/92	5200	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	91-58-7	2-CHLORONAPHTHALENE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	95-57-8	2-CHLOROPHENOL	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	591-78-6	2-HEXANONE	1/14/92	5200	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	91-57-6	2-METHYLNAPHTHALENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	95-48-7	2-METHYLPHENOL	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	88-74-4	2-NITROANILINE	1/14/92	350000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	88-75-5	2-NITROPHENOL	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	91-94-1	3,3'-DICHLOROBENZIDINE	1/14/92	140000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	99-09-2	3-NITROANILINE	1/14/92	350000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/14/92	350000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	59-50-7	4-CHLORO-3-METHYLPHENOL	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	106-47-8	4-CHLOROANILINE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	108-10-1	4-METHYL-2-PENTANONE	1/14/92	5200	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	106-44-5	4-METHYLPHENOL	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	100-01-6	4-NITROANILINE	1/14/92	350000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	100-02-7	4-NITROPHENOL	1/14/92	350000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	83-32-9	ACENAPHTHENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	208-96-8	ACENAPHTHYLENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	67-64-1	ACETONE	1/14/92	5200	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	7429-90-5	ALUMINUM	1/14/92	9360	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	120-12-7	ANTHRACENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	7440-36-0	ANTIMONY	1/14/92	9.6	mg/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	7440-38-2	ARSENIC	1/14/92	7.6	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	7440-39-3	BARIUM	1/14/92	98.1	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	71-43-2	BENZENE	1/14/92	250	ug/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	56-55-3	BENZO(A)ANTHRACENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	50-32-8	BENZO(A)PYRENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	205-99-2	BENZO(B)FLUORANTHENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	191-24-2	BENZO(G,H,I)PERYLENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	207-08-9	BENZO(K)FLUORANTHENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	65-85-0	BENZOIC ACID	1/14/92	350000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	100-51-6	BENZYL ALCOHOL	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	7440-41-7	BERYLLIUM	1/14/92	0.42	mg/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	75-27-4	BROMODICHLOROMETHANE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	75-25-2	BROMOFORM	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	74-83-9	BROMOMETHANE	1/14/92	5200	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	85-68-7	BUTYLBENZYL PHTHALATE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	7440-43-9	CADMIUM	1/14/92	1.2	mg/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	7440-70-2	CALCIUM	1/14/92	185000	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	75-15-0	CARBON DISULFIDE	1/14/92	1100	ug/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	56-23-5	CARBON TETRACHLORIDE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	108-90-7	CHLOROBENZENE	1/14/92	6800	ug/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	124-48-1	CHLORODIBROMOMETHANE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	75-00-3	CHLOROETHANE	1/14/92	5200	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	67-66-3	CHLOROFORM	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	74-87-3	CHLOROMETHANE	1/14/92	5200	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	7440-47-3	CHROMIUM	1/14/92	12.8	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	218-01-9	CHRYSENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	7440-48-4	COBALT	1/14/92	8.1	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	7440-50-8	COPPER	1/14/92	30	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	57-12-5	CYANIDE	1/14/92	1	mg/kg	Y	N	R	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	53-70-3	DIBENZO(A,H)ANTHRACENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	132-64-9	DIBENZOFURAN	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	84-66-2	DIETHYL PHTHALATE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	131-11-3	DIMETHYL PHTHALATE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	84-74-2	DI-N-BUTYL PHTHALATE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	117-84-0	DI-N-OCTYL PHTHALATE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B8	WA9314	100-41-4	ETHYLBENZENE	1/14/92	2600	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	206-44-0	FLUORANTHENE	1/14/92	4100	ug/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	86-73-7	FLUORENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	118-74-1	HEXACHLOROBENZENE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	87-68-3	HEXACHLOROBUTADIENE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	67-72-1	HEXACHLOROETHANE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	193-39-5	INDENO(1,2,3-CD)PYRENE	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	7439-89-6	IRON	1/14/92	11700	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	78-59-1	ISOPHORONE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	7439-92-1	LEAD	1/14/92	16	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	7439-95-4	MAGNESIUM	1/14/92	14800	mg/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	7439-96-5	MANGANESE	1/14/92	253	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	7439-97-6	MERCURY	1/14/92	0.59	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	75-09-2	METHYLENE CHLORIDE	1/14/92	2600	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	91-20-3	NAPHTHALENE	1/14/92	4400	ug/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	7440-02-0	NICKEL	1/14/92	13.2	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	98-95-3	NITROBENZENE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	86-30-6	N-NITROSODIPHENYLAMINE	1/14/92	69000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	87-86-5	PENTACHLOROPHENOL	1/14/92	350000	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	85-01-8	PHENANTHRENE	1/14/92	8700	ug/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	108-95-2	PHENOL	1/14/92	69000	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	7440-09-7	POTASSIUM	1/14/92	2670	mg/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	129-00-0	PYRENE	1/14/92	2800	ug/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9314	7782-49-2	SELENIUM	1/14/92	1.4	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	7440-22-4	SILVER	1/14/92	1.2	mg/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	7440-23-5	SODIUM	1/14/92	5790	mg/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	100-42-5	STYRENE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	127-18-4	TETRACHLOROETHENE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	7440-28-0	THALLIUM	1/14/92	0.42	mg/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	108-88-3	TOLUENE	1/14/92	2600	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	TSO	TOTAL SOLIDS	1/14/92	48	%	Y	Y		1117540.5	922748.8	24	26	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B8	WA9314	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	79-01-6	TRICHLOROETHENE	1/14/92	2600	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	7440-62-2	VANADIUM	1/14/92	26.6	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9314	75-01-4	VINYL CHLORIDE	1/14/92	5200	ug/Kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	1330-20-7	XYLENES, TOTAL	1/14/92	2600	ug/kg	Y	N	UJ	1117540.5	922748.8	24	26	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9314	7440-66-6	ZINC	1/14/92	49.9	mg/kg	Y	Y	J	1117540.5	922748.8	24	26	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	71-55-6	1,1,1-TRICHLOROETHANE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	79-00-5	1,1,2-TRICHLOROETHANE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	75-34-3	1,1-DICHLOROETHANE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	75-35-4	1,1-DICHLOROETHENE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	120-82-1	1,2,4-TRICHLOROBENZENE	1/14/92	19000	ug/Kg	Y	Y	J	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	95-50-1	1,2-DICHLOROBENZENE	1/14/92	110000	ug/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	107-06-2	1,2-DICHLOROETHANE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	78-87-5	1,2-DICHLOROPROPANE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	541-73-1	1,3-DICHLOROBENZENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	106-46-7	1,4-DICHLOROBENZENE	1/14/92	130000	ug/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	95-95-4	2,4,5-TRICHLOROPHENOL	1/14/92	280000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	88-06-2	2,4,6-TRICHLOROPHENOL	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	120-83-2	2,4-DICHLOROPHENOL	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	105-67-9	2,4-DIMETHYLPHENOL	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	51-28-5	2,4-DINITROPHENOL	1/14/92	280000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	121-14-2	2,4-DINITROTOLUENE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	606-20-2	2,6-DINITROTOLUENE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	78-93-3	2-BUTANONE	1/14/92	8300	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	91-58-7	2-CHLORONAPHTHALENE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	95-57-8	2-CHLOROPHENOL	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	591-78-6	2-HEXANONE	1/14/92	8300	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	91-57-6	2-METHYLNAPHTHALENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	95-48-7	2-METHYLPHENOL	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	88-74-4	2-NITROANILINE	1/14/92	280000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	88-75-5	2-NITROPHENOL	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B8	WA9315	91-94-1	3,3'-DICHLOROBENZIDINE	1/14/92	110000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	99-09-2	3-NITROANILINE	1/14/92	280000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/14/92	280000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	59-50-7	4-CHLORO-3-METHYLPHENOL	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	106-47-8	4-CHLOROANILINE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	108-10-1	4-METHYL-2-PENTANONE	1/14/92	8300	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	106-44-5	4-METHYLPHENOL	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	100-01-6	4-NITROANILINE	1/14/92	280000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	100-02-7	4-NITROPHENOL	1/14/92	280000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	83-32-9	ACENAPHTHENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	208-96-8	ACENAPHTHYLENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	67-64-1	ACETONE	1/14/92	8300	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	7429-90-5	ALUMINUM	1/14/92	12500	mg/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	120-12-7	ANTHRACENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	7440-36-0	ANTIMONY	1/14/92	9.1	mg/kg	Y	N	UJ	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	7440-38-2	ARSENIC	1/14/92	11	mg/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	7440-39-3	BARIUM	1/14/92	44.7	mg/kg	Y	Y	J	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	71-43-2	BENZENE	1/14/92	3200	ug/kg	Y	Y	J	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	56-55-3	BENZO(A)ANTHRACENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	50-32-8	BENZO(A)PYRENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	205-99-2	BENZO(B)FLUORANTHENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	191-24-2	BENZO(G,H,I)PERYLENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	207-08-9	BENZO(K)FLUORANTHENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	65-85-0	BENZOIC ACID	1/14/92	280000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	100-51-6	BENZYL ALCOHOL	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	7440-41-7	BERYLLIUM	1/14/92	1.3	mg/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	75-27-4	BROMODICHLOROMETHANE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	75-25-2	BROMOFORM	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	74-83-9	BROMOMETHANE	1/14/92	8300	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	85-68-7	BUTYLBENZYL PHTHALATE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	7440-43-9	CADMIUM	1/14/92	1	mg/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	7440-70-2	CALCIUM	1/14/92	114000	mg/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	75-15-0	CARBON DISULFIDE	1/14/92	4200	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	56-23-5	CARBON TETRACHLORIDE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	108-90-7	CHLOROBENZENE	1/14/92	140000	ug/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	124-48-1	CHLORODIBROMOMETHANE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	75-00-3	CHLOROETHANE	1/14/92	8300	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	67-66-3	CHLOROFORM	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	74-87-3	CHLOROMETHANE	1/14/92	8300	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	7440-47-3	CHROMIUM	1/14/92	11.1	mg/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	218-01-9	CHRYSENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	7440-48-4	COBALT	1/14/92	7.9	mg/kg	Y	Y	J	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	7440-50-8	COPPER	1/14/92	16.1	mg/kg	Y	Y	J	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	57-12-5	CYANIDE	1/14/92	0.83	mg/kg	Y	N	R	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	53-70-3	DIBENZO(A,H)ANTHRACENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	132-64-9	DIBENZOFURAN	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	84-66-2	DIETHYL PHTHALATE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	131-11-3	DIMETHYL PHTHALATE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	84-74-2	DI-N-BUTYL PHTHALATE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	117-84-0	DI-N-OCTYL PHTHALATE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	100-41-4	ETHYLBENZENE	1/14/92	4200	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	206-44-0	FLUORANTHENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	86-73-7	FLUORENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	118-74-1	HEXACHLOROBENZENE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	87-68-3	HEXACHLOROBUTADIENE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	67-72-1	HEXACHLOROETHANE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	193-39-5	INDENO(1,2,3-CD)PYRENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	7439-89-6	IRON	1/14/92	13200	mg/kg	Y	Y	J	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	78-59-1	ISOPHORONE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	7439-92-1	LEAD	1/14/92	5	mg/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B8	WA9315	7439-95-4	MAGNESIUM	1/14/92	18600	mg/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	7439-96-5	MANGANESE	1/14/92	154	mg/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	7439-97-6	MERCURY	1/14/92	0.62	mg/kg	Y	Y	J	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	75-09-2	METHYLENE CHLORIDE	1/14/92	4200	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	91-20-3	NAPHTHALENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	7440-02-0	NICKEL	1/14/92	14.7	mg/kg	Y	Y	J	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	98-95-3	NITROBENZENE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	86-30-6	N-NITROSODIPHENYLAMINE	1/14/92	56000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	87-86-5	PENTACHLOROPHENOL	1/14/92	280000	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	85-01-8	PHENANTHRENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	108-95-2	PHENOL	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	7440-09-7	POTASSIUM	1/14/92	1330	mg/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	129-00-0	PYRENE	1/14/92	56000	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B8	WA9315	7782-49-2	SELENIUM	1/14/92	1	mg/kg	Y	N	UJ	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	7440-22-4	SILVER	1/14/92	1	mg/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	7440-23-5	SODIUM	1/14/92	649	mg/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	100-42-5	STYRENE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	127-18-4	TETRACHLOROETHENE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	7440-28-0	THALLIUM	1/14/92	0.33	mg/kg	Y	N	UJ	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	108-88-3	TOLUENE	1/14/92	4200	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	TSO	TOTAL SOLIDS	1/14/92	60	%	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B8	WA9315	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	79-01-6	TRICHLOROETHENE	1/14/92	4200	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	7440-62-2	VANADIUM	1/14/92	43.6	mg/kg	Y	Y		1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B8	WA9315	75-01-4	VINYL CHLORIDE	1/14/92	8300	ug/Kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	1330-20-7	XYLENES, TOTAL	1/14/92	4200	ug/kg	Y	N	U	1117540.5	922748.8	6	8	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B8	WA9315	7440-66-6	ZINC	1/14/92	19	mg/kg	Y	Y	J	1117540.5	922748.8	6	8	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	71-55-6	1,1,1-TRICHLOROETHANE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	79-00-5	1,1,2-TRICHLOROETHANE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	75-34-3	1,1-DICHLOROETHANE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	75-35-4	1,1-DICHLOROETHENE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	120-82-1	1,2,4-TRICHLOROBENZENE	1/13/92	170	ug/Kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	95-50-1	1,2-DICHLOROBENZENE	1/13/92	6100	ug/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	107-06-2	1,2-DICHLOROETHANE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	78-87-5	1,2-DICHLOROPROPANE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	541-73-1	1,3-DICHLOROBENZENE	1/13/92	200	ug/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	106-46-7	1,4-DICHLOROBENZENE	1/13/92	8600	ug/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	95-95-4	2,4,5-TRICHLOROPHENOL	1/13/92	3000	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	88-06-2	2,4,6-TRICHLOROPHENOL	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	120-83-2	2,4-DICHLOROPHENOL	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	105-67-9	2,4-DIMETHYLPHENOL	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	51-28-5	2,4-DINITROPHENOL	1/13/92	3000	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	121-14-2	2,4-DINITROTOLUENE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	606-20-2	2,6-DINITROTOLUENE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	78-93-3	2-BUTANONE	1/13/92	2300	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	91-58-7	2-CHLORONAPHTHALENE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	95-57-8	2-CHLOROPHENOL	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	591-78-6	2-HEXANONE	1/13/92	2300	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	91-57-6	2-METHYLNAPHTHALENE	1/13/92	88	ug/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	95-48-7	2-METHYLPHENOL	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	88-74-4	2-NITROANILINE	1/13/92	3000	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	88-75-5	2-NITROPHENOL	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	91-94-1	3,3'-DICHLOROBENZIDINE	1/13/92	1200	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	99-09-2	3-NITROANILINE	1/13/92	3000	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/13/92	3000	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	59-50-7	4-CHLORO-3-METHYLPHENOL	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	106-47-8	4-CHLOROANILINE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	108-10-1	4-METHYL-2-PENTANONE	1/13/92	2300	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	106-44-5	4-METHYLPHENOL	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	100-01-6	4-NITROANILINE	1/13/92	3000	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	100-02-7	4-NITROPHENOL	1/13/92	3000	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B9	WA9316	83-32-9	ACENAPHTHENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	208-96-8	ACENAPHTHYLENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	67-64-1	ACETONE	1/13/92	2300	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	7429-90-5	ALUMINUM	1/13/92	12300	mg/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	120-12-7	ANTHRACENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	7440-36-0	ANTIMONY	1/13/92	16.6	mg/kg	Y	N	UJ	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	7440-38-2	ARSENIC	1/13/92	8.4	mg/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	7440-39-3	BARIUM	1/13/92	108	mg/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	71-43-2	BENZENE	1/13/92	1100	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	56-55-3	BENZO(A)ANTHRACENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	50-32-8	BENZO(A)PYRENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	205-99-2	BENZO(B)FLUORANTHENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	191-24-2	BENZO(G,H,I)PERYLENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	207-08-9	BENZO(K)FLUORANTHENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	65-85-0	BENZOIC ACID	1/13/92	3000	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	100-51-6	BENZYL ALCOHOL	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	7440-41-7	BERYLLIUM	1/13/92	1	mg/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	75-27-4	BROMODICHLOROMETHANE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	75-25-2	BROMOFORM	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	74-83-9	BROMOMETHANE	1/13/92	2300	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	85-68-7	BUTYLBENZYL PHTHALATE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	7440-43-9	CADMIUM	1/13/92	1.1	mg/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	7440-70-2	CALCIUM	1/13/92	153000	mg/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	75-15-0	CARBON DISULFIDE	1/13/92	1100	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	56-23-5	CARBON TETRACHLORIDE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	108-90-7	CHLOROBENZENE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	124-48-1	CHLORODIBROMOMETHANE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	75-00-3	CHLOROETHANE	1/13/92	2300	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	67-66-3	CHLOROFORM	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	74-87-3	CHLOROMETHANE	1/13/92	2300	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	7440-47-3	CHROMIUM	1/13/92	31	mg/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	218-01-9	CHRYSENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	7440-48-4	COBALT	1/13/92	7.6	mg/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	7440-50-8	COPPER	1/13/92	19.4	mg/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	57-12-5	CYANIDE	1/13/92	3.3	mg/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	53-70-3	DIBENZO(A,H)ANTHRACENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	132-64-9	DIBENZOFURAN	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	84-66-2	DIETHYL PHTHALATE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	131-11-3	DIMETHYL PHTHALATE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	84-74-2	DI-N-BUTYL PHTHALATE	1/13/92	66	ug/Kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	117-84-0	DI-N-OCTYL PHTHALATE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	100-41-4	ETHYLBENZENE	1/13/92	1100	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	206-44-0	FLUORANTHENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	86-73-7	FLUORENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	118-74-1	HEXACHLOROBENZENE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	87-68-3	HEXACHLOROBUTADIENE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	67-72-1	HEXACHLOROETHANE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	193-39-5	INDENO(1,2,3-CD)PYRENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	7439-89-6	IRON	1/13/92	6280	mg/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	78-59-1	ISOPHORONE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	7439-92-1	LEAD	1/13/92	274	mg/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	7439-95-4	MAGNESIUM	1/13/92	62100	mg/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	7439-96-5	MANGANESE	1/13/92	260	mg/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	7439-97-6	MERCURY	1/13/92	0.82	mg/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	75-09-2	METHYLENE CHLORIDE	1/13/92	1100	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	91-20-3	NAPHTHALENE	1/13/92	950	ug/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	7440-02-0	NICKEL	1/13/92	12.7	mg/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	98-95-3	NITROBENZENE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	86-30-6	N-NITROSODIPHENYLAMINE	1/13/92	610	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	87-86-5	PENTACHLOROPHENOL	1/13/92	3000	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	85-01-8	PHENANTHRENE	1/13/92	110	ug/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B9	WA9316	108-95-2	PHENOL	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	7440-09-7	POTASSIUM	1/13/92	229	mg/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	129-00-0	PYRENE	1/13/92	610	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9316	7782-49-2	SELENIUM	1/13/92	1.1	mg/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	7440-22-4	SILVER	1/13/92	1.5	mg/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	7440-23-5	SODIUM	1/13/92	1350	mg/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	100-42-5	STYRENE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	127-18-4	TETRACHLOROETHENE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	7440-28-0	THALLIUM	1/13/92	3.6	mg/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	108-88-3	TOLUENE	1/13/92	1100	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	TSO	TOTAL SOLIDS	1/13/92	55	%	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	OTHER
Plant Area	Soil	WA-WA-B9	WA9316	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	79-01-6	TRICHLOROETHENE	1/13/92	1100	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	7440-62-2	VANADIUM	1/13/92	48.8	mg/kg	Y	Y		1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9316	75-01-4	VINYL CHLORIDE	1/13/92	2300	ug/Kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	1330-20-7	XYLENES, TOTAL	1/13/92	1100	ug/kg	Y	N	U	1117281.8	922548	20	22	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9316	7440-66-6	ZINC	1/13/92	21.8	mg/kg	Y	Y	J	1117281.8	922548	20	22	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	71-55-6	1,1,1-TRICHLOROETHANE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	79-34-5	1,1,2,2-TETRACHLOROETHANE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	79-00-5	1,1,2-TRICHLOROETHANE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	75-34-3	1,1-DICHLOROETHANE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	75-35-4	1,1-DICHLOROETHENE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	120-82-1	1,2,4-TRICHLOROBENZENE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	95-50-1	1,2-DICHLOROBENZENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	107-06-2	1,2-DICHLOROETHANE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	540-59-0	1,2-DICHLOROETHENE (TOTAL)	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	78-87-5	1,2-DICHLOROPROPANE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	541-73-1	1,3-DICHLOROBENZENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	106-46-7	1,4-DICHLOROBENZENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	95-95-4	2,4,5-TRICHLOROPHENOL	1/13/92	340000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	88-06-2	2,4,6-TRICHLOROPHENOL	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	120-83-2	2,4-DICHLOROPHENOL	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	105-67-9	2,4-DIMETHYLPHENOL	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	51-28-5	2,4-DINITROPHENOL	1/13/92	340000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	121-14-2	2,4-DINITROTOLUENE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	606-20-2	2,6-DINITROTOLUENE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	78-93-3	2-BUTANONE	1/13/92	110	ug/Kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	91-58-7	2-CHLORONAPHTHALENE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	95-57-8	2-CHLOROPHENOL	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	591-78-6	2-HEXANONE	1/13/92	20	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	91-57-6	2-METHYLNAPHTHALENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	95-48-7	2-METHYLPHENOL	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	88-74-4	2-NITROANILINE	1/13/92	340000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	88-75-5	2-NITROPHENOL	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	91-94-1	3,3'-DICHLOROBENZIDINE	1/13/92	140000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	99-09-2	3-NITROANILINE	1/13/92	340000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	534-52-1	4,6-DINITRO-2-METHYLPHENOL	1/13/92	340000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	101-55-3	4-BROMOPHENYL PHENYL ETHER	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	59-50-7	4-CHLORO-3-METHYLPHENOL	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	106-47-8	4-CHLOROANILINE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	108-10-1	4-METHYL-2-PENTANONE	1/13/92	20	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	106-44-5	4-METHYLPHENOL	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	100-01-6	4-NITROANILINE	1/13/92	340000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	100-02-7	4-NITROPHENOL	1/13/92	340000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	83-32-9	ACENAPHTHENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	208-96-8	ACENAPHTHYLENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	67-64-1	ACETONE	1/13/92	270	ug/Kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	7429-90-5	ALUMINUM	1/13/92	2260	mg/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	120-12-7	ANTHRACENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	7440-36-0	ANTIMONY	1/13/92	7.4	mg/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	7440-38-2	ARSENIC	1/13/92	1.6	mg/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	7440-39-3	BARIUM	1/13/92	8.6	mg/kg	Y	N	R	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	71-43-2	BENZENE	1/13/92	67	ug/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	56-55-3	BENZO(A)ANTHRACENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	50-32-8	BENZO(A)PYRENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B9	WA9317	205-99-2	BENZO(B)FLUORANTHENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	191-24-2	BENZO(G,H,I)PERYLENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	207-08-9	BENZO(K)FLUORANTHENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	65-85-0	BENZOIC ACID	1/13/92	340000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	100-51-6	BENZYL ALCOHOL	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	7440-41-7	BERYLLIUM	1/13/92	0.41	mg/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	111-91-1	BIS(2-CHLOROETHOXY)METHANE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	111-44-4	BIS(2-CHLOROETHYL)ETHER	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	75-27-4	BROMODICHLOROMETHANE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	75-25-2	BROMOFORM	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	74-83-9	BROMOMETHANE	1/13/92	20	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	85-68-7	BUTYLBENZYL PHTHALATE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	7440-43-9	CADMIUM	1/13/92	1.2	mg/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	7440-70-2	CALCIUM	1/13/92	338000	mg/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	75-15-0	CARBON DISULFIDE	1/13/92	11	ug/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	56-23-5	CARBON TETRACHLORIDE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	108-90-7	CHLOROBENZENE	1/13/92	130	ug/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	124-48-1	CHLORODIBROMOMETHANE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	75-00-3	CHLOROETHANE	1/13/92	20	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	67-66-3	CHLOROFORM	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	74-87-3	CHLOROMETHANE	1/13/92	20	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	7440-47-3	CHROMIUM	1/13/92	3.8	mg/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	218-01-9	CHRYSENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	10061-01-5	CIS-1,3-DICHLOROPROPENE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	7440-48-4	COBALT	1/13/92	1.6	mg/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	7440-50-8	COPPER	1/13/92	35.1	mg/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	57-12-5	CYANIDE	1/13/92	1	mg/kg	Y	N	R	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	53-70-3	DIBENZO(A,H)ANTHRACENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	132-64-9	DIBENZOFURAN	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	84-66-2	DIETHYL PHTHALATE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	131-11-3	DIMETHYL PHTHALATE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	84-74-2	DI-N-BUTYL PHTHALATE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	117-84-0	DI-N-OCTYL PHTHALATE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	100-41-4	ETHYLBENZENE	1/13/92	10	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	206-44-0	FLUORANTHENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	86-73-7	FLUORENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	118-74-1	HEXACHLOROBENZENE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	87-68-3	HEXACHLOROBUTADIENE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	77-47-4	HEXACHLOROCYCLOPENTADIENE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	67-72-1	HEXACHLOROETHANE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	193-39-5	INDENO(1,2,3-CD)PYRENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	7439-89-6	IRON	1/13/92	2020	mg/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	78-59-1	ISOPHORONE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	7439-92-1	LEAD	1/13/92	225	mg/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	7439-95-4	MAGNESIUM	1/13/92	5100	mg/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	7439-96-5	MANGANESE	1/13/92	358	mg/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	7439-97-6	MERCURY	1/13/92	0.21	mg/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	75-09-2	METHYLENE CHLORIDE	1/13/92	10	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	91-20-3	NAPHTHALENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	7440-02-0	NICKEL	1/13/92	4.5	mg/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	98-95-3	NITROBENZENE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	86-30-6	N-NITROSODIPHENYLAMINE	1/13/92	68000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	87-86-5	PENTACHLOROPHENOL	1/13/92	340000	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	85-01-8	PHENANTHRENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	108-95-2	PHENOL	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	7440-09-7	POTASSIUM	1/13/92	258	mg/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	129-00-0	PYRENE	1/13/92	68000	ug/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	SVOA
Plant Area	Soil	WA-WA-B9	WA9317	7782-49-2	SELENIUM	1/13/92	1.2	mg/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	7440-22-4	SILVER	1/13/92	1.2	mg/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	7440-23-5	SODIUM	1/13/92	4140	mg/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	100-42-5	STYRENE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	127-18-4	TETRACHLOROETHENE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	7440-28-0	THALLIUM	1/13/92	4.1	mg/kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	108-88-3	TOLUENE	1/13/92	5	ug/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	TSO	TOTAL SOLIDS	1/13/92	49	%	Y	Y		1117281.8	922548	22	24	SB	SOIL	Soil	OTHER

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Plant Area	Soil	WA-WA-B9	WA9317	10061-02-6	TRANS-1,3-DICHLOROPROPENE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	79-01-6	TRICHLOROETHENE	1/13/92	10	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	7440-62-2	VANADIUM	1/13/92	5.9	mg/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
Plant Area	Soil	WA-WA-B9	WA9317	75-01-4	VINYL CHLORIDE	1/13/92	20	ug/Kg	Y	N	UJ	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	1330-20-7	XYLENES, TOTAL	1/13/92	3	ug/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	VOA
Plant Area	Soil	WA-WA-B9	WA9317	7440-66-6	ZINC	1/13/92	15.4	mg/kg	Y	Y	J	1117281.8	922548	22	24	SB	SOIL	Soil	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	71-55-6	1,1,1-TRICHLOROETHANE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	79-34-5	1,1,2,2-TETRACHLOROETHANE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	79-00-5	1,1,2-TRICHLOROETHANE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	75-34-3	1,1-DICHLOROETHANE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	75-35-4	1,1-DICHLOROETHENE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	107-06-2	1,2-DICHLOROETHANE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	540-59-0	1,2-DICHLOROETHENE (TOTAL)	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	78-87-5	1,2-DICHLOROPROPANE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	78-93-3	2-BUTANONE	3/3/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	591-78-6	2-HEXANONE	3/3/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	108-10-1	4-METHYL-2-PENTANONE	3/3/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	67-64-1	ACETONE	3/3/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7429-90-5	ALUMINUM	3/3/92	0.107	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7429-90-5	ALUMINUM	3/3/92	7.44	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-36-0	ANTIMONY	3/3/92	0.0472	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-36-0	ANTIMONY	3/3/92	0.014	mg/L	Y	N	UJ	1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-38-2	ARSENIC	3/3/92	0.0065	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-38-2	ARSENIC	3/3/92	0.001	mg/L	Y	N	UJ	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-39-3	BARIUM	3/3/92	0.287	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-39-3	BARIUM	3/3/92	0.116	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	71-43-2	BENZENE	3/3/92	78	ug/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-41-7	BERYLLIUM	3/3/92	0.0028	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-41-7	BERYLLIUM	3/3/92	0.001	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	75-27-4	BROMODICHLOROMETHANE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	75-25-2	BROMOFORM	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	74-83-9	BROMOMETHANE	3/3/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-43-9	CADMIUM	3/3/92	0.002	mg/L	Y	N	UJ	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-43-9	CADMIUM	3/3/92	0.002	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-70-2	CALCIUM	3/3/92	183	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-70-2	CALCIUM	3/3/92	226	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	75-15-0	CARBON DISULFIDE	3/3/92	3	ug/L	Y	Y	J	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	56-23-5	CARBON TETRACHLORIDE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	108-90-7	CHLOROBENZENE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	124-48-1	CHLORODIBROMOMETHANE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	75-00-3	CHLOROETHANE	3/3/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	67-66-3	CHLOROFORM	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	74-87-3	CHLOROMETHANE	3/3/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-47-3	CHROMIUM	3/3/92	0.104	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-47-3	CHROMIUM	3/3/92	0.003	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	10061-01-5	CIS-1,3-DICHLOROPROPENE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-48-4	COBALT	3/3/92	0.003	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-48-4	COBALT	3/3/92	0.0124	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-50-8	COPPER	3/3/92	0.0628	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-50-8	COPPER	3/3/92	0.002	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	57-12-5	CYANIDE	3/3/92	0.01	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	100-41-4	ETHYLBENZENE	3/3/92	1	ug/L	Y	Y	J	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7439-89-6	IRON	3/3/92	12.4	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7439-89-6	IRON	3/3/92	0.0386	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7439-92-1	LEAD	3/3/92	0.01	mg/L	Y	N	UJ	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7439-92-1	LEAD	3/3/92	0.0017	mg/L	Y	Y	J	1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7439-95-4	MAGNESIUM	3/3/92	22.9	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7439-95-4	MAGNESIUM	3/3/92	10.4	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7439-96-5	MANGANESE	3/3/92	1.11	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7439-96-5	MANGANESE	3/3/92	1.63	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7439-97-6	MERCURY	3/3/92	0.00035	mg/L	Y	Y	J	1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7439-97-6	MERCURY	3/3/92	0.0002	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	75-09-2	METHYLENE CHLORIDE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-02-0	NICKEL	3/3/92	0.01	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-02-0	NICKEL	3/3/92	0.0648	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-09-7	POTASSIUM	3/3/92	93.2	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-09-7	POTASSIUM	3/3/92	84.1	mg/L	Y	Y	J	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7782-49-2	SELENIUM	3/3/92	0.02	mg/L	Y	N	UJ	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7782-49-2	SELENIUM	3/3/92	0.02	mg/L	Y	N	UJ	1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-22-4	SILVER	3/3/92	0.0102	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-22-4	SILVER	3/3/92	0.0036	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-23-5	SODIUM	3/3/92	201	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-23-5	SODIUM	3/3/92	176	mg/L	Y	Y	J	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	100-42-5	STYRENE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	127-18-4	TETRACHLOROETHENE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-28-0	THALLIUM	3/3/92	0.002	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-28-0	THALLIUM	3/3/92	0.002	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	108-88-3	TOLUENE	3/3/92	20	ug/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	10061-02-6	TRANS-1,3-DICHLOROPROPENE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	79-01-6	TRICHLOROETHENE	3/3/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-62-2	VANADIUM	3/3/92	0.0147	mg/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-62-2	VANADIUM	3/3/92	0.0194	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	75-01-4	VINYL CHLORIDE	3/3/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	1330-20-7	XYLENES, TOTAL	3/3/92	26	ug/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277	7440-66-6	ZINC	3/3/92	0.0425	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9277F	7440-66-6	ZINC	3/3/92	0.0073	mg/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	120-82-1	1,2,4-TRICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	95-50-1	1,2-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	541-73-1	1,3-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	106-46-7	1,4-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	95-95-4	2,4,5-TRICHLOROPHENOL	3/30/92	50	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	88-06-2	2,4,6-TRICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	120-83-2	2,4-DICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	105-67-9	2,4-DIMETHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	51-28-5	2,4-DINITROPHENOL	3/30/92	50	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	121-14-2	2,4-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	606-20-2	2,6-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	91-58-7	2-CHLORONAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	95-57-8	2-CHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	91-57-6	2-METHYLNAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	95-48-7	2-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	88-74-4	2-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	88-75-5	2-NITROPHENOL	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	99-09-2	3-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3/30/92	50	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	101-55-3	4-BROMOPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	59-50-7	4-CHLORO-3-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	106-47-8	4-CHLOROANILINE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	106-44-5	4-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	100-01-6	4-NITROANILINE	3/30/92	50	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	100-02-7	4-NITROPHENOL	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	83-32-9	ACENAPHTHENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	208-96-8	ACENAPHTHYLENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	120-12-7	ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	56-55-3	BENZO(A)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	50-32-8	BENZO(A)PYRENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	205-99-2	BENZO(B)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	191-24-2	BENZO(G,H,I)PERYLENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	207-08-9	BENZO(K)FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	65-85-0	BENZOIC ACID	3/30/92	50	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	100-51-6	BENZYL ALCOHOL	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	111-91-1	BIS(2-CHLOROETHOXY)METHANE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	111-44-4	BIS(2-CHLOROETHYL)ETHER	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	85-68-7	BUTYLBENZYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	218-01-9	CHRYSENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	53-70-3	DIBENZO(A,H)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	132-64-9	DIBENZOFURAN	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	84-66-2	DIETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	131-11-3	DIMETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	84-74-2	DI-N-BUTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	117-84-0	DI-N-OCTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	206-44-0	FLUORANTHENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	86-73-7	FLUORENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	118-74-1	HEXACHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	87-68-3	HEXACHLOROBUTADIENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	77-47-4	HEXACHLOROCYCLOPENTADIENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	67-72-1	HEXACHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	193-39-5	INDENO(1,2,3-CD)PYRENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	78-59-1	ISOPHORONE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	91-20-3	NAPHTHALENE	3/30/92	7	ug/L	Y	Y	J	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	98-95-3	NITROBENZENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	86-30-6	N-NITROSODIPHENYLAMINE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	87-86-5	PENTACHLOROPHENOL	3/30/92	50	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	85-01-8	PHENANTHRENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	108-95-2	PHENOL	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9278	129-00-0	PYRENE	3/30/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	71-55-6	1,1,1-TRICHLOROETHANE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	79-00-5	1,1,2-TRICHLOROETHANE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	75-34-3	1,1-DICHLOROETHANE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	75-35-4	1,1-DICHLOROETHENE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	95-50-1	1,2-DICHLOROBENZENE	10/13/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	107-06-2	1,2-DICHLOROETHANE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	78-87-5	1,2-DICHLOROPROPANE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	541-73-1	1,3-DICHLOROBENZENE	10/13/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	106-46-7	1,4-DICHLOROBENZENE	10/13/92	5	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	110-75-8	2-CHLOROETHYL VINYL ETHER	10/13/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	71-43-2	BENZENE	10/13/92	4	ug/L	Y	Y		1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	75-27-4	BROMODICHLOROMETHANE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	75-25-2	BROMOFORM	10/13/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	74-83-9	BROMOMETHANE	10/13/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	56-23-5	CARBON TETRACHLORIDE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	108-90-7	CHLOROBENZENE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	124-48-1	CHLORODIBROMOMETHANE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	75-00-3	CHLOROETHANE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	67-66-3	CHLOROFORM	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	74-87-3	CHLOROMETHANE	10/13/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	75-71-8	DICHLORODIFLUOROMETHANE	10/13/92	10	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	100-41-4	ETHYLBENZENE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	75-09-2	METHYLENE CHLORIDE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	127-18-4	TETRACHLOROETHENE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	108-88-3	TOLUENE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	79-01-6	TRICHLOROETHENE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	75-69-4	TRICHLOROFLUOROMETHANE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	75-01-4	VINYL CHLORIDE	10/13/92	1	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06D	WA9279	1330-20-7	XYLENES, TOTAL	10/13/92	3	ug/L	Y	N	U	1117406.8	921706.3	36	46	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	71-55-6	1,1,1-TRICHLOROETHANE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	79-34-5	1,1,2,2-TETRACHLOROETHANE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	79-00-5	1,1,2-TRICHLOROETHANE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	75-34-3	1,1-DICHLOROETHANE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	75-35-4	1,1-DICHLOROETHENE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	107-06-2	1,2-DICHLOROETHANE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	540-59-0	1,2-DICHLOROETHENE (TOTAL)	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	78-87-5	1,2-DICHLOROPROPANE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	78-93-3	2-BUTANONE	3/3/92	8	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	591-78-6	2-HEXANONE	3/3/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	108-10-1	4-METHYL-2-PENTANONE	3/3/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	67-64-1	ACETONE	3/3/92	63	ug/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7429-90-5	ALUMINUM	3/3/92	0.0938	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7429-90-5	ALUMINUM	3/3/92	8.82	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-36-0	ANTIMONY	3/3/92	0.0293	mg/L	Y	N	UJ	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-36-0	ANTIMONY	3/3/92	0.0493	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-38-2	ARSENIC	3/3/92	0.001	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-38-2	ARSENIC	3/3/92	0.0142	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-39-3	BARIUM	3/3/92	0.113	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-39-3	BARIUM	3/3/92	0.0439	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	71-43-2	BENZENE	3/3/92	500	ug/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-41-7	BERYLLIUM	3/3/92	0.0028	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-41-7	BERYLLIUM	3/3/92	0.0037	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	75-27-4	BROMODICHLOROMETHANE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	75-25-2	BROMOFORM	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	74-83-9	BROMOMETHANE	3/3/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-43-9	CADMIUM	3/3/92	0.002	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-43-9	CADMIUM	3/3/92	0.002	mg/L	Y	N	UJ	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-70-2	CALCIUM	3/3/92	893	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-70-2	CALCIUM	3/3/92	652	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	75-15-0	CARBON DISULFIDE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	56-23-5	CARBON TETRACHLORIDE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	108-90-7	CHLOROBENZENE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	124-48-1	CHLORODIBROMOMETHANE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	75-00-3	CHLOROETHANE	3/3/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	67-66-3	CHLOROFORM	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	74-87-3	CHLOROMETHANE	3/3/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-47-3	CHROMIUM	3/3/92	0.0071	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-47-3	CHROMIUM	3/3/92	0.0421	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	10061-01-5	CIS-1,3-DICHLOROPROPENE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-48-4	COBALT	3/3/92	0.0064	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-48-4	COBALT	3/3/92	0.003	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-50-8	COPPER	3/3/92	0.0092	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-50-8	COPPER	3/3/92	0.0289	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	57-12-5	CYANIDE	3/3/92	0.0587	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	100-41-4	ETHYLBENZENE	3/3/92	1	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7439-89-6	IRON	3/3/92	7.44	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7439-89-6	IRON	3/3/92	0.0543	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7439-92-1	LEAD	3/3/92	0.001	mg/L	Y	N	UJ	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7439-92-1	LEAD	3/3/92	0.0358	mg/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7439-95-4	MAGNESIUM	3/3/92	13.3	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7439-95-4	MAGNESIUM	3/3/92	0.142	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7439-96-5	MANGANESE	3/3/92	0.0083	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7439-96-5	MANGANESE	3/3/92	0.1	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7439-97-6	MERCURY	3/3/92	0.0068	mg/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7439-97-6	MERCURY	3/3/92	0.0002	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	75-09-2	METHYLENE CHLORIDE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-02-0	NICKEL	3/3/92	0.01	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-02-0	NICKEL	3/3/92	0.0179	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-09-7	POTASSIUM	3/3/92	42.8	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-09-7	POTASSIUM	3/3/92	40.5	mg/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7782-49-2	SELENIUM	3/3/92	0.02	mg/L	Y	N	UJ	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7782-49-2	SELENIUM	3/3/92	0.02	mg/L	Y	N	UJ	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-22-4	SILVER	3/3/92	0.0047	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-22-4	SILVER	3/3/92	0.003	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-23-5	SODIUM	3/3/92	75.8	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-23-5	SODIUM	3/3/92	62.5	mg/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	100-42-5	STYRENE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	127-18-4	TETRACHLOROETHENE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-28-0	THALLIUM	3/3/92	0.002	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-28-0	THALLIUM	3/3/92	0.002	mg/L	Y	N	UJ	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	108-88-3	TOLUENE	3/3/92	27	ug/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	10061-02-6	TRANS-1,3-DICHLOROPROPENE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	79-01-6	TRICHLOROETHENE	3/3/92	5	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-62-2	VANADIUM	3/3/92	0.0254	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-62-2	VANADIUM	3/3/92	0.0118	mg/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	75-01-4	VINYL CHLORIDE	3/3/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	1330-20-7	XYLENES, TOTAL	3/3/92	7	ug/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280F	7440-66-6	ZINC	3/3/92	0.004	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	WATER	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9280	7440-66-6	ZINC	3/3/92	0.0388	mg/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	METALS
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	120-82-1	1,2,4-TRICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	95-50-1	1,2-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	541-73-1	1,3-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	106-46-7	1,4-DICHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	95-95-4	2,4,5-TRICHLOROPHENOL	3/30/92	52	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	88-06-2	2,4,6-TRICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	120-83-2	2,4-DICHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	105-67-9	2,4-DIMETHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	51-28-5	2,4-DINITROPHENOL	3/30/92	52	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	121-14-2	2,4-DINITROTOLUENE	3/30/92	2	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	606-20-2	2,6-DINITROTOLUENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	91-58-7	2-CHLORONAPHTHALENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	95-57-8	2-CHLOROPHENOL	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	91-57-6	2-METHYLNAPHTHALENE	3/30/92	5	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	95-48-7	2-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	88-74-4	2-NITROANILINE	3/30/92	52	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	88-75-5	2-NITROPHENOL	3/30/92	6	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	99-09-2	3-NITROANILINE	3/30/92	52	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	534-52-1	4,6-DINITRO-2-METHYLPHENOL	3/30/92	52	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	101-55-3	4-BROMOPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	59-50-7	4-CHLORO-3-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	106-47-8	4-CHLOROANILINE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	106-44-5	4-METHYLPHENOL	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	100-01-6	4-NITROANILINE	3/30/92	52	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	100-02-7	4-NITROPHENOL	3/30/92	6	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	83-32-9	ACENAPHTHENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	208-96-8	ACENAPHTHYLENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	120-12-7	ANTHRACENE	3/30/92	3	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	56-55-3	BENZO(A)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	50-32-8	BENZO(A)PYRENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	205-99-2	BENZO(B)FLUORANTHENE	3/30/92	5	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	191-24-2	BENZO(G,H,I)PERYLENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	207-08-9	BENZO(K)FLUORANTHENE	3/30/92	2	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	65-85-0	BENZOIC ACID	3/30/92	13	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	100-51-6	BENZYL ALCOHOL	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	111-91-1	BIS(2-CHLOROETHOXY)METHANE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	111-44-4	BIS(2-CHLOROETHYL)ETHER	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	85-68-7	BUTYLBENZYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	218-01-9	CHRYSENE	3/30/92	2	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	53-70-3	DIBENZO(A,H)ANTHRACENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	132-64-9	DIBENZOFURAN	3/30/92	5	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	84-66-2	DIETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	131-11-3	DIMETHYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	84-74-2	DI-N-BUTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	117-84-0	DI-N-OCTYL PHTHALATE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	206-44-0	FLUORANTHENE	3/30/92	12	ug/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	86-73-7	FLUORENE	3/30/92	1	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	118-74-1	HEXACHLOROBENZENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	87-68-3	HEXACHLOROBUTADIENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	77-47-4	HEXACHLOROCYCLOPENTADIENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	67-72-1	HEXACHLOROETHANE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	193-39-5	INDENO(1,2,3-CD)PYRENE	3/30/92	2	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	78-59-1	ISOPHORONE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	91-20-3	NAPHTHALENE	3/30/92	89	ug/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	98-95-3	NITROBENZENE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	86-30-6	N-NITROSODIPHENYLAMINE	3/30/92	10	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	87-86-5	PENTACHLOROPHENOL	3/30/92	52	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	85-01-8	PHENANTHRENE	3/30/92	17	ug/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	108-95-2	PHENOL	3/30/92	250	ug/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9281	129-00-0	PYRENE	3/30/92	6	ug/L	Y	Y	J	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	71-55-6	1,1,1-TRICHLOROETHANE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	79-00-5	1,1,2-TRICHLOROETHANE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	75-34-3	1,1-DICHLOROETHANE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	75-35-4	1,1-DICHLOROETHENE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	95-50-1	1,2-DICHLOROBENZENE	10/13/92	100	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	107-06-2	1,2-DICHLOROETHANE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	78-87-5	1,2-DICHLOROPROPANE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	541-73-1	1,3-DICHLOROBENZENE	10/13/92	100	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	106-46-7	1,4-DICHLOROBENZENE	10/13/92	100	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	E601/602
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	110-75-8	2-CHLOROETHYL VINYL ETHER	10/13/92	200	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	71-43-2	BENZENE	10/13/92	930	ug/L	Y	Y		1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	75-27-4	BROMODICHLOROMETHANE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	75-25-2	BROMOFORM	10/13/92	200	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	74-83-9	BROMOMETHANE	10/13/92	200	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	56-23-5	CARBON TETRACHLORIDE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	108-90-7	CHLOROBENZENE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	124-48-1	CHLORODIBROMOMETHANE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	75-00-3	CHLOROETHANE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	67-66-3	CHLOROFORM	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	74-87-3	CHLOROMETHANE	10/13/92	200	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	75-71-8	DICHLORODIFLUOROMETHANE	10/13/92	200	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	100-41-4	ETHYLBENZENE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	75-09-2	METHYLENE CHLORIDE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	127-18-4	TETRACHLOROETHENE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	108-88-3	TOLUENE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	79-01-6	TRICHLOROETHENE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	75-69-4	TRICHLOROFLUOROMETHANE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	75-01-4	VINYL CHLORIDE	10/13/92	20	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Ground Water	WA-WA-06S	WA9282	1330-20-7	XYLENES, TOTAL	10/13/92	60	ug/L	Y	N	U	1117419.2	921695.4	16.5	26.5	MW	WATER	Water	VOA
SW-Outfall -006	Soil	WA-006A	WA9007	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	71-55-6	1,1,1-TRICHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	79-00-5	1,1,2-TRICHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	75-34-3	1,1-DICHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	75-35-4	1,1-DICHLOROETHENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	563-58-6	1,1-DICHLOROPROPENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	87-61-6	1,2,3-TRICHLOROBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	96-18-4	1,2,3-TRICHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	120-82-1	1,2,4-TRICHLOROBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	95-63-6	1,2,4-TRIMETHYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	106-93-4	1,2-DIBROMOETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	95-50-1	1,2-DICHLOROBENZENE	9/15/97	3	ug/kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	107-06-2	1,2-DICHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	78-87-5	1,2-DICHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	108-67-8	1,3,5-TRIMETHYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	541-73-1	1,3-DICHLOROBENZENE	9/15/97	3	ug/kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	142-28-9	1,3-DICHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	106-46-7	1,4-DICHLOROBENZENE	9/15/97	3	ug/kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	594-20-7	2,2-DICHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	95-49-8	2-CHLOROTOLUENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	72-54-8	4,4'-DDD	9/15/97	400	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	72-55-9	4,4'-DDE	9/15/97	400	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	50-29-3	4,4'-DDT	9/15/97	400	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	106-43-4	4-CHLOROTOLUENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	309-00-2	ALDRIN	9/15/97	200	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	319-84-6	ALPHA-BHC	9/15/97	200	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	12674-11-2	AROCLOR-1016	9/15/97	2000	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007N	12674-11-2	AROCLOR-1016	9/15/97	91	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	11104-28-2	AROCLOR-1221	9/15/97	2000	ug/kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007N	11104-28-2	AROCLOR-1221	9/15/97	180	ug/kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007N	11141-16-5	AROCLOR-1232	9/15/97	91	ug/kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	11141-16-5	AROCLOR-1232	9/15/97	2000	ug/kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	53469-21-9	AROCLOR-1242	9/15/97	2000	ug/kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007N	53469-21-9	AROCLOR-1242	9/15/97	91	ug/kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	12672-29-6	AROCLOR-1248	9/15/97	2000	ug/kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007N	12672-29-6	AROCLOR-1248	9/15/97	91	ug/kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007N	11097-69-1	AROCLOR-1254	9/15/97	91	ug/kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	11097-69-1	AROCLOR-1254	9/15/97	2000	ug/kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	11096-82-5	AROCLOR-1260	9/15/97	7900	ug/kg	Y	Y		1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007N	11096-82-5	AROCLOR-1260	9/15/97	91	ug/kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	SOIL	SW8080

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006A	WA9007	71-43-2	BENZENE	9/15/97	3	ug/kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	319-85-7	BETA-BHC	9/15/97	200	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	108-86-1	BROMOBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	74-97-5	BROMOCHLOROMETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	75-27-4	BROMODICHLOROMETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	75-25-2	BROMOFORM	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	74-83-9	BROMOMETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	104-51-8	BUTYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	56-23-5	CARBON TETRACHLORIDE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	57-74-9	CHLORDANE	9/15/97	2000	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	108-90-7	CHLOROBENZENE	9/15/97	3	ug/kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	124-48-1	CHLORODIBROMOMETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	75-00-3	CHLOROETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	67-66-3	CHLOROFORM	9/15/97	1.6	ug/Kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	74-87-3	CHLOROMETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	156-59-2	CIS-1,2-DICHLOROETHENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	319-86-8	DELTA-BHC	9/15/97	200	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	74-95-3	DIBROMOMETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	75-71-8	DICHLORODIFLUOROMETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	60-57-1	DIELDRIN	9/15/97	400	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	959-98-8	ENDOSULFAN I	9/15/97	400	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	33213-65-9	ENDOSULFAN II	9/15/97	400	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	1031-07-8	ENDOSULFAN SULFATE	9/15/97	400	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	72-20-8	ENDRIN	9/15/97	400	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	7421-93-4	ENDRIN ALDEHYDE	9/15/97	400	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	100-41-4	ETHYLBENZENE	9/15/97	3	ug/kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	58-89-9	GAMMA-BHC (LINDANE)	9/15/97	200	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	76-44-8	HEPTACHLOR	9/15/97	200	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	1024-57-3	HEPTACHLOR EPOXIDE	9/15/97	200	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	118-74-1	HEXACHLOROBENZENE	9/15/97	2000	ug/Kg	Y	Y		1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	87-68-3	HEXACHLOROBUTADIENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	98-82-8	ISOPROPYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	7439-97-6	MERCURY	9/15/97	200	mg/kg	Y	Y		1117441.2	921549.4	0	0.5	SS	SOIL	Soil	7471A/NONE
SW-Outfall -006	Soil	WA-006A	WA9007N	7439-97-6	MERCURY	9/15/97	171	mg/kg	Y	Y		1117441.2	921549.4	0	0.5	SS	SOIL	SOIL	7471A/NONE
SW-Outfall -006	Soil	WA-006A	WA9007N	7439-97-6	MERCURY	9/15/97	13.7	mg/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	SOIL	7471A/NONE
SW-Outfall -006	Soil	WA-006A	WA9007	72-43-5	METHOXYCHLOR	9/15/97	2000	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	75-09-2	METHYLENE CHLORIDE	9/15/97	6	ug/kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	91-20-3	NAPHTHALENE	9/15/97	3	ug/kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	103-65-1	N-PROPYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	99-87-6	P-ISOPROPYLTOLUENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	135-98-8	SEC-BUTYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	100-42-5	STYRENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	98-06-6	TERT-BUTYLBENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	127-18-4	TETRACHLOROETHENE	9/15/97	6.2	ug/Kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	108-88-3	TOLUENE	9/15/97	3	ug/kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	TSO	TOTAL SOLIDS	9/15/97	83.2	%	Y	Y		1117441.2	921549.4	0	0.5	SS	SOIL	Soil	2540-G
SW-Outfall -006	Soil	WA-006A	WA9007	8001-35-2	TOXAPHENE	9/15/97	2000	ug/Kg	Y	N	U	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9007	156-60-5	TRANS-1,2-DICHLOROETHENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/15/97	3	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	79-01-6	TRICHLOROETHENE	9/15/97	9.1	ug/Kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	75-69-4	TRICHLOROFLUOROMETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	75-01-4	VINYL CHLORIDE	9/15/97	6	ug/Kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9007	1330-20-7	XYLENES, TOTAL	9/15/97	3	ug/kg	Y	N	UJ	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9009	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/1/98	478	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/1/98	2240	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/1/98	751	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	39227-28-6	1,2,3,4,7,8-HXCDD	10/1/98	26.7	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	70648-26-9	1,2,3,4,7,8-HXCDF	10/1/98	2350	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	57653-85-7	1,2,3,6,7,8-HXCDD	10/1/98	19.1	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	57117-44-9	1,2,3,6,7,8-HXCDF	10/1/98	677	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	19408-74-3	1,2,3,7,8,9-HXCDD	10/1/98	21.3	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	72918-21-9	1,2,3,7,8,9-HXCDF	10/1/98	40	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	40321-76-4	1,2,3,7,8-PECDD	10/1/98	12.2	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	57117-41-6	1,2,3,7,8-PECDF	10/1/98	820	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	60851-34-5	2,3,4,6,7,8-HXCDF	10/1/98	163	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	57117-31-4	2,3,4,7,8-PECDF	10/1/98	455	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006A	WA9009	1746-01-6	2,3,7,8-TCDD	10/1/98	32.8	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	51207-31-9	2,3,7,8-TCDF	10/1/98	928	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	3268-87-9	OCDD	10/1/98	3860	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	39001-02-0	OCDF	10/1/98	5390	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	37871-00-4	TOTAL HPCDD	10/1/98	917	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	38998-75-3	TOTAL HPCDF	10/1/98	4400	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	34465-46-8	TOTAL HXCDD	10/1/98	168	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	55684-94-1	TOTAL HXCDF	10/1/98	4850	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	TOC	TOTAL ORGANIC CARBON	10/1/98	163000	mg/Kg	Y	Y		1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW9060
SW-Outfall -006	Soil	WA-006A	WA9009	36088-22-9	TOTAL PECDD	10/1/98	67.5	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	30402-15-4	TOTAL PECDF	10/1/98	3310	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	TSO	TOTAL SOLIDS	10/1/98	74.2	%	Y	Y		1117441.2	921549.4	0	0.5	SS	SOIL	Soil	WET CHEMISTRY
SW-Outfall -006	Soil	WA-006A	WA9009	41903-57-5	TOTAL TCDD	10/1/98	110	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009	55722-27-5	Total TCDF	10/1/98	2770	ng/kg	Y	Y	J	1117441.2	921549.4	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9009N	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/1/98	601	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/1/98	3080	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/1/98	1220	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	39227-28-6	1,2,3,4,7,8-HXCDD	10/1/98	44.5	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	70648-26-9	1,2,3,4,7,8-HXCDF	10/1/98	3230	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	57653-85-7	1,2,3,6,7,8-HXCDD	10/1/98	25	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	57117-44-9	1,2,3,6,7,8-HXCDF	10/1/98	841	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	19408-74-3	1,2,3,7,8,9-HXCDD	10/1/98	36.4	ng/kg	Y	N	U*	1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	72918-21-9	1,2,3,7,8,9-HXCDF	10/1/98	36.8	ng/kg	Y	N	U	1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	40321-76-4	1,2,3,7,8-PECDD	10/1/98	20.4	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	57117-41-6	1,2,3,7,8-PECDF	10/1/98	1160	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	60851-34-5	2,3,4,6,7,8-HXCDF	10/1/98	218	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	57117-31-4	2,3,4,7,8-PECDF	10/1/98	740	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	1746-01-6	2,3,7,8-TCDD	10/1/98	52.6	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	51207-31-9	2,3,7,8-TCDF	10/1/98	3740	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	3268-87-9	OCDD	10/1/98	5410	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	39001-02-0	OCDF	10/1/98	6940	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	SOLID	SOLIDS, PERCENT	10/1/98	76.6	%	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	WET CHEMISTRY
SW-Outfall -006	Soil	WA-006A	WA9009N	37871-00-4	TOTAL HPCDD	10/1/98	1130	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	38998-75-3	TOTAL HPCDF	10/1/98	6240	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	34465-46-8	TOTAL HXCDD	10/1/98	224	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	55684-94-1	TOTAL HXCDF	10/1/98	6320	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	TOC	TOTAL ORGANIC CARBON	10/1/98	310000	mg/Kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	SW9060
SW-Outfall -006	Soil	WA-006A	WA9009N	36088-22-9	TOTAL PECDD	10/1/98	60.2	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	30402-15-4	TOTAL PECDF	10/1/98	4680	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	41903-57-5	TOTAL TCDD	10/1/98	159	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9009N	55722-27-5	Total TCDF	10/1/98	8920	ng/kg	Y	Y		1117441.2	921549.4	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006A	WA9008	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	71-55-6	1,1,1-TRICHLOROETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	79-00-5	1,1,2-TRICHLOROETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	75-34-3	1,1-DICHLOROETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	75-35-4	1,1-DICHLOROETHENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	563-58-6	1,1-DICHLOROPROPENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	87-61-6	1,2,3-TRICHLOROBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	96-18-4	1,2,3-TRICHLOROPROPANE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	120-82-1	1,2,4-TRICHLOROBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	95-63-6	1,2,4-TRIMETHYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	106-93-4	1,2-DIBROMOETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	95-50-1	1,2-DICHLOROBENZENE	9/15/97	3.1	ug/kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	107-06-2	1,2-DICHLOROETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	78-87-5	1,2-DICHLOROPROPANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	108-67-8	1,3,5-TRIMETHYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	541-73-1	1,3-DICHLOROBENZENE	9/15/97	3.1	ug/kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	142-28-9	1,3-DICHLOROPROPANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	106-46-7	1,4-DICHLOROBENZENE	9/15/97	3.1	ug/kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	594-20-7	2,2-DICHLOROPROPANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	95-49-8	2-CHLOROTOLUENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	72-54-8	4,4'-DDD	9/15/97	420	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	72-55-9	4,4'-DDE	9/15/97	420	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	50-29-3	4,4'-DDT	9/15/97	420	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	106-43-4	4-CHLOROTOLUENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006A	WA9008	309-00-2	ALDRIN	9/15/97	210	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	319-84-6	ALPHA-BHC	9/15/97	210	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008N	12674-11-2	AROCLOR-1016	9/15/97	85	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	12674-11-2	AROCLOR-1016	9/15/97	10000	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	11104-28-2	AROCLOR-1221	9/15/97	10000	ug/kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008N	11104-28-2	AROCLOR-1221	9/15/97	170	ug/kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008N	11141-16-5	AROCLOR-1232	9/15/97	85	ug/kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	11141-16-5	AROCLOR-1232	9/15/97	10000	ug/kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	53469-21-9	AROCLOR-1242	9/15/97	10000	ug/kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008N	53469-21-9	AROCLOR-1242	9/15/97	85	ug/kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	12672-29-6	AROCLOR-1248	9/15/97	10000	ug/kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008N	12672-29-6	AROCLOR-1248	9/15/97	85	ug/kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008N	11097-69-1	AROCLOR-1254	9/15/97	85	ug/kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	11097-69-1	AROCLOR-1254	9/15/97	10000	ug/kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	11096-82-5	AROCLOR-1260	9/15/97	19000	ug/kg	Y	Y		1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008N	11096-82-5	AROCLOR-1260	9/15/97	85	ug/kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	71-43-2	BENZENE	9/15/97	3.1	ug/kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	319-85-7	BETA-BHC	9/15/97	210	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	108-86-1	BROMOBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	74-97-5	BROMOCHLOROMETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	75-27-4	BROMODICHLOROMETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	75-25-2	BROMOFORM	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	74-83-9	BROMOMETHANE	9/15/97	6.2	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	104-51-8	BUTYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	56-23-5	CARBON TETRACHLORIDE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	57-74-9	CHLORDANE	9/15/97	2100	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	108-90-7	CHLOROBENZENE	9/15/97	3.1	ug/kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	124-48-1	CHLORODIBROMOMETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	75-00-3	CHLOROETHANE	9/15/97	6.2	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	67-66-3	CHLOROFORM	9/15/97	4.5	ug/Kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	74-87-3	CHLOROMETHANE	9/15/97	6.2	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	156-59-2	CIS-1,2-DICHLOROETHENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	319-86-8	DELTA-BHC	9/15/97	210	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	74-95-3	DIBROMOMETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	75-71-8	DICHLORODIFLUOROMETHANE	9/15/97	6.2	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	60-57-1	DIELDRIN	9/15/97	420	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	959-98-8	ENDOSULFAN I	9/15/97	420	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	33213-65-9	ENDOSULFAN II	9/15/97	420	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	1031-07-8	ENDOSULFAN SULFATE	9/15/97	420	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	72-20-8	ENDRIN	9/15/97	420	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	7421-93-4	ENDRIN ALDEHYDE	9/15/97	420	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	100-41-4	ETHYLBENZENE	9/15/97	3.1	ug/kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	58-89-9	GAMMA-BHC (LINDANE)	9/15/97	210	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	76-44-8	HEPTACHLOR	9/15/97	210	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	1024-57-3	HEPTACHLOR EPOXIDE	9/15/97	210	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	118-74-1	HEXACHLOROBENZENE	9/15/97	3200	ug/Kg	Y	Y		1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	87-68-3	HEXACHLOROBUTADIENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	98-82-8	ISOPROPYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	7439-97-6	MERCURY	9/15/97	820	mg/kg	Y	Y		1117441.2	921549.4	1	1.5	SS	SOIL	Soil	7471A/NONE
SW-Outfall -006	Soil	WA-006A	WA9008N	7439-97-6	MERCURY	9/15/97	747	mg/kg	Y	Y		1117441.2	921549.4	1	1.5	SS	SOIL	SOIL	7471A/NONE
SW-Outfall -006	Soil	WA-006A	WA9008	72-43-5	METHOXYCHLOR	9/15/97	2100	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	75-09-2	METHYLENE CHLORIDE	9/15/97	6.2	ug/kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	91-20-3	NAPHTHALENE	9/15/97	3.1	ug/kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	103-65-1	N-PROPYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	99-87-6	P-ISOPROPYLTOLUENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	135-98-8	SEC-BUTYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	100-42-5	STYRENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	98-06-6	TERT-BUTYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	127-18-4	TETRACHLOROETHENE	9/15/97	15	ug/Kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	108-88-3	TOLUENE	9/15/97	3.1	ug/kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	TSO	TOTAL SOLIDS	9/15/97	80	%	Y	Y		1117441.2	921549.4	1	1.5	SS	SOIL	Soil	2540-G
SW-Outfall -006	Soil	WA-006A	WA9008	8001-35-2	TOXAPHENE	9/15/97	2100	ug/Kg	Y	N	U	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006A	WA9008	156-60-5	TRANS-1,2-DICHLOROETHENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	79-01-6	TRICHLOROETHENE	9/15/97	37	ug/Kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	75-69-4	TRICHLOROFLUOROMETHANE	9/15/97	6.2	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006A	WA9008	75-01-4	VINYL CHLORIDE	9/15/97	6.2	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9008	1330-20-7	XYLENES, TOTAL	9/15/97	3.1	ug/Kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006A	WA9010	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/1/98	397	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/1/98	2070	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/1/98	682	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	39227-28-6	1,2,3,4,7,8-HXCDD	10/1/98	7.88	ng/kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	70648-26-9	1,2,3,4,7,8-HXCDF	10/1/98	2210	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	57653-85-7	1,2,3,6,7,8-HXCDD	10/1/98	7.88	ng/kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	57117-44-9	1,2,3,6,7,8-HXCDF	10/1/98	642	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	19408-74-3	1,2,3,7,8,9-HXCDD	10/1/98	7.88	ng/kg	Y	N	UJ	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	72918-21-9	1,2,3,7,8,9-HXCDF	10/1/98	17.1	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	40321-76-4	1,2,3,7,8-PECDD	10/1/98	13.8	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	57117-41-6	1,2,3,7,8-PECDF	10/1/98	820	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	60851-34-5	2,3,4,6,7,8-HXCDF	10/1/98	144	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	57117-31-4	2,3,4,7,8-PECDF	10/1/98	436	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	1746-01-6	2,3,7,8-TCDD	10/1/98	80	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	51207-31-9	2,3,7,8-TCDF	10/1/98	875	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	3268-87-9	OCDD	10/1/98	3610	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	39001-02-0	OCDF	10/1/98	5310	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	37871-00-4	TOTAL HPCDD	10/1/98	762	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	38998-75-3	TOTAL HPCDF	10/1/98	4030	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	34465-46-8	TOTAL HXCDD	10/1/98	94.7	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	55684-94-1	TOTAL HXCDF	10/1/98	4520	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	TOC	TOTAL ORGANIC CARBON	10/1/98	244000	mg/Kg	Y	Y		1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW9060
SW-Outfall -006	Soil	WA-006A	WA9010	36088-22-9	TOTAL PECDD	10/1/98	83.1	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	30402-15-4	TOTAL PECDF	10/1/98	3330	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	TSO	TOTAL SOLIDS	10/1/98	67.4	%	Y	Y		1117441.2	921549.4	1	1.5	SS	SOIL	Soil	WET CHEMISTRY
SW-Outfall -006	Soil	WA-006A	WA9010	41903-57-5	TOTAL TCDD	10/1/98	221	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006A	WA9010	55722-27-5	Total TCDF	10/1/98	3080	ng/kg	Y	Y	J	1117441.2	921549.4	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9011	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	71-55-6	1,1,1-TRICHLOROETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	79-00-5	1,1,2-TRICHLOROETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	75-34-3	1,1-DICHLOROETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	75-35-4	1,1-DICHLOROETHENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	563-58-6	1,1-DICHLOROPROPENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	87-61-6	1,2,3-TRICHLOROBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	96-18-4	1,2,3-TRICHLOROPROPANE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	120-82-1	1,2,4-TRICHLOROBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	95-63-6	1,2,4-TRIMETHYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	106-93-4	1,2-DIBROMOETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	95-50-1	1,2-DICHLOROBENZENE	9/15/97	3.1	ug/kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	107-06-2	1,2-DICHLOROETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	78-87-5	1,2-DICHLOROPROPANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	108-67-8	1,3,5-TRIMETHYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	541-73-1	1,3-DICHLOROBENZENE	9/15/97	3.1	ug/kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	142-28-9	1,3-DICHLOROPROPANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	106-46-7	1,4-DICHLOROBENZENE	9/15/97	3.1	ug/kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	594-20-7	2,2-DICHLOROPROPANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	95-49-8	2-CHLOROTOLUENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	72-54-8	4,4'-DDD	9/15/97	820	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	72-55-9	4,4'-DDE	9/15/97	820	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	50-29-3	4,4'-DDT	9/15/97	820	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	106-43-4	4-CHLOROTOLUENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	309-00-2	ALDRIN	9/15/97	410	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	319-84-6	ALPHA-BHC	9/15/97	410	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011N	12674-11-2	AROCLOR-1016	9/15/97	85	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	12674-11-2	AROCLOR-1016	9/15/97	10000	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	11104-28-2	AROCLOR-1221	9/15/97	10000	ug/kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011N	11104-28-2	AROCLOR-1221	9/15/97	170	ug/kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011N	11141-16-5	AROCLOR-1232	9/15/97	85	ug/kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	11141-16-5	AROCLOR-1232	9/15/97	10000	ug/kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	53469-21-9	AROCLOR-1242	9/15/97	10000	ug/kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011N	53469-21-9	AROCLOR-1242	9/15/97	85	ug/kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	12672-29-6	AROCLOR-1248	9/15/97	10000	ug/kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011N	12672-29-6	AROCLOR-1248	9/15/97	85	ug/kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	SOIL	SW8080

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006B	WA9011N	11097-69-1	AROCLOR-1254	9/15/97	85	ug/kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	11097-69-1	AROCLOR-1254	9/15/97	10000	ug/kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	11096-82-5	AROCLOR-1260	9/15/97	35000	ug/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011N	11096-82-5	AROCLOR-1260	9/15/97	85	ug/kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	71-43-2	BENZENE	9/15/97	3.1	ug/kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	319-85-7	BETA-BHC	9/15/97	410	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	108-86-1	BROMOBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	74-97-5	BROMOCHLOROMETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	75-27-4	BROMODICHLOROMETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	75-25-2	BROMOFORM	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	74-83-9	BROMOMETHANE	9/15/97	6.2	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	104-51-8	BUTYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	56-23-5	CARBON TETRACHLORIDE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	57-74-9	CHLORDANE	9/15/97	4100	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	108-90-7	CHLOROBENZENE	9/15/97	3.1	ug/kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	124-48-1	CHLORODIBROMOMETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	75-00-3	CHLOROETHANE	9/15/97	6.2	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	67-66-3	CHLOROFORM	9/15/97	3.7	ug/Kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	74-87-3	CHLOROMETHANE	9/15/97	6.2	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	156-59-2	CIS-1,2-DICHLOROETHENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	319-86-8	DELTA-BHC	9/15/97	410	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	74-95-3	DIBROMOMETHANE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	75-71-8	DICHLORODIFLUOROMETHANE	9/15/97	6.2	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	60-57-1	DIELDRIN	9/15/97	820	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	959-98-8	ENDOSULFAN I	9/15/97	820	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	33213-65-9	ENDOSULFAN II	9/15/97	820	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	1031-07-8	ENDOSULFAN SULFATE	9/15/97	820	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	72-20-8	ENDRIN	9/15/97	820	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	7421-93-4	ENDRIN ALDEHYDE	9/15/97	820	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	100-41-4	ETHYLBENZENE	9/15/97	3.1	ug/kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	58-89-9	GAMMA-BHC (LINDANE)	9/15/97	410	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	76-44-8	HEPTACHLOR	9/15/97	410	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	1024-57-3	HEPTACHLOR EPOXIDE	9/15/97	410	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	118-74-1	HEXACHLOROBENZENE	9/15/97	5100	ug/Kg	Y	Y		1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	87-68-3	HEXACHLOROBUTADIENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	98-82-8	ISOPROPYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011N	7439-97-6	MERCURY	9/15/97	751	mg/kg	Y	Y		1117456.9	921573	0	0.5	SS	SOIL	SOIL	7471A/NONE
SW-Outfall -006	Soil	WA-006B	WA9011	7439-97-6	MERCURY	9/15/97	670	mg/kg	Y	Y		1117456.9	921573	0	0.5	SS	SOIL	Soil	7471A/NONE
SW-Outfall -006	Soil	WA-006B	WA9011	72-43-5	METHOXYCHLOR	9/15/97	4100	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	75-09-2	METHYLENE CHLORIDE	9/15/97	6.2	ug/kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	91-20-3	NAPHTHALENE	9/15/97	3.1	ug/kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	103-65-1	N-PROPYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	99-87-6	P-ISOPROPYLTOLUENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	135-98-8	SEC-BUTYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	100-42-5	STYRENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	98-06-6	TERT-BUTYLBENZENE	9/15/97	3.1	ug/Kg	Y	N	R	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	127-18-4	TETRACHLOROETHENE	9/15/97	12	ug/Kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	108-88-3	TOLUENE	9/15/97	3.1	ug/kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	TSO	TOTAL SOLIDS	9/15/97	81.1	%	Y	Y		1117456.9	921573	0	0.5	SS	SOIL	Soil	2540-G
SW-Outfall -006	Soil	WA-006B	WA9011	8001-35-2	TOXAPHENE	9/15/97	4100	ug/Kg	Y	N	U	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9011	156-60-5	TRANS-1,2-DICHLOROETHENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	79-01-6	TRICHLOROETHENE	9/15/97	24	ug/Kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	75-69-4	TRICHLOROFLUOROMETHANE	9/15/97	6.2	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	75-01-4	VINYL CHLORIDE	9/15/97	6.2	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9011	1330-20-7	XYLENES, TOTAL	9/15/97	3.1	ug/Kg	Y	N	UJ	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9013	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/1/98	1020	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/1/98	2010	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/1/98	664	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	39227-28-6	1,2,3,4,7,8-HXCDD	10/1/98	52.8	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	70648-26-9	1,2,3,4,7,8-HXCDF	10/1/98	2250	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	57653-85-7	1,2,3,6,7,8-HXCDD	10/1/98	38.3	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	57117-44-9	1,2,3,6,7,8-HXCDF	10/1/98	511	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	19408-74-3	1,2,3,7,8,9-HXCDD	10/1/98	33.7	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	72918-21-9	1,2,3,7,8,9-HXCDF	10/1/98	30.8	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	40321-76-4	1,2,3,7,8-PECDD	10/1/98	20.3	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006B	WA9013	57117-41-6	1,2,3,7,8-PECDF	10/1/98	778	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	60851-34-5	2,3,4,6,7,8-HXCDF	10/1/98	71.4	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	57117-31-4	2,3,4,7,8-PECDF	10/1/98	401	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	1746-01-6	2,3,7,8-TCDD	10/1/98	54.6	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	51207-31-9	2,3,7,8-TCDF	10/1/98	1370	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	3268-87-9	OCDD	10/1/98	8260	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	39001-02-0	OCDF	10/1/98	8270	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	37871-00-4	TOTAL HPCDD	10/1/98	2040	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	38998-75-3	TOTAL HPCDF	10/1/98	4020	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	34465-46-8	TOTAL HXCDD	10/1/98	387	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	55684-94-1	TOTAL HXCDF	10/1/98	4090	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	TOC	TOTAL ORGANIC CARBON	10/1/98	157000	mg/Kg	Y	Y		1117456.9	921573	0	0.5	SS	SOIL	Soil	SW9060
SW-Outfall -006	Soil	WA-006B	WA9013	36088-22-9	TOTAL PECDD	10/1/98	133	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	30402-15-4	TOTAL PECDF	10/1/98	2950	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	TSO	TOTAL SOLIDS	10/1/98	66.5	%	Y	Y		1117456.9	921573	0	0.5	SS	SOIL	Soil	WET CHEMISTRY
SW-Outfall -006	Soil	WA-006B	WA9013	41903-57-5	TOTAL TCDD	10/1/98	199	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013	55722-27-5	Total TCDF	10/1/98	3990	ng/kg	Y	Y	J	1117456.9	921573	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9013N	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/1/98	1020	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/1/98	4210	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/1/98	1490	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	39227-28-6	1,2,3,4,7,8-HXCDD	10/1/98	76	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	70648-26-9	1,2,3,4,7,8-HXCDF	10/1/98	4410	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	57653-85-7	1,2,3,6,7,8-HXCDD	10/1/98	46.6	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	57117-44-9	1,2,3,6,7,8-HXCDF	10/1/98	984	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	19408-74-3	1,2,3,7,8,9-HXCDD	10/1/98	70.6	ng/kg	Y	N	U*	1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	72918-21-9	1,2,3,7,8,9-HXCDF	10/1/98	96.9	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	40321-76-4	1,2,3,7,8-PECDD	10/1/98	61	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	57117-41-6	1,2,3,7,8-PECDF	10/1/98	1610	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	60851-34-5	2,3,4,6,7,8-HXCDF	10/1/98	236	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	57117-31-4	2,3,4,7,8-PECDF	10/1/98	972	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	1746-01-6	2,3,7,8-TCDD	10/1/98	229	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	51207-31-9	2,3,7,8-TCDF	10/1/98	2540	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	3268-87-9	OCDD	10/1/98	23100	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	39001-02-0	OCDF	10/1/98	12100	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	SOLID	SOLIDS, PERCENT	10/1/98	74	%	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	WET CHEMISTRY
SW-Outfall -006	Soil	WA-006B	WA9013N	37871-00-4	TOTAL HPCDD	10/1/98	1830	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	38998-75-3	TOTAL HPCDF	10/1/98	7700	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	34465-46-8	TOTAL HXCDD	10/1/98	443	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	55684-94-1	TOTAL HXCDF	10/1/98	8130	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	TOC	TOTAL ORGANIC CARBON	10/1/98	209000	mg/Kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	SW9060
SW-Outfall -006	Soil	WA-006B	WA9013N	36088-22-9	TOTAL PECDD	10/1/98	191	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	30402-15-4	TOTAL PECDF	10/1/98	6460	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	41903-57-5	TOTAL TCDD	10/1/98	492	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9013N	55722-27-5	Total TCDF	10/1/98	10900	ng/kg	Y	Y		1117456.9	921573	0.5	1	SS	SOIL	SOIL	DFLM/NONE
SW-Outfall -006	Soil	WA-006B	WA9012	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	71-55-6	1,1,1-TRICHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	79-00-5	1,1,2-TRICHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	75-34-3	1,1-DICHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	75-35-4	1,1-DICHLOROETHENE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	563-58-6	1,1-DICHLOROPROPENE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	87-61-6	1,2,3-TRICHLOROBENZENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	96-18-4	1,2,3-TRICHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	120-82-1	1,2,4-TRICHLOROBENZENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	95-63-6	1,2,4-TRIMETHYLBENZENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	106-93-4	1,2-DIBROMOETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	95-50-1	1,2-DICHLOROBENZENE	9/15/97	17	ug/kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	107-06-2	1,2-DICHLOROETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	78-87-5	1,2-DICHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	108-67-8	1,3,5-TRIMETHYLBENZENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	541-73-1	1,3-DICHLOROBENZENE	9/15/97	3	ug/kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	142-28-9	1,3-DICHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	106-46-7	1,4-DICHLOROBENZENE	9/15/97	4.9	ug/kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	594-20-7	2,2-DICHLOROPROPANE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	95-49-8	2-CHLOROTOLUENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	72-54-8	4,4'-DDD	9/15/97	810	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006B	WA9012	72-55-9	4,4'-DDE	9/15/97	810	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	50-29-3	4,4'-DDT	9/15/97	810	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	106-43-4	4-CHLOROTOLUENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	309-00-2	ALDRIN	9/15/97	400	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	319-84-6	ALPHA-BHC	9/15/97	400	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	12674-11-2	AROCLOR-1016	9/15/97	10000	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012N	12674-11-2	AROCLOR-1016	9/15/97	80	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	11104-28-2	AROCLOR-1221	9/15/97	10000	ug/kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012N	11104-28-2	AROCLOR-1221	9/15/97	160	ug/kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012N	11141-16-5	AROCLOR-1232	9/15/97	80	ug/kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	11141-16-5	AROCLOR-1232	9/15/97	10000	ug/kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	53469-21-9	AROCLOR-1242	9/15/97	10000	ug/kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012N	53469-21-9	AROCLOR-1242	9/15/97	80	ug/kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012N	12672-29-6	AROCLOR-1248	9/15/97	80	ug/kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	12672-29-6	AROCLOR-1248	9/15/97	10000	ug/kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012N	11097-69-1	AROCLOR-1254	9/15/97	80	ug/kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	11097-69-1	AROCLOR-1254	9/15/97	10000	ug/kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	11096-82-5	AROCLOR-1260	9/15/97	35000	ug/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012N	11096-82-5	AROCLOR-1260	9/15/97	80	ug/kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	71-43-2	BENZENE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	319-85-7	BETA-BHC	9/15/97	400	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	108-86-1	BROMOBENZENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	74-97-5	BROMOCHLOROMETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	75-27-4	BROMODICHLOROMETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	75-25-2	BROMOFORM	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	74-83-9	BROMOMETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	104-51-8	BUTYLBENZENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	56-23-5	CARBON TETRACHLORIDE	9/15/97	1.2	ug/Kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	57-74-9	CHLORDANE	9/15/97	4000	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	108-90-7	CHLOROBENZENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	124-48-1	CHLORODIBROMOMETHANE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	75-00-3	CHLOROETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	67-66-3	CHLOROFORM	9/15/97	13	ug/Kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	74-87-3	CHLOROMETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	156-59-2	CIS-1,2-DICHLOROETHENE	9/15/97	1.4	ug/Kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	319-86-8	DELTA-BHC	9/15/97	400	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	74-95-3	DIBROMOMETHANE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	75-71-8	DICHLORODIFLUOROMETHANE	9/15/97	6	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	60-57-1	DIELDRIN	9/15/97	810	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	959-98-8	ENDOSULFAN I	9/15/97	810	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	33213-65-9	ENDOSULFAN II	9/15/97	810	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	1031-07-8	ENDOSULFAN SULFATE	9/15/97	810	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	72-20-8	ENDRIN	9/15/97	810	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	7421-93-4	ENDRIN ALDEHYDE	9/15/97	810	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	100-41-4	ETHYLBENZENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	58-89-9	GAMMA-BHC (LINDANE)	9/15/97	400	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	76-44-8	HEPTACHLOR	9/15/97	400	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	1024-57-3	HEPTACHLOR EPOXIDE	9/15/97	400	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	118-74-1	HEXACHLOROBENZENE	9/15/97	5100	ug/Kg	Y	Y		1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	87-68-3	HEXACHLOROBUTADIENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	98-82-8	ISOPROPYLBENZENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012N	7439-97-6	MERCURY	9/15/97	974	mg/kg	Y	Y		1117456.9	921573	1	1.5	SS	SOIL	SOIL	7471A/NONE
SW-Outfall -006	Soil	WA-006B	WA9012	7439-97-6	MERCURY	9/15/97	1300	mg/kg	Y	Y		1117456.9	921573	1	1.5	SS	SOIL	Soil	7471A/NONE
SW-Outfall -006	Soil	WA-006B	WA9012	72-43-5	METHOXYCHLOR	9/15/97	4000	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	75-09-2	METHYLENE CHLORIDE	9/15/97	4.6	ug/Kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	91-20-3	NAPHTHALENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	103-65-1	N-PROPYLBENZENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	99-87-6	P-ISOPROPYLTOLUENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	135-98-8	SEC-BUTYLBENZENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	100-42-5	STYRENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	98-06-6	TERT-BUTYLBENZENE	9/15/97	3	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	127-18-4	TETRACHLOROETHENE	9/15/97	50	ug/Kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	108-88-3	TOLUENE	9/15/97	3	ug/kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	TSO	TOTAL SOLIDS	9/15/97	82.7	%	Y	Y		1117456.9	921573	1	1.5	SS	SOIL	Soil	2540-G
SW-Outfall -006	Soil	WA-006B	WA9012	8001-35-2	TOXAPHENE	9/15/97	4000	ug/Kg	Y	N	U	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006B	WA9012	156-60-5	TRANS-1,2-DICHLOROETHENE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006B	WA9012	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/15/97	3	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	79-01-6	TRICHLOROETHENE	9/15/97	70	ug/Kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	75-69-4	TRICHLOROFLUOROMETHANE	9/15/97	3.7	ug/Kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	75-01-4	VINYL CHLORIDE	9/15/97	6	ug/Kg	Y	N	UJ	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9012	1330-20-7	XYLENES, TOTAL	9/15/97	3	ug/kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006B	WA9014	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/1/98	892	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/1/98	2520	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/1/98	9500	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	39227-28-6	1,2,3,4,7,8-HXCDD	10/1/98	72.5	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	70648-26-9	1,2,3,4,7,8-HXCDF	10/1/98	2870	ng/kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	57653-85-7	1,2,3,6,7,8-HXCDD	10/1/98	57.3	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	57117-44-9	1,2,3,6,7,8-HXCDF	10/1/98	907	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	19408-74-3	1,2,3,7,8,9-HXCDD	10/1/98	59.6	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	72918-21-9	1,2,3,7,8,9-HXCDF	10/1/98	103	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	40321-76-4	1,2,3,7,8-PECDD	10/1/98	36.7	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	57117-41-6	1,2,3,7,8-PECDF	10/1/98	1490	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	60851-34-5	2,3,4,6,7,8-HXCDF	10/1/98	121	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	57117-31-4	2,3,4,7,8-PECDF	10/1/98	802	ng/kg	Y	N	R	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	1746-01-6	2,3,7,8-TCDD	10/1/98	119	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	51207-31-9	2,3,7,8-TCDF	10/1/98	1620	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	3268-87-9	OCDD	10/1/98	7630	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	39001-02-0	OCDF	10/1/98	6000	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	37871-00-4	TOTAL HPCDD	10/1/98	1770	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	38998-75-3	TOTAL HPCDF	10/1/98	32620	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	34465-46-8	TOTAL HXCDD	10/1/98	656	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	55684-94-1	TOTAL HXCDF	10/1/98	11770	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	TOC	TOTAL ORGANIC CARBON	10/1/98	284000	mg/Kg	Y	Y		1117456.9	921573	1	1.5	SS	SOIL	Soil	SW9060
SW-Outfall -006	Soil	WA-006B	WA9014	36088-22-9	TOTAL PECDD	10/1/98	199	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	30402-15-4	TOTAL PECDF	10/1/98	5840	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	TSO	TOTAL SOLIDS	10/1/98	68.1	%	Y	Y		1117456.9	921573	1	1.5	SS	SOIL	Soil	WET CHEMISTRY
SW-Outfall -006	Soil	WA-006B	WA9014	41903-57-5	TOTAL TCDD	10/1/98	410	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006B	WA9014	55722-27-5	Total TCDF	10/1/98	5550	ng/kg	Y	Y	J	1117456.9	921573	1	1.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	71-55-6	1,1,1-TRICHLOROETHANE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	79-00-5	1,1,2-TRICHLOROETHANE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	75-34-3	1,1-DICHLOROETHANE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	75-35-4	1,1-DICHLOROETHENE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	120-82-1	1,2,4-TRICHLOROBENZENE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	95-50-1	1,2-DICHLOROBENZENE	10/23/98	49	ug/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	107-06-2	1,2-DICHLOROETHANE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	78-87-5	1,2-DICHLOROPROPANE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	541-73-1	1,3-DICHLOROBENZENE	10/23/98	400	ug/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	106-46-7	1,4-DICHLOROBENZENE	10/23/98	89	ug/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	95-95-4	2,4,5-TRICHLOROPHENOL	10/23/98	1000	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	88-06-2	2,4,6-TRICHLOROPHENOL	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	120-83-2	2,4-DICHLOROPHENOL	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	105-67-9	2,4-DIMETHYLPHENOL	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	51-28-5	2,4-DINITROPHENOL	10/23/98	1000	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	121-14-2	2,4-DINITROTOLUENE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	606-20-2	2,6-DINITROTOLUENE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	78-93-3	2-BUTANONE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	91-58-7	2-CHLORONAPHTHALENE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	95-57-8	2-CHLOROPHENOL	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	591-78-6	2-HEXANONE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	91-57-6	2-METHYLNAPHTHALENE	10/23/98	120	ug/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	95-48-7	2-METHYLPHENOL	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	88-74-4	2-NITROANILINE	10/23/98	1000	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	88-75-5	2-NITROPHENOL	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	91-94-1	3,3'-DICHLOROBENZIDINE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	99-09-2	3-NITROANILINE	10/23/98	1000	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	72-54-8	4,4'-DDD	10/23/98	81	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	72-55-9	4,4'-DDE	10/23/98	81	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	50-29-3	4,4'-DDT	10/23/98	81	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/23/98	1000	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	59-50-7	4-CHLORO-3-METHYLPHENOL	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	106-47-8	4-CHLOROANILINE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	108-10-1	4-METHYL-2-PENTANONE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	106-44-5	4-METHYLPHENOL	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	100-01-6	4-NITROANILINE	10/23/98	1000	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	100-02-7	4-NITROPHENOL	10/23/98	1000	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	83-32-9	ACENAPHTHENE	10/23/98	76	ug/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	208-96-8	ACENAPHTHYLENE	10/23/98	400	ug/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	67-64-1	ACETONE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	309-00-2	ALDRIN	10/23/98	120	ug/Kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	319-84-6	ALPHA-BHC	10/23/98	40	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	5103-71-9	ALPHA-CHLORDANE	10/23/98	40	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7429-90-5	ALUMINUM	10/23/98	4260	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	120-12-7	ANTHRACENE	10/23/98	220	ug/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-36-0	ANTIMONY	10/23/98	0.31	mg/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	12674-11-2	AROCLOR-1016	10/23/98	810	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	11104-28-2	AROCLOR-1221	10/23/98	1600	ug/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	11141-16-5	AROCLOR-1232	10/23/98	810	ug/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	53469-21-9	AROCLOR-1242	10/23/98	810	ug/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	12672-29-6	AROCLOR-1248	10/23/98	810	ug/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	11097-69-1	AROCLOR-1254	10/23/98	2200	ug/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	11096-82-5	AROCLOR-1260	10/23/98	810	ug/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-38-2	ARSENIC	10/23/98	12.1	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-39-3	BARIUM	10/23/98	541	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	71-43-2	BENZENE	10/23/98	12	ug/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	56-55-3	BENZO(A)ANTHRACENE	10/23/98	630	ug/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	50-32-8	BENZO(A)PYRENE	10/23/98	560	ug/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	205-99-2	BENZO(B)FLUORANTHENE	10/23/98	910	ug/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	191-24-2	BENZO(G,H,I)PERYLENE	10/23/98	810	ug/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	207-08-9	BENZO(K)FLUORANTHENE	10/23/98	270	ug/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-41-7	BERYLLIUM	10/23/98	0.51	mg/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	319-85-7	BETA-BHC	10/23/98	40	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/23/98	97	ug/Kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	75-27-4	BROMODICHLOROMETHANE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	75-25-2	BROMOFORM	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	74-83-9	BROMOMETHANE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	85-68-7	BUTYLBENZYL PHTHALATE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-43-9	CADMIUM	10/23/98	0.59	mg/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-70-2	CALCIUM	10/23/98	171000	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	86-74-8	CARBAZOLE	10/23/98	64	ug/Kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	75-15-0	CARBON DISULFIDE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	56-23-5	CARBON TETRACHLORIDE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	108-90-7	CHLOROBENZENE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	124-48-1	CHLORODIBROMOMETHANE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	75-00-3	CHLOROETHANE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	67-66-3	CHLOROFORM	10/23/98	2	ug/Kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	74-87-3	CHLOROMETHANE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-47-3	CHROMIUM	10/23/98	22.2	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	218-01-9	CHRYSENE	10/23/98	660	ug/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	156-59-2	CIS-1,2-DICHLOROETHENE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-48-4	COBALT	10/23/98	5.7	mg/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-50-8	COPPER	10/23/98	85.5	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	57-12-5	CYANIDE	10/23/98	3	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	335.2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	319-86-8	DELTA-BHC	10/23/98	40	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	53-70-3	DIBENZO(A,H)ANTHRACENE	10/23/98	280	ug/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	132-64-9	DIBENZOFURAN	10/23/98	95	ug/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	60-57-1	DIELDRIN	10/23/98	81	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	84-66-2	DIETHYL PHTHALATE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	131-11-3	DIMETHYL PHTHALATE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	84-74-2	DI-N-BUTYL PHTHALATE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	117-84-0	DI-N-OCTYL PHTHALATE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	959-98-8	ENDOSULFAN I	10/23/98	40	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	33213-65-9	ENDOSULFAN II	10/23/98	81	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	1031-07-8	ENDOSULFAN SULFATE	10/23/98	81	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	72-20-8	ENDRIN	10/23/98	81	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7421-93-4	ENDRIN ALDEHYDE	10/23/98	200	ug/Kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	53494-70-5	ENDRIN KETONE	10/23/98	81	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	100-41-4	ETHYLBENZENE	10/23/98	12	ug/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	206-44-0	FLUORANTHENE	10/23/98	830	ug/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	86-73-7	FLUORENE	10/23/98	86	ug/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	58-89-9	GAMMA-BHC (LINDANE)	10/23/98	40	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	5566-34-7	GAMMA-CHLORDANE	10/23/98	40	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	76-44-8	HEPTACHLOR	10/23/98	120	ug/Kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	1024-57-3	HEPTACHLOR EPOXIDE	10/23/98	22	ug/Kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	118-74-1	HEXACHLOROBENZENE	10/23/98	160	ug/Kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	87-68-3	HEXACHLOROBUTADIENE	10/23/98	73	ug/Kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	67-72-1	HEXACHLOROETHANE	10/23/98	730	ug/Kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	193-39-5	INDENO(1,2,3-CD)PYRENE	10/23/98	720	ug/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7439-89-6	IRON	10/23/98	8930	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	78-59-1	ISOPHORONE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7439-92-1	LEAD	10/23/98	566	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7439-95-4	MAGNESIUM	10/23/98	9590	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7439-96-5	MANGANESE	10/23/98	138	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7439-97-6	MERCURY	10/23/98	10.9	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	245.1M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	72-43-5	METHOXYCHLOR	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	75-09-2	METHYLENE CHLORIDE	10/23/98	110	ug/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	91-20-3	NAPHTHALENE	10/23/98	380	ug/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-02-0	NICKEL	10/23/98	14.3	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	98-95-3	NITROBENZENE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	86-30-6	N-NITROSODIPHENYLAMINE	10/23/98	400	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	87-86-5	PENTACHLOROPHENOL	10/23/98	1000	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	85-01-8	PHENANTHRENE	10/23/98	1100	ug/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	108-95-2	PHENOL	10/23/98	140	ug/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-09-7	POTASSIUM	10/23/98	225	mg/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	129-00-0	PYRENE	10/23/98	1300	ug/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7782-49-2	SELENIUM	10/23/98	1.1	mg/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-22-4	SILVER	10/23/98	0.29	mg/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-23-5	SODIUM	10/23/98	705	mg/kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	100-42-5	STYRENE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	127-18-4	TETRACHLOROETHENE	10/23/98	3	ug/Kg	Y	Y	J	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-28-0	THALLIUM	10/23/98	1.3	mg/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	108-88-3	TOLUENE	10/23/98	12	ug/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	TSO	TOTAL SOLIDS	10/23/98	82.7	%	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	2540-G
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	8001-35-2	TOXAPHENE	10/23/98	4000	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	156-60-5	TRANS-1,2-DICHLOROETHENE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	79-01-6	TRICHLOROETHENE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-62-2	VANADIUM	10/23/98	20.2	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	75-01-4	VINYL CHLORIDE	10/23/98	12	ug/Kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	1330-20-7	XYLENES, TOTAL	10/23/98	12	ug/kg	Y	N	U	1117491.3	921803.7	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#1	WA9015	7440-66-6	ZINC	10/23/98	131	mg/kg	Y	Y		1117491.3	921803.7	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	71-55-6	1,1,1-TRICHLOROETHANE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	79-00-5	1,1,2-TRICHLOROETHANE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	75-34-3	1,1-DICHLOROETHANE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	75-35-4	1,1-DICHLOROETHENE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	120-82-1	1,2,4-TRICHLOROBENZENE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	95-50-1	1,2-DICHLOROBENZENE	10/23/98	430	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	107-06-2	1,2-DICHLOROETHANE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	78-87-5	1,2-DICHLOROPROPANE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	541-73-1	1,3-DICHLOROBENZENE	10/23/98	430	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	106-46-7	1,4-DICHLOROBENZENE	10/23/98	430	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	95-95-4	2,4,5-TRICHLOROPHENOL	10/23/98	1100	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	88-06-2	2,4,6-TRICHLOROPHENOL	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	120-83-2	2,4-DICHLOROPHENOL	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	105-67-9	2,4-DIMETHYLPHENOL	10/23/98	180	ug/Kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	51-28-5	2,4-DINITROPHENOL	10/23/98	1100	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	121-14-2	2,4-DINITROTOLUENE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	606-20-2	2,6-DINITROTOLUENE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	78-93-3	2-BUTANONE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	91-58-7	2-CHLORONAPHTHALENE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	95-57-8	2-CHLOROPHENOL	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	591-78-6	2-HEXANONE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	91-57-6	2-METHYLNAPHTHALENE	10/23/98	230	ug/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	95-48-7	2-METHYLPHENOL	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	88-74-4	2-NITROANILINE	10/23/98	1100	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	88-75-5	2-NITROPHENOL	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	91-94-1	3,3'-DICHLOROBENZIDINE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	99-09-2	3-NITROANILINE	10/23/98	1100	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	72-54-8	4,4'-DDD	10/23/98	21	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	72-55-9	4,4'-DDE	10/23/98	21	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	50-29-3	4,4'-DDT	10/23/98	21	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/23/98	1100	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	59-50-7	4-CHLORO-3-METHYLPHENOL	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	106-47-8	4-CHLOROANILINE	10/23/98	550	ug/Kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	108-10-1	4-METHYL-2-PENTANONE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	106-44-5	4-METHYLPHENOL	10/23/98	99	ug/Kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	100-01-6	4-NITROANILINE	10/23/98	1100	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	100-02-7	4-NITROPHENOL	10/23/98	1100	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	83-32-9	ACENAPHTHENE	10/23/98	430	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	208-96-8	ACENAPHTHYLENE	10/23/98	430	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	67-64-1	ACETONE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	309-00-2	ALDRIN	10/23/98	11	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	319-84-6	ALPHA-BHC	10/23/98	11	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	5103-71-9	ALPHA-CHLORDANE	10/23/98	2.7	ug/Kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7429-90-5	ALUMINUM	10/23/98	6220	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	120-12-7	ANTHRACENE	10/23/98	290	ug/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-36-0	ANTIMONY	10/23/98	0.42	mg/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	12674-11-2	AROCLOR-1016	10/23/98	210	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	11104-28-2	AROCLOR-1221	10/23/98	430	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	11141-16-5	AROCLOR-1232	10/23/98	210	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	53469-21-9	AROCLOR-1242	10/23/98	210	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	12672-29-6	AROCLOR-1248	10/23/98	210	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	11097-69-1	AROCLOR-1254	10/23/98	780	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	11096-82-5	AROCLOR-1260	10/23/98	210	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-38-2	ARSENIC	10/23/98	17.8	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-39-3	BARIUM	10/23/98	188	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	71-43-2	BENZENE	10/23/98	2	ug/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	56-55-3	BENZO(A)ANTHRACENE	10/23/98	560	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	50-32-8	BENZO(A)PYRENE	10/23/98	530	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	205-99-2	BENZO(B)FLUORANTHENE	10/23/98	930	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	191-24-2	BENZO(G,H,I)PERYLENE	10/23/98	1200	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	207-08-9	BENZO(K)FLUORANTHENE	10/23/98	230	ug/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-41-7	BERYLLIUM	10/23/98	0.83	mg/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	319-85-7	BETA-BHC	10/23/98	11	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/23/98	90	ug/Kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	75-27-4	BROMODICHLOROMETHANE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	75-25-2	BROMOFORM	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	74-83-9	BROMOMETHANE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	85-68-7	BUTYLBENZYL PHTHALATE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-43-9	CADMIUM	10/23/98	0.34	mg/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-70-2	CALCIUM	10/23/98	96200	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	86-74-8	CARBAZOLE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	75-15-0	CARBON DISULFIDE	10/23/98	13	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	56-23-5	CARBON TETRACHLORIDE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	108-90-7	CHLOROBENZENE	10/23/98	13	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	124-48-1	CHLORODIBROMOMETHANE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	75-00-3	CHLOROETHANE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	67-66-3	CHLOROFORM	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	74-87-3	CHLOROMETHANE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-47-3	CHROMIUM	10/23/98	15.6	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	218-01-9	CHRYSENE	10/23/98	760	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	156-59-2	CIS-1,2-DICHLOROETHENE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-48-4	COBALT	10/23/98	5.8	mg/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-50-8	COPPER	10/23/98	45	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	57-12-5	CYANIDE	10/23/98	0.82	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	335.2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	319-86-8	DELTA-BHC	10/23/98	11	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	53-70-3	DIBENZO(A,H)ANTHRACENE	10/23/98	380	ug/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	132-64-9	DIBENZOFURAN	10/23/98	92	ug/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	60-57-1	DIELDRIN	10/23/98	19	ug/Kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	84-66-2	DIETHYL PHTHALATE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	131-11-3	DIMETHYL PHTHALATE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	84-74-2	DI-N-BUTYL PHTHALATE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	117-84-0	DI-N-OCTYL PHTHALATE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	959-98-8	ENDOSULFAN I	10/23/98	11	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	33213-65-9	ENDOSULFAN II	10/23/98	21	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	1031-07-8	ENDOSULFAN SULFATE	10/23/98	21	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	72-20-8	ENDRIN	10/23/98	21	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7421-93-4	ENDRIN ALDEHYDE	10/23/98	190	ug/Kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	53494-70-5	ENDRIN KETONE	10/23/98	49	ug/Kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	100-41-4	ETHYLBENZENE	10/23/98	13	ug/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	206-44-0	FLUORANTHENE	10/23/98	660	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	86-73-7	FLUORENE	10/23/98	4700	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	58-89-9	GAMMA-BHC (LINDANE)	10/23/98	11	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	5566-34-7	GAMMA-CHLORDANE	10/23/98	11	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	76-44-8	HEPTACHLOR	10/23/98	11	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	1024-57-3	HEPTACHLOR EPOXIDE	10/23/98	6.8	ug/Kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	118-74-1	HEXACHLOROBENZENE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	87-68-3	HEXACHLOROBUTADIENE	10/23/98	63	ug/Kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	67-72-1	HEXACHLOROETHANE	10/23/98	930	ug/Kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	193-39-5	INDENO(1,2,3-CD)PYRENE	10/23/98	940	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7439-89-6	IRON	10/23/98	11800	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	78-59-1	ISOPHORONE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7439-92-1	LEAD	10/23/98	64.3	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7439-95-4	MAGNESIUM	10/23/98	10100	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7439-96-5	MANGANESE	10/23/98	132	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7439-97-6	MERCURY	10/23/98	4.3	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	245.1M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	72-43-5	METHOXYCHLOR	10/23/98	100	ug/Kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	75-09-2	METHYLENE CHLORIDE	10/23/98	190	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	91-20-3	NAPHTHALENE	10/23/98	1600	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-02-0	NICKEL	10/23/98	16.4	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	98-95-3	NITROBENZENE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	86-30-6	N-NITROSODIPHENYLAMINE	10/23/98	430	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	87-86-5	PENTACHLOROPHENOL	10/23/98	1100	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	85-01-8	PHENANTHRENE	10/23/98	1500	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	108-95-2	PHENOL	10/23/98	380	ug/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-09-7	POTASSIUM	10/23/98	349	mg/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	129-00-0	PYRENE	10/23/98	830	ug/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7782-49-2	SELENIUM	10/23/98	2	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-22-4	SILVER	10/23/98	0.31	mg/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-23-5	SODIUM	10/23/98	814	mg/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	100-42-5	STYRENE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	127-18-4	TETRACHLOROETHENE	10/23/98	1	ug/Kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-28-0	THALLIUM	10/23/98	1.4	mg/kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	108-88-3	TOLUENE	10/23/98	2	ug/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	TSO	TOTAL SOLIDS	10/23/98	78	%	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	2540-G
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	8001-35-2	TOXAPHENE	10/23/98	1100	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	156-60-5	TRANS-1,2-DICHLOROETHENE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	79-01-6	TRICHLOROETHENE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-62-2	VANADIUM	10/23/98	19	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	75-01-4	VINYL CHLORIDE	10/23/98	13	ug/Kg	Y	N	U	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	1330-20-7	XYLENES, TOTAL	10/23/98	6	ug/kg	Y	Y	J	1117467.7	921651.6	0	2	SS	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006MASS#2	WA9016	7440-66-6	ZINC	10/23/98	50.1	mg/kg	Y	Y		1117467.7	921651.6	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	71-55-6	1,1,1-TRICHLOROETHANE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	79-00-5	1,1,2-TRICHLOROETHANE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	75-34-3	1,1-DICHLOROETHANE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	75-35-4	1,1-DICHLOROETHENE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	120-82-1	1,2,4-TRICHLOROBENZENE	10/23/98	63	ug/Kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	95-50-1	1,2-DICHLOROBENZENE	10/23/98	92	ug/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	107-06-2	1,2-DICHLOROETHANE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	78-87-5	1,2-DICHLOROPROPANE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	541-73-1	1,3-DICHLOROBENZENE	10/23/98	420	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	106-46-7	1,4-DICHLOROBENZENE	10/23/98	51	ug/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	95-95-4	2,4,5-TRICHLOROPHENOL	10/23/98	1100	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	88-06-2	2,4,6-TRICHLOROPHENOL	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	120-83-2	2,4-DICHLOROPHENOL	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	105-67-9	2,4-DIMETHYLPHENOL	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	51-28-5	2,4-DINITROPHENOL	10/23/98	1100	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	121-14-2	2,4-DINITROTOLUENE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	606-20-2	2,6-DINITROTOLUENE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	78-93-3	2-BUTANONE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	91-58-7	2-CHLORONAPHTHALENE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	95-57-8	2-CHLOROPHENOL	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	591-78-6	2-HEXANONE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	91-57-6	2-METHYLNAPHTHALENE	10/23/98	120	ug/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	95-48-7	2-METHYLPHENOL	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	88-74-4	2-NITROANILINE	10/23/98	1100	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	88-75-5	2-NITROPHENOL	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	91-94-1	3,3'-DICHLOROBENZIDINE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	99-09-2	3-NITROANILINE	10/23/98	1100	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	72-54-8	4,4'-DDD	10/23/98	21	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	72-55-9	4,4'-DDE	10/23/98	36	ug/Kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	50-29-3	4,4'-DDT	10/23/98	21	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/23/98	1100	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	59-50-7	4-CHLORO-3-METHYLPHENOL	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	106-47-8	4-CHLOROANILINE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	108-10-1	4-METHYL-2-PENTANONE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	106-44-5	4-METHYLPHENOL	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	100-01-6	4-NITROANILINE	10/23/98	1100	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	100-02-7	4-NITROPHENOL	10/23/98	1100	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	83-32-9	ACENAPHTHENE	10/23/98	130	ug/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	208-96-8	ACENAPHTHYLENE	10/23/98	420	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	67-64-1	ACETONE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	309-00-2	ALDRIN	10/23/98	11	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	319-84-6	ALPHA-BHC	10/23/98	11	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	5103-71-9	ALPHA-CHLORDANE	10/23/98	11	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7429-90-5	ALUMINUM	10/23/98	4210	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	120-12-7	ANTHRACENE	10/23/98	240	ug/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-36-0	ANTIMONY	10/23/98	0.38	mg/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	12674-11-2	AROCLOR-1016	10/23/98	210	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	11104-28-2	AROCLOR-1221	10/23/98	420	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	11141-16-5	AROCLOR-1232	10/23/98	210	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	53469-21-9	AROCLOR-1242	10/23/98	210	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	12672-29-6	AROCLOR-1248	10/23/98	210	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	11097-69-1	AROCLOR-1254	10/23/98	1800	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	11096-82-5	AROCLOR-1260	10/23/98	210	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-38-2	ARSENIC	10/23/98	16.6	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-39-3	BARIUM	10/23/98	673	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	71-43-2	BENZENE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	56-55-3	BENZO(A)ANTHRACENE	10/23/98	930	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	50-32-8	BENZO(A)PYRENE	10/23/98	840	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	205-99-2	BENZO(B)FLUORANTHENE	10/23/98	1100	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	191-24-2	BENZO(G,H,I)PERYLENE	10/23/98	1400	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	207-08-9	BENZO(K)FLUORANTHENE	10/23/98	420	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-41-7	BERYLLIUM	10/23/98	0.62	mg/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	319-85-7	BETA-BHC	10/23/98	11	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/23/98	390	ug/Kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	75-27-4	BROMODICHLOROMETHANE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	75-25-2	BROMOFORM	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	74-83-9	BROMOMETHANE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	85-68-7	BUTYLBENZYL PHTHALATE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-43-9	CADMIUM	10/23/98	0.76	mg/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-70-2	CALCIUM	10/23/98	197000	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	86-74-8	CARBAZOLE	10/23/98	130	ug/Kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	75-15-0	CARBON DISULFIDE	10/23/98	13	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	56-23-5	CARBON TETRACHLORIDE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	108-90-7	CHLOROBENZENE	10/23/98	13	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	124-48-1	CHLORODIBROMOMETHANE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	75-00-3	CHLOROETHANE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	67-66-3	CHLOROFORM	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	74-87-3	CHLOROMETHANE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-47-3	CHROMIUM	10/23/98	27.4	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	218-01-9	CHRYSENE	10/23/98	990	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	156-59-2	CIS-1,2-DICHLOROETHENE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-48-4	COBALT	10/23/98	7.4	mg/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-50-8	COPPER	10/23/98	39.6	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	57-12-5	CYANIDE	10/23/98	1.9	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	335.2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	319-86-8	DELTA-BHC	10/23/98	3.6	ug/Kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	53-70-3	DIBENZO(A,H)ANTHRACENE	10/23/98	490	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	132-64-9	DIBENZOFURAN	10/23/98	150	ug/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	60-57-1	DIELDRIN	10/23/98	21	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	84-66-2	DIETHYL PHTHALATE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	131-11-3	DIMETHYL PHTHALATE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	84-74-2	DI-N-BUTYL PHTHALATE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	117-84-0	DI-N-OCTYL PHTHALATE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	959-98-8	ENDOSULFAN I	10/23/98	3.2	ug/Kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	33213-65-9	ENDOSULFAN II	10/23/98	63	ug/Kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	1031-07-8	ENDOSULFAN SULFATE	10/23/98	21	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	72-20-8	ENDRIN	10/23/98	21	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7421-93-4	ENDRIN ALDEHYDE	10/23/98	61	ug/Kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	53494-70-5	ENDRIN KETONE	10/23/98	99	ug/Kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	100-41-4	ETHYLBENZENE	10/23/98	13	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	206-44-0	FLUORANTHENE	10/23/98	1300	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	86-73-7	FLUORENE	10/23/98	130	ug/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	58-89-9	GAMMA-BHC (LINDANE)	10/23/98	11	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	5566-34-7	GAMMA-CHLORDANE	10/23/98	11	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	76-44-8	HEPTACHLOR	10/23/98	3.9	ug/Kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	1024-57-3	HEPTACHLOR EPOXIDE	10/23/98	0.91	ug/Kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	118-74-1	HEXACHLOROBENZENE	10/23/98	170	ug/Kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	87-68-3	HEXACHLOROBUTADIENE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	67-72-1	HEXACHLOROETHANE	10/23/98	73	ug/Kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	193-39-5	INDENO(1,2,3-CD)PYRENE	10/23/98	1200	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7439-89-6	IRON	10/23/98	10300	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	78-59-1	ISOPHORONE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7439-92-1	LEAD	10/23/98	63.8	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7439-95-4	MAGNESIUM	10/23/98	8050	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7439-96-5	MANGANESE	10/23/98	159	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7439-97-6	MERCURY	10/23/98	1880	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	245.1M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	72-43-5	METHOXYCHLOR	10/23/98	110	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	75-09-2	METHYLENE CHLORIDE	10/23/98	94	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	91-20-3	NAPHTHALENE	10/23/98	410	ug/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-02-0	NICKEL	10/23/98	20.9	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	98-95-3	NITROBENZENE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	86-30-6	N-NITROSODIPHENYLAMINE	10/23/98	420	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	87-86-5	PENTACHLOROPHENOL	10/23/98	1100	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	85-01-8	PHENANTHRENE	10/23/98	1500	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	108-95-2	PHENOL	10/23/98	420	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-09-7	POTASSIUM	10/23/98	449	mg/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	129-00-0	PYRENE	10/23/98	1900	ug/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7782-49-2	SELENIUM	10/23/98	2.3	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-22-4	SILVER	10/23/98	0.3	mg/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-23-5	SODIUM	10/23/98	437	mg/kg	Y	Y	J	1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	100-42-5	STYRENE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	127-18-4	TETRACHLOROETHENE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-28-0	THALLIUM	10/23/98	1.4	mg/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	108-88-3	TOLUENE	10/23/98	13	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	TSO	TOTAL SOLIDS	10/23/98	79.3	%	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	2540-G
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	8001-35-2	TOXAPHENE	10/23/98	1100	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	PCB
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	156-60-5	TRANS-1,2-DICHLOROETHENE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	79-01-6	TRICHLOROETHENE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-62-2	VANADIUM	10/23/98	21.3	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	75-01-4	VINYL CHLORIDE	10/23/98	13	ug/Kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	1330-20-7	XYLENES, TOTAL	10/23/98	13	ug/kg	Y	N	U	1117334	921687.8	0	2	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-006MASS#3	WA9017	7440-66-6	ZINC	10/23/98	64.1	mg/kg	Y	Y		1117334	921687.8	0	2	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-006MATP1	WA9018	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	71-55-6	1,1,1-TRICHLOROETHANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	79-00-5	1,1,2-TRICHLOROETHANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	75-34-3	1,1-DICHLOROETHANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	75-35-4	1,1-DICHLOROETHENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	563-58-6	1,1-DICHLOROPROPENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	87-61-6	1,2,3-TRICHLOROBENZENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	96-18-4	1,2,3-TRICHLOROPROPANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	120-82-1	1,2,4-TRICHLOROBENZENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	95-63-6	1,2,4-TRIMETHYLBENZENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	106-93-4	1,2-DIBROMOETHANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	95-50-1	1,2-DICHLOROBENZENE	9/16/97	3.4	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	107-06-2	1,2-DICHLOROETHANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	78-87-5	1,2-DICHLOROPROPANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	108-67-8	1,3,5-TRIMETHYLBENZENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	541-73-1	1,3-DICHLOROBENZENE	9/16/97	3.4	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	142-28-9	1,3-DICHLOROPROPANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	106-46-7	1,4-DICHLOROBENZENE	9/16/97	4.1	ug/kg	Y	Y	J	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	594-20-7	2,2-DICHLOROPROPANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	95-49-8	2-CHLOROTOLUENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	72-54-8	4,4'-DDD	9/16/97	46	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	72-55-9	4,4'-DDE	9/16/97	46	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	50-29-3	4,4'-DDT	9/16/97	46	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	106-43-4	4-CHLOROTOLUENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	309-00-2	ALDRIN	9/16/97	23	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	319-84-6	ALPHA-BHC	9/16/97	23	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018N	12674-11-2	AROCLOR-1016	9/16/97	91	ug/Kg	Y	N	U	1117493.8	921795.7	2	8	TP	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	12674-11-2	AROCLOR-1016	9/16/97	230	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018N	11104-28-2	AROCLOR-1221	9/16/97	180	ug/kg	Y	N	U	1117493.8	921795.7	2	8	TP	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	11104-28-2	AROCLOR-1221	9/16/97	230	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	11141-16-5	AROCLOR-1232	9/16/97	230	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018N	11141-16-5	AROCLOR-1232	9/16/97	91	ug/kg	Y	N	U	1117493.8	921795.7	2	8	TP	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	53469-21-9	AROCLOR-1242	9/16/97	230	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018N	53469-21-9	AROCLOR-1242	9/16/97	91	ug/kg	Y	N	U	1117493.8	921795.7	2	8	TP	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	12672-29-6	AROCLOR-1248	9/16/97	230	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018N	12672-29-6	AROCLOR-1248	9/16/97	91	ug/kg	Y	N	U	1117493.8	921795.7	2	8	TP	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	11097-69-1	AROCLOR-1254	9/16/97	230	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018N	11097-69-1	AROCLOR-1254	9/16/97	91	ug/kg	Y	N	U	1117493.8	921795.7	2	8	TP	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018N	11096-82-5	AROCLOR-1260	9/16/97	91	ug/kg	Y	N	U	1117493.8	921795.7	2	8	TP	SOIL	SOIL	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	11096-82-5	AROCLOR-1260	9/16/97	230	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	71-43-2	BENZENE	9/16/97	3.4	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	319-85-7	BETA-BHC	9/16/97	23	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	108-86-1	BROMOBENZENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	74-97-5	BROMOCHLOROMETHANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	75-27-4	BROMODICHLOROMETHANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	75-25-2	BROMOFORM	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006MATP1	WA9018	74-83-9	BROMOMETHANE	9/16/97	6.9	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	104-51-8	BUTYLBENZENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	56-23-5	CARBON TETRACHLORIDE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	57-74-9	CHLORDANE	9/16/97	230	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	108-90-7	CHLOROBENZENE	9/16/97	3.4	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	124-48-1	CHLORODIBROMOMETHANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	75-00-3	CHLOROETHANE	9/16/97	6.9	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	67-66-3	CHLOROFORM	9/16/97	2.4	ug/Kg	Y	Y	J	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	74-87-3	CHLOROMETHANE	9/16/97	6.9	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	156-59-2	CIS-1,2-DICHLOROETHENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	319-86-8	DELTA-BHC	9/16/97	23	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	74-95-3	DIBROMOMETHANE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	75-71-8	DICHLORODIFLUOROMETHANE	9/16/97	6.9	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	60-57-1	DIELDRIN	9/16/97	46	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	959-98-8	ENDOSULFAN I	9/16/97	46	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	33213-65-9	ENDOSULFAN II	9/16/97	46	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	1031-07-8	ENDOSULFAN SULFATE	9/16/97	46	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	72-20-8	ENDRIN	9/16/97	46	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	7421-93-4	ENDRIN ALDEHYDE	9/16/97	46	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	100-41-4	ETHYLBENZENE	9/16/97	3.4	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	58-89-9	GAMMA-BHC (LINDANE)	9/16/97	23	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	76-44-8	HEPTACHLOR	9/16/97	23	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	1024-57-3	HEPTACHLOR EPOXIDE	9/16/97	23	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	118-74-1	HEXACHLOROBENZENE	9/16/97	87	ug/Kg	Y	Y	J	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	87-68-3	HEXACHLOROBUTADIENE	9/16/97	1.7	ug/Kg	Y	Y	J	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	98-82-8	ISOPROPYLBENZENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	7439-97-6	MERCURY	9/16/97	7	mg/kg	Y	Y		1117493.8	921795.7	2	8	TP	SOIL	Soil	7471A/NONE
SW-Outfall -006	Soil	WA-006MATP1	WA9018N	7439-97-6	MERCURY	9/16/97	9.7	mg/kg	Y	Y		1117493.8	921795.7	2	8	TP	SOIL	SOIL	7471A/NONE
SW-Outfall -006	Soil	WA-006MATP1	WA9018	72-43-5	METHOXYCHLOR	9/16/97	230	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	75-09-2	METHYLENE CHLORIDE	9/16/97	37	ug/kg	Y	Y	J	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	91-20-3	NAPHTHALENE	9/16/97	1.7	ug/kg	Y	Y	J	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	103-65-1	N-PROPYLBENZENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	99-87-6	P-ISOPROPYLTOLUENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	135-98-8	SEC-BUTYLBENZENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	100-42-5	STYRENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	98-06-6	TERT-BUTYLBENZENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	127-18-4	TETRACHLOROETHENE	9/16/97	5.2	ug/Kg	Y	Y	J	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	108-88-3	TOLUENE	9/16/97	3.4	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	TSO	TOTAL SOLIDS	9/16/97	72.9	%	Y	Y		1117493.8	921795.7	2	8	TP	SOIL	Soil	2540-G
SW-Outfall -006	Soil	WA-006MATP1	WA9018	8001-35-2	TOXAPHENE	9/16/97	230	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP1	WA9018	156-60-5	TRANS-1,2-DICHLOROETHENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/16/97	3.4	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	79-01-6	TRICHLOROETHENE	9/16/97	6.1	ug/Kg	Y	Y	J	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	75-69-4	TRICHLOROFLUOROMETHANE	9/16/97	6.9	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	75-01-4	VINYL CHLORIDE	9/16/97	6.9	ug/Kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP1	WA9018	1330-20-7	XYLENES, TOTAL	9/16/97	3.4	ug/kg	Y	N	UJ	1117493.8	921795.7	2	8	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	630-20-6	1,1,1,2-TETRACHLOROETHANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	71-55-6	1,1,1-TRICHLOROETHANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	79-34-5	1,1,2,2-TETRACHLOROETHANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	79-00-5	1,1,2-TRICHLOROETHANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	75-34-3	1,1-DICHLOROETHANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	75-35-4	1,1-DICHLOROETHENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	563-58-6	1,1-DICHLOROPROPENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	87-61-6	1,2,3-TRICHLOROBENZENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	96-18-4	1,2,3-TRICHLOROPROPANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	120-82-1	1,2,4-TRICHLOROBENZENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	95-63-6	1,2,4-TRIMETHYLBENZENE	9/17/97	140000	ug/Kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	106-93-4	1,2-DIBROMOETHANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	95-50-1	1,2-DICHLOROBENZENE	9/17/97	7900	ug/kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	107-06-2	1,2-DICHLOROETHANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	78-87-5	1,2-DICHLOROPROPANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	108-67-8	1,3,5-TRIMETHYLBENZENE	9/17/97	100000	ug/Kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	541-73-1	1,3-DICHLOROBENZENE	9/17/97	7900	ug/kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	142-28-9	1,3-DICHLOROPROPANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	106-46-7	1,4-DICHLOROBENZENE	9/17/97	76000	ug/kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	594-20-7	2,2-DICHLOROPROPANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	95-49-8	2-CHLOROTOLUENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	72-54-8	4,4'-DDD	9/17/97	210	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	72-55-9	4,4'-DDE	9/17/97	210	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	50-29-3	4,4'-DDT	9/17/97	210	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	106-43-4	4-CHLOROTOLUENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	309-00-2	ALDRIN	9/17/97	110	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	319-84-6	ALPHA-BHC	9/17/97	110	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	12674-11-2	AROCLOR-1016	9/17/97	1100	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	11104-28-2	AROCLOR-1221	9/17/97	1100	ug/kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	11141-16-5	AROCLOR-1232	9/17/97	1100	ug/kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	53469-21-9	AROCLOR-1242	9/17/97	1100	ug/kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	12672-29-6	AROCLOR-1248	9/17/97	1100	ug/kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	11097-69-1	AROCLOR-1254	9/17/97	1100	ug/kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	11096-82-5	AROCLOR-1260	9/17/97	1100	ug/kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	71-43-2	BENZENE	9/17/97	7600000	ug/kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	319-85-7	BETA-BHC	9/17/97	110	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	108-86-1	BROMOBENZENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	74-97-5	BROMOCHLOROMETHANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	75-27-4	BROMODICHLOROMETHANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	75-25-2	BROMOFORM	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	74-83-9	BROMOMETHANE	9/17/97	16000	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	104-51-8	BUTYLBENZENE	9/17/97	3600	ug/Kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	56-23-5	CARBON TETRACHLORIDE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	57-74-9	CHLORDANE	9/17/97	1100	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	108-90-7	CHLOROBENZENE	9/17/97	7900	ug/kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	124-48-1	CHLORODIBROMOMETHANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	75-00-3	CHLOROETHANE	9/17/97	16000	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	67-66-3	CHLOROFORM	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	74-87-3	CHLOROMETHANE	9/17/97	16000	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	156-59-2	CIS-1,2-DICHLOROETHENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	10061-01-5	CIS-1,3-DICHLOROPROPENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	319-86-8	DELTA-BHC	9/17/97	110	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	74-95-3	DIBROMOMETHANE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	75-71-8	DICHLORODIFLUOROMETHANE	9/17/97	16000	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	60-57-1	DIELDRIN	9/17/97	210	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	959-98-8	ENDOSULFAN I	9/17/97	210	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	33213-65-9	ENDOSULFAN II	9/17/97	210	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	1031-07-8	ENDOSULFAN SULFATE	9/17/97	210	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	72-20-8	ENDRIN	9/17/97	210	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	7421-93-4	ENDRIN ALDEHYDE	9/17/97	210	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	100-41-4	ETHYLBENZENE	9/17/97	88000	ug/kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	58-89-9	GAMMA-BHC (LINDANE)	9/17/97	110	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	76-44-8	HEPTACHLOR	9/17/97	110	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	1024-57-3	HEPTACHLOR EPOXIDE	9/17/97	110	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	118-74-1	HEXACHLOROBENZENE	9/17/97	240	ug/Kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	87-68-3	HEXACHLOROBUTADIENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	98-82-8	ISOPROPYLBENZENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	7439-97-6	MERCURY	9/17/97	22	mg/kg	Y	Y		1117332.4	921671.8	4	6	TP	SOIL	Soil	7471A/NONE
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	72-43-5	METHOXYCHLOR	9/17/97	1100	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	75-09-2	METHYLENE CHLORIDE	9/17/97	3000	ug/kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	91-20-3	NAPHTHALENE	9/17/97	3200000	ug/kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	103-65-1	N-PROPYLBENZENE	9/17/97	5700	ug/Kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	99-87-6	P-ISOPROPYLTOLUENE	9/17/97	14000	ug/Kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	135-98-8	SEC-BUTYLBENZENE	9/17/97	130000	ug/Kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	100-42-5	STYRENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	98-06-6	TERT-BUTYLBENZENE	9/17/97	43000	ug/Kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	127-18-4	TETRACHLOROETHENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	108-88-3	TOLUENE	9/17/97	3100000	ug/kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	TSO	TOTAL SOLIDS	9/17/97	78.7	%	Y	Y		1117332.4	921671.8	4	6	TP	SOIL	Soil	2540-G
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	8001-35-2	TOXAPHENE	9/17/97	1100	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8080
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	156-60-5	TRANS-1,2-DICHLOROETHENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	10061-02-6	TRANS-1,3-DICHLOROPROPENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	79-01-6	TRICHLOROETHENE	9/17/97	7900	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	75-69-4	TRICHLOROFLUOROMETHANE	9/17/97	16000	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	75-01-4	VINYL CHLORIDE	9/17/97	16000	ug/Kg	Y	N	UJ	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260
SW-Outfall -006	Soil	WA-006MATP2A	WA9019	1330-20-7	XYLENES, TOTAL	9/17/97	1700000	ug/kg	Y	Y	J	1117332.4	921671.8	4	6	TP	SOIL	Soil	SW8260

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	71-55-6	1,1,1-TRICHLOROETHANE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	79-00-5	1,1,2-TRICHLOROETHANE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	75-34-3	1,1-DICHLOROETHANE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	75-35-4	1,1-DICHLOROETHENE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/26/99	574	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/26/99	1180	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/26/99	648	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	39227-28-6	1,2,3,4,7,8-HXCDD	10/26/99	31.7	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	70648-26-9	1,2,3,4,7,8-HXCDF	10/26/99	1220	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	57653-85-7	1,2,3,6,7,8-HXCDD	10/26/99	24.4	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	57117-44-9	1,2,3,6,7,8-HXCDF	10/26/99	432	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	19408-74-3	1,2,3,7,8,9-HXCDD	10/26/99	29.4	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	72918-21-9	1,2,3,7,8,9-HXCDF	10/26/99	40.2	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	40321-76-4	1,2,3,7,8-PECDD	10/26/99	18.7	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	57117-41-6	1,2,3,7,8-PECDF	10/26/99	457	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	120-82-1	1,2,4-TRICHLOROBENZENE	10/26/99	520	ug/Kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	95-50-1	1,2-DICHLOROBENZENE	10/26/99	3300	ug/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	107-06-2	1,2-DICHLOROETHANE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	78-87-5	1,2-DICHLOROPROPANE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	541-73-1	1,3-DICHLOROBENZENE	10/26/99	110	ug/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	106-46-7	1,4-DICHLOROBENZENE	10/26/99	1600	ug/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	60851-34-5	2,3,4,6,7,8-HXCDF	10/26/99	105	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	57117-31-4	2,3,4,7,8-PECDF	10/26/99	392	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	1746-01-6	2,3,7,8-TCDD	10/26/99	41.3	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	51207-31-9	2,3,7,8-TCDF	10/26/99	655	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	95-95-4	2,4,5-TRICHLOROPHENOL	10/26/99	1300	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	88-06-2	2,4,6-TRICHLOROPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	120-83-2	2,4-DICHLOROPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	105-67-9	2,4-DIMETHYLPHENOL	10/26/99	75	ug/Kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	51-28-5	2,4-DINITROPHENOL	10/26/99	1300	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	121-14-2	2,4-DINITROTOLUENE	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	606-20-2	2,6-DINITROTOLUENE	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	78-93-3	2-BUTANONE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	91-58-7	2-CHLORONAPHTHALENE	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	95-57-8	2-CHLOROPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	591-78-6	2-HEXANONE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	91-57-6	2-METHYLNAPHTHALENE	10/26/99	1200	ug/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	95-48-7	2-METHYLPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	88-74-4	2-NITROANILINE	10/26/99	1300	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	88-75-5	2-NITROPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	91-94-1	3,3'-DICHLOROBENZIDINE	10/26/99	510	ug/Kg	Y	N	R	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	99-09-2	3-NITROANILINE	10/26/99	1300	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	72-54-8	4,4'-DDD	10/26/99	100	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	72-55-9	4,4'-DDE	10/26/99	68	ug/Kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	50-29-3	4,4'-DDT	10/26/99	100	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/26/99	1300	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/26/99	510	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	59-50-7	4-CHLORO-3-METHYLPHENOL	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	106-47-8	4-CHLOROANILINE	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	108-10-1	4-METHYL-2-PENTANONE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	106-44-5	4-METHYLPHENOL	10/26/99	110	ug/Kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	100-01-6	4-NITROANILINE	10/26/99	1300	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	100-02-7	4-NITROPHENOL	10/26/99	1300	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	83-32-9	ACENAPHTHENE	10/26/99	620	ug/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	208-96-8	ACENAPHTHYLENE	10/26/99	490	ug/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	67-64-1	ACETONE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	309-00-2	ALDRIN	10/26/99	47	ug/Kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	319-84-6	ALPHA-BHC	10/26/99	51	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	5103-71-9	ALPHA-CHLORDANE	10/26/99	51	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7429-90-5	ALUMINUM	10/26/99	7770	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	120-12-7	ANTHRACENE	10/26/99	1700	ug/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-36-0	ANTIMONY	10/26/99	0.76	mg/kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	12674-11-2	AROCLOR-1016	10/26/99	5100	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	11104-28-2	AROCLOR-1221	10/26/99	10000	ug/kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	11141-16-5	AROCLOR-1232	10/26/99	5100	ug/kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	53469-21-9	AROCLOR-1242	10/26/99	5100	ug/kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	12672-29-6	AROCLOR-1248	10/26/99	5100	ug/kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	11097-69-1	AROCLOR-1254	10/26/99	5100	ug/kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	11096-82-5	AROCLOR-1260	10/26/99	4500	ug/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	11100-14-4	AROCLOR-1268	10/26/99	10000	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-38-2	ARSENIC	10/26/99	27.6	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-39-3	BARIUM	10/26/99	167	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	71-43-2	BENZENE	10/26/99	15	ug/kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	56-55-3	BENZO(A)ANTHRACENE	10/26/99	6700	ug/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	50-32-8	BENZO(A)PYRENE	10/26/99	7800	ug/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	205-99-2	BENZO(B)FLUORANTHENE	10/26/99	13000	ug/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	191-24-2	BENZO(G,H,I)PERYLENE	10/26/99	5800	ug/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	207-08-9	BENZO(K)FLUORANTHENE	10/26/99	3300	ug/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-41-7	BERYLLIUM	10/26/99	1.2	mg/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	319-85-7	BETA-BHC	10/26/99	70	ug/Kg	Y	N	R	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/26/99	680	ug/Kg	Y	N	R	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	75-27-4	BROMODICHLOROMETHANE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	75-25-2	BROMOFORM	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	74-83-9	BROMOMETHANE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	85-68-7	BUTYLBENZYL PHTHALATE	10/26/99	510	ug/Kg	Y	N	R	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-43-9	CADMIUM	10/26/99	1.2	mg/kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-70-2	CALCIUM	10/26/99	106000	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	86-74-8	CARBAZOLE	10/26/99	650	ug/Kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	75-15-0	CARBON DISULFIDE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	56-23-5	CARBON TETRACHLORIDE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	108-90-7	CHLOROBENZENE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	124-48-1	CHLORODIBROMOMETHANE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	75-00-3	CHLOROETHANE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	67-66-3	CHLOROFORM	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	74-87-3	CHLOROMETHANE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-47-3	CHROMIUM	10/26/99	183	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	218-01-9	CHRYSENE	10/26/99	9800	ug/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	156-59-2	CIS-1,2-DICHLOROETHENE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-48-4	COBALT	10/26/99	34	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-50-8	COPPER	10/26/99	138	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	57-12-5	CYANIDE	10/26/99	0.76	mg/kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	EPA 335.2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	319-86-8	DELTA-BHC	10/26/99	51	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	53-70-3	DIBENZO(A,H)ANTHRACENE	10/26/99	2400	ug/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	132-64-9	DIBENZOFURAN	10/26/99	840	ug/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	60-57-1	DIELDRIN	10/26/99	100	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	84-66-2	DIETHYL PHTHALATE	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	131-11-3	DIMETHYL PHTHALATE	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	84-74-2	DI-N-BUTYL PHTHALATE	10/26/99	510	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	117-84-0	DI-N-OCTYL PHTHALATE	10/26/99	510	ug/Kg	Y	N	R	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	959-98-8	ENDOSULFAN I	10/26/99	51	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	33213-65-9	ENDOSULFAN II	10/26/99	100	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	1031-07-8	ENDOSULFAN SULFATE	10/26/99	100	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	72-20-8	ENDRIN	10/26/99	230	ug/Kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7421-93-4	ENDRIN ALDEHYDE	10/26/99	160	ug/Kg	Y	N	R	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	53494-70-5	ENDRIN KETONE	10/26/99	120	ug/Kg	Y	N	R	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	100-41-4	ETHYLBENZENE	10/26/99	15	ug/kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	206-44-0	FLUORANTHENE	10/26/99	10000	ug/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	86-73-7	FLUORENE	10/26/99	420	ug/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	58-89-9	GAMMA-BHC (LINDANE)	10/26/99	51	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	5566-34-7	GAMMA-CHLORDANE	10/26/99	51	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	76-44-8	HEPTACHLOR	10/26/99	51	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	1024-57-3	HEPTACHLOR EPOXIDE	10/26/99	51	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	118-74-1	HEXACHLOROBENZENE	10/26/99	2600	ug/Kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	87-68-3	HEXACHLOROBUTADIENE	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	67-72-1	HEXACHLOROETHANE	10/26/99	700	ug/Kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	193-39-5	INDENO(1,2,3-CD)PYRENE	10/26/99	5100	ug/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7439-89-6	IRON	10/26/99	26400	mg/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	78-59-1	ISOPHORONE	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7439-92-1	LEAD	10/26/99	147	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7439-95-4	MAGNESIUM	10/26/99	7350	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7439-96-5	MANGANESE	10/26/99	296	mg/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7439-97-6	MERCURY	10/26/99	429	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	245.5M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	72-43-5	METHOXYCHLOR	10/26/99	510	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	22967-92-6	METHYL MERCURY	10/26/99	83.7	ng/g	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	1630/NONE
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	75-09-2	METHYLENE CHLORIDE	10/26/99	15	ug/kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	91-20-3	NAPHTHALENE	10/26/99	3100	ug/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-02-0	NICKEL	10/26/99	112	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	98-95-3	NITROBENZENE	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/26/99	510	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	86-30-6	N-NITROSODIPHENYLAMINE	10/26/99	510	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	3268-87-9	OCDD	10/26/99	3230	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	39001-02-0	OCDF	10/26/99	2710	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	87-86-5	PENTACHLOROPHENOL	10/26/99	1300	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	85-01-8	PHENANTHRENE	10/26/99	8800	ug/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	108-95-2	PHENOL	10/26/99	370	ug/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-09-7	POTASSIUM	10/26/99	1500	mg/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	129-00-0	PYRENE	10/26/99	15000	ug/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-2
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7782-49-2	SELENIUM	10/26/99	4.2	mg/kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-22-4	SILVER	10/26/99	0.67	mg/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-23-5	SODIUM	10/26/99	298	mg/kg	Y	Y	J	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	100-42-5	STYRENE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	127-18-4	TETRACHLOROETHENE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-28-0	THALLIUM	10/26/99	1.5	mg/kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	108-88-3	TOLUENE	10/26/99	15	ug/kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	37871-00-4	TOTAL HPCDD	10/26/99	1210	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	38998-75-3	TOTAL HPCDF	10/26/99	1790	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	34465-46-8	TOTAL HXCDD	10/26/99	248	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	55684-94-1	TOTAL HXCDF	10/26/99	1660	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	TOC	TOTAL ORGANIC CARBON	10/26/99	160000	mg/Kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW9060
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	36088-22-9	TOTAL PECDD	10/26/99	103	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	30402-15-4	TOTAL PECDF	10/26/99	1470	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	TSO	TOTAL SOLIDS	10/26/99	66	%	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	2540-G
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	41903-57-5	TOTAL TCDD	10/26/99	164	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	55722-27-5	Total TCDF	10/26/99	1390	ng/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	SW8290
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	8001-35-2	TOXAPHENE	10/26/99	5100	ug/Kg	Y	N	U	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-3
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	156-60-5	TRANS-1,2-DICHLOROETHENE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	79-01-6	TRICHLOROETHENE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-62-2	VANADIUM	10/26/99	106	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	75-01-4	VINYL CHLORIDE	10/26/99	15	ug/Kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	1330-20-7	XYLENES, TOTAL	10/26/99	15	ug/kg	Y	N	UJ	1117426.6	921517.5	0	0.5	SS	SOIL	Soil	ASP 95-1
SW-Outfall -006	Soil	WA-OUT006-SS	WA9153	7440-66-6	ZINC	10/26/99	275	mg/kg	Y	Y		1117426.6	921517.5	0	0.5	SS	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	95-50-1	1,2-DICHLOROBENZENE	1/17/91	420	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	541-73-1	1,3-DICHLOROBENZENE	1/17/91	420	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	106-46-7	1,4-DICHLOROBENZENE	1/17/91	220	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	91-57-6	2-METHYLNAPHTHALENE	1/17/91	61	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	83-32-9	ACENAPHTHENE	1/17/91	100	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	208-96-8	ACENAPHTHYLENE	1/17/91	420	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7429-90-5	ALUMINUM	1/17/91	857	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	120-12-7	ANTHRACENE	1/17/91	110	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-36-0	ANTIMONY	1/17/91	31.8	mg/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	11104-28-2	AROCLOR-1221	1/17/91	100	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	11141-16-5	AROCLOR-1232	1/17/91	100	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	53469-21-9	AROCLOR-1242	1/17/91	100	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	12672-29-6	AROCLOR-1248	1/17/91	100	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	11097-69-1	AROCLOR-1254	1/17/91	220	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	11096-82-5	AROCLOR-1260	1/17/91	200	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-38-2	ARSENIC	1/17/91	11.3	mg/kg	Y	N	R	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-39-3	BARIUM	1/17/91	310	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	71-43-2	BENZENE	1/17/91	6	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	56-55-3	BENZO(A)ANTHRACENE	1/17/91	330	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	50-32-8	BENZO(A)PYRENE	1/17/91	320	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	205-99-2	BENZO(B)FLUORANTHENE	1/17/91	480	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	191-24-2	BENZO(G,H,I)PERYLENE	1/17/91	180	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	207-08-9	BENZO(K)FLUORANTHENE	1/17/91	420	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	65-85-0	BENZOIC ACID	1/17/91	2100	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-41-7	BERYLLIUM	1/17/91	1.35	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-43-9	CADMIUM	1/17/91	1.9	mg/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-70-2	CALCIUM	1/17/91	253000	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	75-15-0	CARBON DISULFIDE	1/17/91	16	ug/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	108-90-7	CHLOROBENZENE	1/17/91	82	ug/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-47-3	CHROMIUM	1/17/91	704	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	218-01-9	CHRYSENE	1/17/91	360	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-48-4	COBALT	1/17/91	125	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-50-8	COPPER	1/17/91	49.6	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	57-12-5	CYANIDE	1/17/91	0.64	mg/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	53-70-3	DIBENZO(A,H)ANTHRACENE	1/17/91	420	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	132-64-9	DIBENZOFURAN	1/17/91	120	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	100-41-4	ETHYLBENZENE	1/17/91	1	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	206-44-0	FLUORANTHENE	1/17/91	540	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	86-73-7	FLUORENE	1/17/91	98	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	193-39-5	INDENO(1,2,3-CD)PYRENE	1/17/91	200	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7439-89-6	IRON	1/17/91	32800	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7439-92-1	LEAD	1/17/91	119	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7439-95-4	MAGNESIUM	1/17/91	16500	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7439-96-5	MANGANESE	1/17/91	251	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7439-97-6	MERCURY	1/17/91	0.13	mg/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	75-09-2	METHYLENE CHLORIDE	1/17/91	5	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	91-20-3	NAPHTHALENE	1/17/91	200	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-02-0	NICKEL	1/17/91	170	mg/kg	Y	N	R	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	85-01-8	PHENANTHRENE	1/17/91	310	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	108-95-2	PHENOL	1/17/91	420	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-09-7	POTASSIUM	1/17/91	127	mg/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	129-00-0	PYRENE	1/17/91	570	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7782-49-2	SELENIUM	1/17/91	1.9	mg/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-22-4	SILVER	1/17/91	1.64	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-23-5	SODIUM	1/17/91	702	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-28-0	THALLIUM	1/17/91	0.38	mg/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	108-88-3	TOLUENE	1/17/91	6	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-62-2	VANADIUM	1/17/91	278	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	1330-20-7	XYLENES, TOTAL	1/17/91	6	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9020	7440-66-6	ZINC	1/17/91	30.8	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-D	WA9021	71-43-2	BENZENE	6/25/91	6	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9021	108-88-3	TOLUENE	6/25/91	6	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-D	WA9021	1330-20-7	XYLENES, TOTAL	6/25/91	6	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	95-50-1	1,2-DICHLOROBENZENE	1/17/91	1300	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	541-73-1	1,3-DICHLOROBENZENE	1/17/91	1300	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	106-46-7	1,4-DICHLOROBENZENE	1/17/91	1300	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	91-57-6	2-METHYLNAPHTHALENE	1/17/91	280	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	83-32-9	ACENAPHTHENE	1/17/91	1300	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	208-96-8	ACENAPHTHYLENE	1/17/91	1300	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7429-90-5	ALUMINUM	1/17/91	4840	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	120-12-7	ANTHRACENE	1/17/91	530	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-36-0	ANTIMONY	1/17/91	38.5	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	11104-28-2	AROCLOR-1221	1/17/91	3100	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	11141-16-5	AROCLOR-1232	1/17/91	3100	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	53469-21-9	AROCLOR-1242	1/17/91	3100	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	12672-29-6	AROCLOR-1248	1/17/91	3300	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	11097-69-1	AROCLOR-1254	1/17/91	2300	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	11096-82-5	AROCLOR-1260	1/17/91	6200	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-38-2	ARSENIC	1/17/91	14.4	mg/kg	Y	N	R	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-39-3	BARIUM	1/17/91	310	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	71-43-2	BENZENE	1/17/91	25000	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	56-55-3	BENZO(A)ANTHRACENE	1/17/91	1300	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	50-32-8	BENZO(A)PYRENE	1/17/91	160	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	205-99-2	BENZO(B)FLUORANTHENE	1/17/91	1300	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	191-24-2	BENZO(G,H,I)PERYLENE	1/17/91	1300	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	207-08-9	BENZO(K)FLUORANTHENE	1/17/91	1300	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	65-85-0	BENZOIC ACID	1/17/91	6400	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-41-7	BERYLLIUM	1/17/91	1.76	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-43-9	CADMIUM	1/17/91	2.31	mg/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-70-2	CALCIUM	1/17/91	249000	mg/kg	Y	Y		1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	75-15-0	CARBON DISULFIDE	1/17/91	2400	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	108-90-7	CHLOROBENZENE	1/17/91	2400	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-47-3	CHROMIUM	1/17/91	2380	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	218-01-9	CHRYSENE	1/17/91	260	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-48-4	COBALT	1/17/91	546	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-50-8	COPPER	1/17/91	191	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	57-12-5	CYANIDE	1/17/91	2.89	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	53-70-3	DIBENZO(A,H)ANTHRACENE	1/17/91	1300	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	132-64-9	DIBENZOFURAN	1/17/91	160	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	100-41-4	ETHYLBENZENE	1/17/91	500	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	206-44-0	FLUORANTHENE	1/17/91	540	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	86-73-7	FLUORENE	1/17/91	1300	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	193-39-5	INDENO(1,2,3-CD)PYRENE	1/17/91	1300	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7439-89-6	IRON	1/17/91	44300	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7439-92-1	LEAD	1/17/91	133	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7439-95-4	MAGNESIUM	1/17/91	13500	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7439-96-5	MANGANESE	1/17/91	1450	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7439-97-6	MERCURY	1/17/91	0.79	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	75-09-2	METHYLENE CHLORIDE	1/17/91	2400	ug/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	91-20-3	NAPHTHALENE	1/17/91	3400	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-02-0	NICKEL	1/17/91	913	mg/kg	Y	N	R	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	85-01-8	PHENANTHRENE	1/17/91	520	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	108-95-2	PHENOL	1/17/91	980	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-09-7	POTASSIUM	1/17/91	510	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	129-00-0	PYRENE	1/17/91	600	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7782-49-2	SELENIUM	1/17/91	1.16	mg/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-22-4	SILVER	1/17/91	2.38	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-23-5	SODIUM	1/17/91	874	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-28-0	THALLIUM	1/17/91	1.16	mg/kg	Y	N	UJ	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	108-88-3	TOLUENE	1/17/91	9400	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-62-2	VANADIUM	1/17/91	925	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	1330-20-7	XYLENES, TOTAL	1/17/91	10000	ug/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9024	7440-66-6	ZINC	1/17/91	279	mg/kg	Y	Y	J	1118855	920521.4	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-M	WA9025	71-43-2	BENZENE	6/25/91	19000	ug/kg	Y	Y		1118855	920521.4	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9025	108-88-3	TOLUENE	6/25/91	8500	ug/kg	Y	Y		1118855	920521.4	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-M	WA9025	1330-20-7	XYLENES, TOTAL	6/25/91	6200	ug/kg	Y	Y		1118855	920521.4	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	95-50-1	1,2-DICHLOROBENZENE	1/17/91	410	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	541-73-1	1,3-DICHLOROBENZENE	1/17/91	190	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	106-46-7	1,4-DICHLOROBENZENE	1/17/91	560	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	91-57-6	2-METHYLNAPHTHALENE	1/17/91	470	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	83-32-9	ACENAPHTHENE	1/17/91	450	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	208-96-8	ACENAPHTHYLENE	1/17/91	210	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7429-90-5	ALUMINUM	1/17/91	2820	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	120-12-7	ANTHRACENE	1/17/91	920	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-36-0	ANTIMONY	1/17/91	31.2	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	11104-28-2	AROCLOR-1221	1/17/91	250	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	11141-16-5	AROCLOR-1232	1/17/91	250	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	53469-21-9	AROCLOR-1242	1/17/91	250	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	12672-29-6	AROCLOR-1248	1/17/91	250	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	11097-69-1	AROCLOR-1254	1/17/91	250	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	11096-82-5	AROCLOR-1260	1/17/91	250	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	PCB
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-38-2	ARSENIC	1/17/91	15.6	mg/kg	Y	N	R	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-39-3	BARIUM	1/17/91	194	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	71-43-2	BENZENE	1/17/91	16	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	56-55-3	BENZO(A)ANTHRACENE	1/17/91	3200	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	50-32-8	BENZO(A)PYRENE	1/17/91	2900	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	205-99-2	BENZO(B)FLUORANTHENE	1/17/91	5200	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	191-24-2	BENZO(G,H,I)PERYLENE	1/17/91	1900	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	207-08-9	BENZO(K)FLUORANTHENE	1/17/91	4200	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	65-85-0	BENZOIC ACID	1/17/91	470	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-41-7	BERYLLIUM	1/17/91	2.06	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-43-9	CADMIUM	1/17/91	1.88	mg/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-70-2	CALCIUM	1/17/91	394000	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	75-15-0	CARBON DISULFIDE	1/17/91	16	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	108-90-7	CHLOROBENZENE	1/17/91	16	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	VOA

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-47-3	CHROMIUM	1/17/91	33.8	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	218-01-9	CHRYSENE	1/17/91	4300	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-48-4	COBALT	1/17/91	5.73	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-50-8	COPPER	1/17/91	91.3	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	57-12-5	CYANIDE	1/17/91	1.56	mg/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	53-70-3	DIBENZO(A,H)ANTHRACENE	1/17/91	450	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	132-64-9	DIBENZOFURAN	1/17/91	820	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	100-41-4	ETHYLBENZENE	1/17/91	16	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	206-44-0	FLUORANTHENE	1/17/91	6100	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	86-73-7	FLUORENE	1/17/91	610	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	193-39-5	INDENO(1,2,3-CD)PYRENE	1/17/91	2100	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7439-89-6	IRON	1/17/91	20500	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7439-92-1	LEAD	1/17/91	4100	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7439-95-4	MAGNESIUM	1/17/91	3320	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7439-96-5	MANGANESE	1/17/91	162	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7439-97-6	MERCURY	1/17/91	1.29	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	75-09-2	METHYLENE CHLORIDE	1/17/91	14	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	91-20-3	NAPHTHALENE	1/17/91	1000	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-02-0	NICKEL	1/17/91	13.3	mg/kg	Y	N	R	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	85-01-8	PHENANTHRENE	1/17/91	3900	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	108-95-2	PHENOL	1/17/91	1000	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-09-7	POTASSIUM	1/17/91	312	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	129-00-0	PYRENE	1/17/91	7600	ug/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	SVOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7782-49-2	SELENIUM	1/17/91	4.68	mg/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-22-4	SILVER	1/17/91	1.25	mg/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-23-5	SODIUM	1/17/91	2260	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-28-0	THALLIUM	1/17/91	0.94	mg/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	108-88-3	TOLUENE	1/17/91	16	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-62-2	VANADIUM	1/17/91	27.3	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	1330-20-7	XYLENES, TOTAL	1/17/91	16	ug/kg	Y	N	UJ	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9026	7440-66-6	ZINC	1/17/91	385	mg/kg	Y	Y	J	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	METALS
Tributary 5A	Sediment	WA-5A-SD-U	WA9027	71-43-2	BENZENE	6/25/91	6	ug/kg	Y	N	U	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9027	108-88-3	TOLUENE	6/25/91	6	ug/kg	Y	N	U	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SD-U	WA9027	1330-20-7	XYLENES, TOTAL	6/25/91	6	ug/kg	Y	N	U	1117407.3	921404.6	0	0.5	SED	SOIL	Soil	VOA
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	71-55-6	1,1,1-TRICHLOROETHANE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	79-00-5	1,1,2-TRICHLOROETHANE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	75-34-3	1,1-DICHLOROETHANE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	75-35-4	1,1-DICHLOROETHENE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/27/99	374	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/27/99	149	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/27/99	12	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	39227-28-6	1,2,3,4,7,8-HXCDD	10/27/99	5.22	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	70648-26-9	1,2,3,4,7,8-HXCDF	10/27/99	16.6	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	57653-85-7	1,2,3,6,7,8-HXCDD	10/27/99	33.4	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	57117-44-9	1,2,3,6,7,8-HXCDF	10/27/99	9.61	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	19408-74-3	1,2,3,7,8,9-HXCDD	10/27/99	18.2	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	72918-21-9	1,2,3,7,8,9-HXCDF	10/27/99	2.6	ng/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	40321-76-4	1,2,3,7,8-PECDD	10/27/99	5.54	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	57117-41-6	1,2,3,7,8-PECDF	10/27/99	6.54	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	120-82-1	1,2,4-TRICHLOROBENZENE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	95-50-1	1,2-DICHLOROBENZENE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	107-06-2	1,2-DICHLOROETHANE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	78-87-5	1,2-DICHLOROPROPANE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	541-73-1	1,3-DICHLOROBENZENE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	106-46-7	1,4-DICHLOROBENZENE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	60851-34-5	2,3,4,6,7,8-HXCDF	10/27/99	13	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	57117-31-4	2,3,4,7,8-PECDF	10/27/99	16.7	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	1746-01-6	2,3,7,8-TCDD	10/27/99	0.2	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	51207-31-9	2,3,7,8-TCDF	10/27/99	0.96	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	95-95-4	2,4,5-TRICHLOROPHENOL	10/27/99	3000	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	88-06-2	2,4,6-TRICHLOROPHENOL	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	120-83-2	2,4-DICHLOROPHENOL	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	105-67-9	2,4-DIMETHYLPHENOL	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	51-28-5	2,4-DINITROPHENOL	10/27/99	3000	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	121-14-2	2,4-DINITROTOLUENE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	606-20-2	2,6-DINITROTOLUENE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	78-93-3	2-BUTANONE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	91-58-7	2-CHLORONAPHTHALENE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	95-57-8	2-CHLOROPHENOL	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	591-78-6	2-HEXANONE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	91-57-6	2-METHYLNAPHTHALENE	10/27/99	210	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	95-48-7	2-METHYLPHENOL	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	88-74-4	2-NITROANILINE	10/27/99	3000	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	88-75-5	2-NITROPHENOL	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	91-94-1	3,3'-DICHLOROBENZIDINE	10/27/99	1200	ug/Kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	99-09-2	3-NITROANILINE	10/27/99	3000	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	72-54-8	4,4'-DDD	10/27/99	12	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	72-55-9	4,4'-DDE	10/27/99	11	ug/Kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	50-29-3	4,4'-DDT	10/27/99	14	ug/Kg	Y	Y	JN	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/27/99	3000	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	59-50-7	4-CHLORO-3-METHYLPHENOL	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	106-47-8	4-CHLOROANILINE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	108-10-1	4-METHYL-2-PENTANONE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	106-44-5	4-METHYLPHENOL	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	100-01-6	4-NITROANILINE	10/27/99	3000	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	100-02-7	4-NITROPHENOL	10/27/99	3000	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	83-32-9	ACENAPHTHENE	10/27/99	120	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	208-96-8	ACENAPHTHYLENE	10/27/99	1200	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	67-64-1	ACETONE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	309-00-2	ALDRIN	10/27/99	6	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	319-84-6	ALPHA-BHC	10/27/99	6	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	5103-71-9	ALPHA-CHLORDANE	10/27/99	12	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7429-90-5	ALUMINUM	10/27/99	11600	mg/Kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	120-12-7	ANTHRACENE	10/27/99	290	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-36-0	ANTIMONY	10/27/99	2.1	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	12674-11-2	AROCLOR-1016	10/27/99	120	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	11104-28-2	AROCLOR-1221	10/27/99	240	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	11141-16-5	AROCLOR-1232	10/27/99	120	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	53469-21-9	AROCLOR-1242	10/27/99	120	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	12672-29-6	AROCLOR-1248	10/27/99	120	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	11097-69-1	AROCLOR-1254	10/27/99	570	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	11096-82-5	AROCLOR-1260	10/27/99	120	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	11100-14-4	AROCLOR-1268	10/27/99	260	ug/Kg	Y	Y	JN	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-38-2	ARSENIC	10/27/99	33.6	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-39-3	BARIUM	10/27/99	1450	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	71-43-2	BENZENE	10/27/99	36	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	56-55-3	BENZO(A)ANTHRACENE	10/27/99	1200	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	50-32-8	BENZO(A)PYRENE	10/27/99	1500	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	205-99-2	BENZO(B)FLUORANTHENE	10/27/99	2100	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	191-24-2	BENZO(G,H,I)PERYLENE	10/27/99	1800	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	207-08-9	BENZO(K)FLUORANTHENE	10/27/99	910	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-41-7	BERYLLIUM	10/27/99	1.1	mg/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	319-85-7	BETA-BHC	10/27/99	6	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	39638-32-9	BIS(2-CHLOROISOPROPYL)ETHER	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/27/99	1200	ug/Kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	75-27-4	BROMODICHLOROMETHANE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	75-25-2	BROMOFORM	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	74-83-9	BROMOMETHANE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	85-68-7	BUTYLBENZYL PHTHALATE	10/27/99	1200	ug/Kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-43-9	CADMIUM	10/27/99	0.58	mg/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-70-2	CALCIUM	10/27/99	178000	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	86-74-8	CARBAZOLE	10/27/99	190	ug/Kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	75-15-0	CARBON DISULFIDE	10/27/99	36	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	56-23-5	CARBON TETRACHLORIDE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	108-90-7	CHLOROBENZENE	10/27/99	36	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	124-48-1	CHLORODIBROMOMETHANE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	75-00-3	CHLOROETHANE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	67-66-3	CHLOROFORM	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	74-87-3	CHLOROMETHANE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-47-3	CHROMIUM	10/27/99	3080	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	218-01-9	CHRYSENE	10/27/99	1600	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	156-59-2	CIS-1,2-DICHLOROETHENE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-48-4	COBALT	10/27/99	481	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-50-8	COPPER	10/27/99	453	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	57-12-5	CYANIDE	10/27/99	1.8	mg/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	EPA 335.2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	319-86-8	DELTA-BHC	10/27/99	6	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	53-70-3	DIBENZO(A,H)ANTHRACENE	10/27/99	1200	ug/kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	132-64-9	DIBENZOFURAN	10/27/99	150	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	60-57-1	DIELDRIN	10/27/99	12	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	84-66-2	DIETHYL PHTHALATE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	131-11-3	DIMETHYL PHTHALATE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	84-74-2	DI-N-BUTYL PHTHALATE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	117-84-0	DI-N-OCTYL PHTHALATE	10/27/99	1200	ug/Kg	Y	N	U	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	959-98-8	ENDOSULFAN I	10/27/99	6	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	33213-65-9	ENDOSULFAN II	10/27/99	11	ug/Kg	Y	Y	JN	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	1031-07-8	ENDOSULFAN SULFATE	10/27/99	12	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	72-20-8	ENDRIN	10/27/99	28	ug/Kg	Y	Y	JN	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7421-93-4	ENDRIN ALDEHYDE	10/27/99	12	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	53494-70-5	ENDRIN KETONE	10/27/99	29	ug/Kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	100-41-4	ETHYLBENZENE	10/27/99	36	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	206-44-0	FLUORANTHENE	10/27/99	1200	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	86-73-7	FLUORENE	10/27/99	140	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	58-89-9	GAMMA-BHC (LINDANE)	10/27/99	6	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	5566-34-7	GAMMA-CHLORDANE	10/27/99	6	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	76-44-8	HEPTACHLOR	10/27/99	6	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	1024-57-3	HEPTACHLOR EPOXIDE	10/27/99	6	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	118-74-1	HEXACHLOROBENZENE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	87-68-3	HEXACHLOROBUTADIENE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	67-72-1	HEXACHLOROETHANE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	193-39-5	INDENO(1,2,3-CD)PYRENE	10/27/99	1300	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7439-89-6	IRON	10/27/99	98400	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	78-59-1	ISOPHORONE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7439-92-1	LEAD	10/27/99	330	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7439-95-4	MAGNESIUM	10/27/99	16900	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7439-96-5	MANGANESE	10/27/99	1320	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7439-97-6	MERCURY	10/27/99	1.1	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	245.5M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	72-43-5	METHOXYCHLOR	10/27/99	60	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	22967-92-6	METHYL MERCURY	10/27/99	4.65	ng/g	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	1630/NONE
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	75-09-2	METHYLENE CHLORIDE	10/27/99	36	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	91-20-3	NAPHTHALENE	10/27/99	290	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-02-0	NICKEL	10/27/99	1710	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	98-95-3	NITROBENZENE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	1621-64-7	N-NITROSODI-N-PROPYLAMINE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	86-30-6	N-NITROSODIPHENYLAMINE	10/27/99	1200	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	3268-87-9	OCDD	10/27/99	1410	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	39001-02-0	OCDF	10/27/99	206	ng/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	87-86-5	PENTACHLOROPHENOL	10/27/99	3000	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	85-01-8	PHENANTHRENE	10/27/99	1400	ug/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	108-95-2	PHENOL	10/27/99	1200	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-09-7	POTASSIUM	10/27/99	2030	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	129-00-0	PYRENE	10/27/99	5800	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7782-49-2	SELENIUM	10/27/99	15.4	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE1.5in	SIEVE NO. 1.5INCH, PERCENT PASSIN	10/27/99	83.4	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE0.5in	SIEVE NO. 1/2INCH, PERCENT PASSIN	10/27/99	47.6	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE0.25in	SIEVE NO. 1/4INCH, PERCENT PASSIN	10/27/99	36.4	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE10	SIEVE NO. 10, PERCENT PASSING	10/27/99	27.1	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE1in	SIEVE NO. 1INCH, PERCENT PASSIN	10/27/99	72.8	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE200	SIEVE NO. 200, PERCENT PASSING	10/27/99	6.1	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE2in	SIEVE NO. 2INCH, PERCENT PASSIN	10/27/99	91	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE0.75in	SIEVE NO. 3/4INCH, PERCENT PASSIN	10/27/99	60.4	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE0.375in	SIEVE NO. 3/8INCH, PERCENT PASSIN	10/27/99	42.1	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE30	SIEVE NO. 30, PERCENT PASSING	10/27/99	17.8	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE3in	SIEVE NO. 3INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE4	SIEVE NO. 4, PERCENT PASSING	10/27/99	33.7	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE40	SIEVE NO. 40, PERCENT PASSING	10/27/99	14.1	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE100	SIEVE, NO. 100, PERCENT PASSING	10/27/99	8.5	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SIEVE60	SIEVE, NO. 60, PERCENT PASSING	10/27/99	10.8	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-22-4	SILVER	10/27/99	0.56	mg/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-23-5	SODIUM	10/27/99	1090	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	SOLID	SOLIDS, PERCENT	10/27/99	28	%	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	2540-G
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	100-42-5	STYRENE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	127-18-4	TETRACHLOROETHENE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-28-0	THALLIUM	10/27/99	3.6	mg/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	108-88-3	TOLUENE	10/27/99	36	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	37871-00-4	TOTAL HPCDD	10/27/99	700	ng/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	38998-75-3	TOTAL HPCDF	10/27/99	368	ng/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	34465-46-8	TOTAL HXCDD	10/27/99	248	ng/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	55684-94-1	TOTAL HXCDF	10/27/99	223	ng/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	TOC	TOTAL ORGANIC CARBON	10/27/99	60000	mg/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW9060
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	36088-22-9	TOTAL PECDD	10/27/99	55.1	ng/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	30402-15-4	TOTAL PECDF	10/27/99	185	ng/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	41903-57-5	TOTAL TCDD	10/27/99	33.7	ng/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	55722-27-5	Total TCDF	10/27/99	365	ng/kg	Y	Y		1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	SW8290
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	8001-35-2	TOXAPHENE	10/27/99	600	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	156-60-5	TRANS-1,2-DICHLOROETHENE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	79-01-6	TRICHLOROETHENE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-62-2	VANADIUM	10/27/99	878	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	75-01-4	VINYL CHLORIDE	10/27/99	36	ug/Kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	1330-20-7	XYLENES, TOTAL	10/27/99	36	ug/kg	Y	N	UJ	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-1	WA9335	7440-66-6	ZINC	10/27/99	548	mg/kg	Y	Y	J	1119218.5	921108.2	0	0.5	SED	SOIL	SOIL	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/26/99	92.5	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/26/99	22.1	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/26/99	1.63	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	39227-28-6	1,2,3,4,7,8-HXCDD	10/26/99	0.93	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	70648-26-9	1,2,3,4,7,8-HXCDF	10/26/99	3.45	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	57653-85-7	1,2,3,6,7,8-HXCDD	10/26/99	7.58	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	57117-44-9	1,2,3,6,7,8-HXCDF	10/26/99	2.11	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	19408-74-3	1,2,3,7,8,9-HXCDD	10/26/99	2.47	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	72918-21-9	1,2,3,7,8,9-HXCDF	10/26/99	0.1	ng/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	40321-76-4	1,2,3,7,8-PECDD	10/26/99	0.65	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	57117-41-6	1,2,3,7,8-PECDF	10/26/99	1.18	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	60851-34-5	2,3,4,6,7,8-HXCDF	10/26/99	2.26	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	57117-31-4	2,3,4,7,8-PECDF	10/26/99	3.04	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	1746-01-6	2,3,7,8-TCDD	10/26/99	0.1	ng/kg	Y	N	UJ	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	51207-31-9	2,3,7,8-TCDF	10/26/99	0.21	ng/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	3268-87-9	OCDD	10/26/99	523	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	39001-02-0	OCDF	10/26/99	37.3	ng/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	37871-00-4	TOTAL HPCDD	10/26/99	170	ng/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	38998-75-3	TOTAL HPCDF	10/26/99	51.6	ng/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	34465-46-8	TOTAL HXCDD	10/26/99	60.5	ng/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	55684-94-1	TOTAL HXCDF	10/26/99	39.3	ng/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	36088-22-9	TOTAL PECDD	10/26/99	6.67	ng/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	30402-15-4	TOTAL PECDF	10/26/99	32	ng/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	41903-57-5	TOTAL TCDD	10/26/99	4.97	ng/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9028	55722-27-5	Total TCDF	10/26/99	75.4	ng/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	71-55-6	1,1,1-TRICHLOROETHANE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	79-00-5	1,1,2-TRICHLOROETHANE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	75-34-3	1,1-DICHLOROETHANE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	75-35-4	1,1-DICHLOROETHENE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	120-82-1	1,2,4-TRICHLOROBENZENE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	95-50-1	1,2-DICHLOROBENZENE	10/27/99	640	ug/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	107-06-2	1,2-DICHLOROETHANE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	78-87-5	1,2-DICHLOROPROPANE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	541-73-1	1,3-DICHLOROBENZENE	10/27/99	640	ug/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	106-46-7	1,4-DICHLOROBENZENE	10/27/99	640	ug/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	95-95-4	2,4,5-TRICHLOROPHENOL	10/27/99	1600	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	88-06-2	2,4,6-TRICHLOROPHENOL	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	120-83-2	2,4-DICHLOROPHENOL	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	105-67-9	2,4-DIMETHYLPHENOL	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	51-28-5	2,4-DINITROPHENOL	10/27/99	1600	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	121-14-2	2,4-DINITROTOLUENE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	606-20-2	2,6-DINITROTOLUENE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	78-93-3	2-BUTANONE	10/27/99	13	ug/Kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	91-58-7	2-CHLORONAPHTHALENE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	95-57-8	2-CHLOROPHENOL	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	591-78-6	2-HEXANONE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	91-57-6	2-METHYLNAPHTHALENE	10/27/99	280	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	95-48-7	2-METHYLPHENOL	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	88-74-4	2-NITROANILINE	10/27/99	1600	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	88-75-5	2-NITROPHENOL	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	91-94-1	3,3'-DICHLOROBENZIDINE	10/27/99	640	ug/Kg	Y	N	UJ	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	99-09-2	3-NITROANILINE	10/27/99	1600	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	72-54-8	4,4'-DDD	10/27/99	6.4	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	72-55-9	4,4'-DDE	10/27/99	1.9	ug/Kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	50-29-3	4,4'-DDT	10/27/99	6.4	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/27/99	1600	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	59-50-7	4-CHLORO-3-METHYLPHENOL	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	106-47-8	4-CHLOROANILINE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	108-10-1	4-METHYL-2-PENTANONE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	106-44-5	4-METHYLPHENOL	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	100-01-6	4-NITROANILINE	10/27/99	1600	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	100-02-7	4-NITROPHENOL	10/27/99	1600	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	83-32-9	ACENAPHTHENE	10/27/99	110	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	208-96-8	ACENAPHTHYLENE	10/27/99	640	ug/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	67-64-1	ACETONE	10/27/99	2400	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	309-00-2	ALDRIN	10/27/99	3.2	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	319-84-6	ALPHA-BHC	10/27/99	3.2	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	5103-71-9	ALPHA-CHLORDANE	10/27/99	3.2	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7429-90-5	ALUMINUM	10/27/99	2220	mg/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	120-12-7	ANTHRACENE	10/27/99	100	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-36-0	ANTIMONY	10/27/99	0.96	mg/kg	Y	N	UJ	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	12674-11-2	AROCLOR-1016	10/27/99	64	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	11104-28-2	AROCLOR-1221	10/27/99	130	ug/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	11141-16-5	AROCLOR-1232	10/27/99	64	ug/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	53469-21-9	AROCLOR-1242	10/27/99	64	ug/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	12672-29-6	AROCLOR-1248	10/27/99	64	ug/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	11097-69-1	AROCLOR-1254	10/27/99	84	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	11096-82-5	AROCLOR-1260	10/27/99	64	ug/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	11100-14-4	AROCLOR-1268	10/27/99	25	ug/Kg	Y	Y	JN	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-38-2	ARSENIC	10/27/99	4.8	mg/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-39-3	BARIUM	10/27/99	110	mg/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	71-43-2	BENZENE	10/27/99	4400	ug/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	56-55-3	BENZO(A)ANTHRACENE	10/27/99	230	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	50-32-8	BENZO(A)PYRENE	10/27/99	260	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	205-99-2	BENZO(B)FLUORANTHENE	10/27/99	440	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	191-24-2	BENZO(G,H,I)PERYLENE	10/27/99	170	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	207-08-9	BENZO(K)FLUORANTHENE	10/27/99	180	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-41-7	BERYLLIUM	10/27/99	0.24	mg/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	319-85-7	BETA-BHC	10/27/99	3.2	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/27/99	640	ug/Kg	Y	N	UJ	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	75-27-4	BROMODICHLOROMETHANE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	75-25-2	BROMOFORM	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	74-83-9	BROMOMETHANE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	85-68-7	BUTYLBENZYL PHTHALATE	10/27/99	640	ug/Kg	Y	N	UJ	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-43-9	CADMIUM	10/27/99	0.15	mg/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-70-2	CALCIUM	10/27/99	289000	mg/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	86-74-8	CARBAZOLE	10/27/99	100	ug/Kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	75-15-0	CARBON DISULFIDE	10/27/99	19	ug/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	56-23-5	CARBON TETRACHLORIDE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	108-90-7	CHLOROBENZENE	10/27/99	2	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	124-48-1	CHLORODIBROMOMETHANE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	75-00-3	CHLOROETHANE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	67-66-3	CHLOROFORM	10/27/99	3	ug/Kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	74-87-3	CHLOROMETHANE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-47-3	CHROMIUM	10/27/99	600	mg/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	218-01-9	CHRYSENE	10/27/99	340	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	156-59-2	CIS-1,2-DICHLOROETHENE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-48-4	COBALT	10/27/99	111	mg/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-50-8	COPPER	10/27/99	60	mg/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	57-12-5	CYANIDE	10/27/99	4.4	mg/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	EPA 335.2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	319-86-8	DELTA-BHC	10/27/99	3.2	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	53-70-3	DIBENZO(A,H)ANTHRACENE	10/27/99	640	ug/kg	Y	N	R	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	132-64-9	DIBENZOFURAN	10/27/99	200	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	60-57-1	DIELDRIN	10/27/99	6.4	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	84-66-2	DIETHYL PHTHALATE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	131-11-3	DIMETHYL PHTHALATE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	84-74-2	DI-N-BUTYL PHTHALATE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	117-84-0	DI-N-OCTYL PHTHALATE	10/27/99	640	ug/Kg	Y	N	R	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	959-98-8	ENDOSULFAN I	10/27/99	3.2	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	33213-65-9	ENDOSULFAN II	10/27/99	6.4	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	1031-07-8	ENDOSULFAN SULFATE	10/27/99	6.4	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	72-20-8	ENDRIN	10/27/99	6.4	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7421-93-4	ENDRIN ALDEHYDE	10/27/99	6.4	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	53494-70-5	ENDRIN KETONE	10/27/99	6.4	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	100-41-4	ETHYLBENZENE	10/27/99	48	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	206-44-0	FLUORANTHENE	10/27/99	500	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	86-73-7	FLUORENE	10/27/99	100	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	58-89-9	GAMMA-BHC (LINDANE)	10/27/99	3.2	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	5566-34-7	GAMMA-CHLORDANE	10/27/99	3.2	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	76-44-8	HEPTACHLOR	10/27/99	3.2	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	1024-57-3	HEPTACHLOR EPOXIDE	10/27/99	3.2	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	118-74-1	HEXACHLOROBENZENE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	87-68-3	HEXACHLOROBUTADIENE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	67-72-1	HEXACHLOROETHANE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	193-39-5	INDENO(1,2,3-CD)PYRENE	10/27/99	140	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7439-89-6	IRON	10/27/99	12600	mg/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	78-59-1	ISOPHORONE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7439-92-1	LEAD	10/27/99	340	mg/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7439-95-4	MAGNESIUM	10/27/99	10100	mg/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7439-96-5	MANGANESE	10/27/99	619	mg/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7439-97-6	MERCURY	10/27/99	0.13	mg/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	245.5M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	72-43-5	METHOXYCHLOR	10/27/99	32	ug/Kg	Y	N	UJ	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	22967-92-6	METHYL MERCURY	10/27/99	1.92	ng/g	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	1630/NONE
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	75-09-2	METHYLENE CHLORIDE	10/27/99	19	ug/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	91-20-3	NAPHTHALENE	10/27/99	2600	ug/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-02-0	NICKEL	10/27/99	327	mg/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	98-95-3	NITROBENZENE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	86-30-6	N-NITROSODIPHENYLAMINE	10/27/99	640	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	87-86-5	PENTACHLOROPHENOL	10/27/99	1600	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	85-01-8	PHENANTHRENE	10/27/99	840	ug/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	108-95-2	PHENOL	10/27/99	810	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-09-7	POTASSIUM	10/27/99	304	mg/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	129-00-0	PYRENE	10/27/99	1000	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7782-49-2	SELENIUM	10/27/99	2.5	mg/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE1.5in	SIEVE NO. 1.5INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE0.5in	SIEVE NO. 1/2INCH, PERCENT PASSIN	10/27/99	99.8	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE0.25in	SIEVE NO. 1/4INCH, PERCENT PASSIN	10/27/99	98.3	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE10	SIEVE NO. 10, PERCENT PASSING	10/27/99	91.7	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE1in	SIEVE NO. 1INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE200	SIEVE NO. 200, PERCENT PASSING	10/27/99	40.5	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE2in	SIEVE NO. 2INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE0.75in	SIEVE NO. 3/4INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE0.375in	SIEVE NO. 3/8INCH, PERCENT PASSIN	10/27/99	99.5	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE30	SIEVE NO. 30, PERCENT PASSING	10/27/99	78.7	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE3in	SIEVE NO. 3INCH, PERCENT PASSING	10/27/99	100	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE4	SIEVE NO. 4, PERCENT PASSING	10/27/99	97.1	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE40	SIEVE NO. 40, PERCENT PASSING	10/27/99	74.7	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE100	SIEVE, NO. 100, PERCENT PASSING	10/27/99	57.3	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	SIEVE60	SIEVE, NO. 60, PERCENT PASSING	10/27/99	66.5	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-22-4	SILVER	10/27/99	0.3	mg/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-23-5	SODIUM	10/27/99	646	mg/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	100-42-5	STYRENE	10/27/99	23	ug/Kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	127-18-4	TETRACHLOROETHENE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-28-0	THALLIUM	10/27/99	2	mg/kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	108-88-3	TOLUENE	10/27/99	2600	ug/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	TOC	TOTAL ORGANIC CARBON	10/27/99	27800	mg/Kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	SW9060
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	TSO	TOTAL SOLIDS	10/27/99	52.3	%	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	2540-G
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	8001-35-2	TOXAPHENE	10/27/99	320	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	156-60-5	TRANS-1,2-DICHLOROETHENE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	79-01-6	TRICHLOROETHENE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-62-2	VANADIUM	10/27/99	173	mg/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	75-01-4	VINYL CHLORIDE	10/27/99	19	ug/Kg	Y	N	U	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	1330-20-7	XYLENES, TOTAL	10/27/99	1500	ug/kg	Y	Y	J	1118897.7	920576.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-2	WA9029	7440-66-6	ZINC	10/27/99	100	mg/kg	Y	Y		1118897.7	920576.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/26/99	35.7	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/26/99	11.7	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/26/99	1.15	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	39227-28-6	1,2,3,4,7,8-HXCDD	10/26/99	0.44	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	70648-26-9	1,2,3,4,7,8-HXCDF	10/26/99	1.57	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	57653-85-7	1,2,3,6,7,8-HXCDD	10/26/99	2.37	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	57117-44-9	1,2,3,6,7,8-HXCDF	10/26/99	0.79	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	19408-74-3	1,2,3,7,8,9-HXCDD	10/26/99	1.28	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	72918-21-9	1,2,3,7,8,9-HXCDF	10/26/99	0.75	ng/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	40321-76-4	1,2,3,7,8-PECDD	10/26/99	0.35	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	57117-41-6	1,2,3,7,8-PECDF	10/26/99	0.97	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	60851-34-5	2,3,4,6,7,8-HXCDF	10/26/99	0.99	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	57117-31-4	2,3,4,7,8-PECDF	10/26/99	1.62	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	1746-01-6	2,3,7,8-TCDD	10/26/99	0.11	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	51207-31-9	2,3,7,8-TCDF	10/26/99	0.2	ng/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	3268-87-9	OCDD	10/26/99	261	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	39001-02-0	OCDF	10/26/99	18.4	ng/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	37871-00-4	TOTAL HPCDD	10/26/99	64.2	ng/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	38998-75-3	TOTAL HPCDF	10/26/99	29.7	ng/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	34465-46-8	TOTAL HXCDD	10/26/99	18.8	ng/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	55684-94-1	TOTAL HXCDF	10/26/99	15.5	ng/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	36088-22-9	TOTAL PECDD	10/26/99	3.91	ng/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	30402-15-4	TOTAL PECDF	10/26/99	18.1	ng/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	41903-57-5	TOTAL TCDD	10/26/99	3.8	ng/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9030	55722-27-5	Total TCDF	10/26/99	55.6	ng/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	71-55-6	1,1,1-TRICHLOROETHANE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	79-00-5	1,1,2-TRICHLOROETHANE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	75-34-3	1,1-DICHLOROETHANE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	75-35-4	1,1-DICHLOROETHENE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	120-82-1	1,2,4-TRICHLOROBENZENE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	95-50-1	1,2-DICHLOROBENZENE	10/27/99	390	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	107-06-2	1,2-DICHLOROETHANE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	78-87-5	1,2-DICHLOROPROPANE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	541-73-1	1,3-DICHLOROBENZENE	10/27/99	390	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	106-46-7	1,4-DICHLOROBENZENE	10/27/99	390	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	95-95-4	2,4,5-TRICHLOROPHENOL	10/27/99	980	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	88-06-2	2,4,6-TRICHLOROPHENOL	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	120-83-2	2,4-DICHLOROPHENOL	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	105-67-9	2,4-DIMETHYLPHENOL	10/27/99	44	ug/Kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	51-28-5	2,4-DINITROPHENOL	10/27/99	980	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	121-14-2	2,4-DINITROTOLUENE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	606-20-2	2,6-DINITROTOLUENE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	78-93-3	2-BUTANONE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	91-58-7	2-CHLORONAPHTHALENE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	95-57-8	2-CHLOROPHENOL	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	591-78-6	2-HEXANONE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	91-57-6	2-METHYLNAPHTHALENE	10/27/99	58	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	95-48-7	2-METHYLPHENOL	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	88-74-4	2-NITROANILINE	10/27/99	980	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	88-75-5	2-NITROPHENOL	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	91-94-1	3,3'-DICHLOROBENZIDINE	10/27/99	390	ug/Kg	Y	N	UJ	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	99-09-2	3-NITROANILINE	10/27/99	980	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	72-54-8	4,4'-DDD	10/27/99	7.8	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	72-55-9	4,4'-DDE	10/27/99	17	ug/Kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	50-29-3	4,4'-DDT	10/27/99	7.8	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/27/99	980	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	59-50-7	4-CHLORO-3-METHYLPHENOL	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	106-47-8	4-CHLOROANILINE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	108-10-1	4-METHYL-2-PENTANONE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	106-44-5	4-METHYLPHENOL	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	100-01-6	4-NITROANILINE	10/27/99	980	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	100-02-7	4-NITROPHENOL	10/27/99	980	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	83-32-9	ACENAPHTHENE	10/27/99	390	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	208-96-8	ACENAPHTHYLENE	10/27/99	390	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	67-64-1	ACETONE	10/27/99	48	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	309-00-2	ALDRIN	10/27/99	3.9	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	319-84-6	ALPHA-BHC	10/27/99	3.9	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	5103-71-9	ALPHA-CHLORDANE	10/27/99	3.9	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7429-90-5	ALUMINUM	10/27/99	2240	mg/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	120-12-7	ANTHRACENE	10/27/99	58	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-36-0	ANTIMONY	10/27/99	2.9	mg/kg	Y	N	UJ	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	12674-11-2	AROCLOR-1016	10/27/99	78	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	11104-28-2	AROCLOR-1221	10/27/99	160	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	11141-16-5	AROCLOR-1232	10/27/99	78	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	53469-21-9	AROCLOR-1242	10/27/99	78	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	12672-29-6	AROCLOR-1248	10/27/99	78	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	11097-69-1	AROCLOR-1254	10/27/99	550	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	11096-82-5	AROCLOR-1260	10/27/99	78	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	11100-14-4	AROCLOR-1268	10/27/99	160	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-38-2	ARSENIC	10/27/99	26.5	mg/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-39-3	BARIUM	10/27/99	82.1	mg/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	71-43-2	BENZENE	10/27/99	12	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	56-55-3	BENZO(A)ANTHRACENE	10/27/99	210	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	50-32-8	BENZO(A)PYRENE	10/27/99	230	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	205-99-2	BENZO(B)FLUORANTHENE	10/27/99	360	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	191-24-2	BENZO(G,H,I)PERYLENE	10/27/99	140	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	207-08-9	BENZO(K)FLUORANTHENE	10/27/99	120	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-41-7	BERYLLIUM	10/27/99	5.8	mg/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	319-85-7	BETA-BHC	10/27/99	3.9	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/27/99	390	ug/Kg	Y	N	UJ	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	75-27-4	BROMODICHLOROMETHANE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	75-25-2	BROMOFORM	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	74-83-9	BROMOMETHANE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	85-68-7	BUTYLBENZYL PHTHALATE	10/27/99	390	ug/Kg	Y	N	UJ	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-43-9	CADMIUM	10/27/99	0.35	mg/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-70-2	CALCIUM	10/27/99	125000	mg/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	86-74-8	CARBAZOLE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	75-15-0	CARBON DISULFIDE	10/27/99	6	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	56-23-5	CARBON TETRACHLORIDE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	108-90-7	CHLOROBENZENE	10/27/99	12	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	124-48-1	CHLORODIBROMOMETHANE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	75-00-3	CHLOROETHANE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	67-66-3	CHLOROFORM	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	74-87-3	CHLOROMETHANE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-47-3	CHROMIUM	10/27/99	12400	mg/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	218-01-9	CHRYSENE	10/27/99	260	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	156-59-2	CIS-1,2-DICHLOROETHENE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-48-4	COBALT	10/27/99	5460	mg/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-50-8	COPPER	10/27/99	306	mg/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	57-12-5	CYANIDE	10/27/99	0.59	mg/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	EPA 335.2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	319-86-8	DELTA-BHC	10/27/99	11	ug/Kg	Y	Y	JN	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	53-70-3	DIBENZO(A,H)ANTHRACENE	10/27/99	390	ug/kg	Y	N	R	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	132-64-9	DIBENZOFURAN	10/27/99	390	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	60-57-1	DIELDRIN	10/27/99	7.8	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	84-66-2	DIETHYL PHTHALATE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	131-11-3	DIMETHYL PHTHALATE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	84-74-2	DI-N-BUTYL PHTHALATE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	117-84-0	DI-N-OCTYL PHTHALATE	10/27/99	390	ug/Kg	Y	N	R	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	959-98-8	ENDOSULFAN I	10/27/99	3.9	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	33213-65-9	ENDOSULFAN II	10/27/99	7.8	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	1031-07-8	ENDOSULFAN SULFATE	10/27/99	7.8	ug/Kg	Y	N	UJ	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	72-20-8	ENDRIN	10/27/99	7.8	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7421-93-4	ENDRIN ALDEHYDE	10/27/99	7.8	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	53494-70-5	ENDRIN KETONE	10/27/99	7.8	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	100-41-4	ETHYLBENZENE	10/27/99	12	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	206-44-0	FLUORANTHENE	10/27/99	270	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	86-73-7	FLUORENE	10/27/99	390	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	58-89-9	GAMMA-BHC (LINDANE)	10/27/99	3.9	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	5566-34-7	GAMMA-CHLORDANE	10/27/99	3.9	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	76-44-8	HEPTACHLOR	10/27/99	3.9	ug/Kg	Y	N	R	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	1024-57-3	HEPTACHLOR EPOXIDE	10/27/99	3.9	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	118-74-1	HEXACHLOROBENZENE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	87-68-3	HEXACHLOROBUTADIENE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	67-72-1	HEXACHLOROETHANE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	193-39-5	INDENO(1,2,3-CD)PYRENE	10/27/99	120	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7439-89-6	IRON	10/27/99	229000	mg/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	78-59-1	ISOPHORONE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7439-92-1	LEAD	10/27/99	3.7	mg/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7439-95-4	MAGNESIUM	10/27/99	16200	mg/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7439-96-5	MANGANESE	10/27/99	1520	mg/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7439-97-6	MERCURY	10/27/99	0.06	mg/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	245.5M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	72-43-5	METHOXYCHLOR	10/27/99	39	ug/Kg	Y	N	UJ	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	22967-92-6	METHYL MERCURY	10/27/99	4.14	ng/g	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	1630/NONE
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	75-09-2	METHYLENE CHLORIDE	10/27/99	12	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	91-20-3	NAPHTHALENE	10/27/99	390	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-02-0	NICKEL	10/27/99	1200	mg/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	98-95-3	NITROBENZENE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	86-30-6	N-NITROSODIPHENYLAMINE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	87-86-5	PENTACHLOROPHENOL	10/27/99	980	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	85-01-8	PHENANTHRENE	10/27/99	260	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	108-95-2	PHENOL	10/27/99	67	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-09-7	POTASSIUM	10/27/99	275	mg/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	129-00-0	PYRENE	10/27/99	750	ug/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7782-49-2	SELENIUM	10/27/99	42.5	mg/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE1.5in	SIEVE NO. 1.5INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE0.5in	SIEVE NO. 1/2INCH, PERCENT PASSIN	10/27/99	99.5	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE0.25in	SIEVE NO. 1/4INCH, PERCENT PASSIN	10/27/99	97.7	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE10	SIEVE NO. 10, PERCENT PASSING	10/27/99	73.8	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE1in	SIEVE NO. 1INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE200	SIEVE NO. 200, PERCENT PASSING	10/27/99	5.7	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE2in	SIEVE NO. 2INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE0.75in	SIEVE NO. 3/4INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE0.375in	SIEVE NO. 3/8INCH, PERCENT PASSIN	10/27/99	99	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE30	SIEVE NO. 30, PERCENT PASSING	10/27/99	39.8	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE3in	SIEVE NO. 3INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE4	SIEVE NO. 4, PERCENT PASSING	10/27/99	94.9	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE40	SIEVE NO. 40, PERCENT PASSING	10/27/99	32.3	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE100	SIEVE, NO. 100, PERCENT PASSING	10/27/99	14	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	SIEVE60	SIEVE, NO. 60, PERCENT PASSING	10/27/99	21.1	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASTM D422

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-22-4	SILVER	10/27/99	0.99	mg/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-23-5	SODIUM	10/27/99	221	mg/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	100-42-5	STYRENE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	127-18-4	TETRACHLOROETHENE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-28-0	THALLIUM	10/27/99	6	mg/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	108-88-3	TOLUENE	10/27/99	12	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	TOC	TOTAL ORGANIC CARBON	10/27/99	21400	mg/Kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	SW9060
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	TSO	TOTAL SOLIDS	10/27/99	85.1	%	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	2540-G
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	8001-35-2	TOXAPHENE	10/27/99	390	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	156-60-5	TRANS-1,2-DICHLOROETHENE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	79-01-6	TRICHLOROETHENE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-62-2	VANADIUM	10/27/99	9670	mg/kg	Y	Y		1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	75-01-4	VINYL CHLORIDE	10/27/99	12	ug/Kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	1330-20-7	XYLENES, TOTAL	10/27/99	12	ug/kg	Y	N	U	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-3	WA9031	7440-66-6	ZINC	10/27/99	20	mg/kg	Y	Y	J	1118507.8	920174.2	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	35822-46-9	1,2,3,4,6,7,8-HPCDD	10/26/99	565	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	67562-39-4	1,2,3,4,6,7,8-HPCDF	10/26/99	74.3	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	55673-89-7	1,2,3,4,7,8,9-HPCDF	10/26/99	11	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	39227-28-6	1,2,3,4,7,8-HXCDD	10/26/99	3.38	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	70648-26-9	1,2,3,4,7,8-HXCDF	10/26/99	15.4	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	57653-85-7	1,2,3,6,7,8-HXCDD	10/26/99	11.6	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	57117-44-9	1,2,3,6,7,8-HXCDF	10/26/99	6.63	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	19408-74-3	1,2,3,7,8,9-HXCDD	10/26/99	11.3	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	72918-21-9	1,2,3,7,8,9-HXCDF	10/26/99	0.66	ng/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	40321-76-4	1,2,3,7,8-PECDD	10/26/99	2.02	ng/kg	Y	Y	M	1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	57117-41-6	1,2,3,7,8-PECDF	10/26/99	5.3	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	60851-34-5	2,3,4,6,7,8-HXCDF	10/26/99	3.58	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	57117-31-4	2,3,4,7,8-PECDF	10/26/99	6.63	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	1746-01-6	2,3,7,8-TCDD	10/26/99	2.4	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	51207-31-9	2,3,7,8-TCDF	10/26/99	11.4	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	3268-87-9	OCDD	10/26/99	3320	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	39001-02-0	OCDF	10/26/99	310	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	37871-00-4	TOTAL HPCDD	10/26/99	2130	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	38998-75-3	TOTAL HPCDF	10/26/99	238	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	34465-46-8	TOTAL HXCDD	10/26/99	202	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	55684-94-1	TOTAL HXCDF	10/26/99	114	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	36088-22-9	TOTAL PECDD	10/26/99	26.8	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	30402-15-4	TOTAL PECDF	10/26/99	95.6	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	41903-57-5	TOTAL TCDD	10/26/99	42.5	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9032	55722-27-5	Total TCDF	10/26/99	147	ng/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW8290
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	71-55-6	1,1,1-TRICHLOROETHANE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	79-00-5	1,1,2-TRICHLOROETHANE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	75-34-3	1,1-DICHLOROETHANE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	75-35-4	1,1-DICHLOROETHENE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	120-82-1	1,2,4-TRICHLOROBENZENE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	95-50-1	1,2-DICHLOROBENZENE	10/27/99	100	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	107-06-2	1,2-DICHLOROETHANE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	78-87-5	1,2-DICHLOROPROPANE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	541-73-1	1,3-DICHLOROBENZENE	10/27/99	590	ug/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	106-46-7	1,4-DICHLOROBENZENE	10/27/99	100	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	95-95-4	2,4,5-TRICHLOROPHENOL	10/27/99	1500	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	88-06-2	2,4,6-TRICHLOROPHENOL	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	120-83-2	2,4-DICHLOROPHENOL	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	105-67-9	2,4-DIMETHYLPHENOL	10/27/99	110	ug/Kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	51-28-5	2,4-DINITROPHENOL	10/27/99	1500	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	121-14-2	2,4-DINITROTOLUENE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	606-20-2	2,6-DINITROTOLUENE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	78-93-3	2-BUTANONE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	91-58-7	2-CHLORONAPHTHALENE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	95-57-8	2-CHLOROPHENOL	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	591-78-6	2-HEXANONE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	91-57-6	2-METHYLNAPHTHALENE	10/27/99	430	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	95-48-7	2-METHYLPHENOL	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	88-74-4	2-NITROANILINE	10/27/99	1500	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	88-75-5	2-NITROPHENOL	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	91-94-1	3,3'-DICHLOROBENZIDINE	10/27/99	590	ug/Kg	Y	N	R	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	99-09-2	3-NITROANILINE	10/27/99	1500	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	72-54-8	4,4'-DDD	10/27/99	12	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	72-55-9	4,4'-DDE	10/27/99	12	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	50-29-3	4,4'-DDT	10/27/99	12	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/27/99	1500	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	59-50-7	4-CHLORO-3-METHYLPHENOL	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	106-47-8	4-CHLOROANILINE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	108-10-1	4-METHYL-2-PENTANONE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	106-44-5	4-METHYLPHENOL	10/27/99	82	ug/Kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	100-01-6	4-NITROANILINE	10/27/99	1500	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	100-02-7	4-NITROPHENOL	10/27/99	1500	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	83-32-9	ACENAPHTHENE	10/27/99	280	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	208-96-8	ACENAPHTHYLENE	10/27/99	510	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	67-64-1	ACETONE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	309-00-2	ALDRIN	10/27/99	5.9	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	319-84-6	ALPHA-BHC	10/27/99	5.9	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	5103-71-9	ALPHA-CHLORDANE	10/27/99	9.9	ug/Kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7429-90-5	ALUMINUM	10/27/99	4230	mg/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	120-12-7	ANTHRACENE	10/27/99	990	ug/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-36-0	ANTIMONY	10/27/99	1.2	mg/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	12674-11-2	AROCLOR-1016	10/27/99	59	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	11104-28-2	AROCLOR-1221	10/27/99	120	ug/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	11141-16-5	AROCLOR-1232	10/27/99	59	ug/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	53469-21-9	AROCLOR-1242	10/27/99	59	ug/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	12672-29-6	AROCLOR-1248	10/27/99	59	ug/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	11097-69-1	AROCLOR-1254	10/27/99	59	ug/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	11096-82-5	AROCLOR-1260	10/27/99	69	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	11100-14-4	AROCLOR-1268	10/27/99	120	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-38-2	ARSENIC	10/27/99	29.2	mg/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-39-3	BARIUM	10/27/99	73.5	mg/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	71-43-2	BENZENE	10/27/99	18	ug/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	56-55-3	BENZO(A)ANTHRACENE	10/27/99	6100	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	50-32-8	BENZO(A)PYRENE	10/27/99	4600	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	205-99-2	BENZO(B)FLUORANTHENE	10/27/99	11000	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	191-24-2	BENZO(G,H,I)PERYLENE	10/27/99	4400	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	207-08-9	BENZO(K)FLUORANTHENE	10/27/99	2200	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-41-7	BERYLLIUM	10/27/99	0.7	mg/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	319-85-7	BETA-BHC	10/27/99	5.9	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/27/99	590	ug/Kg	Y	N	R	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	75-27-4	BROMODICHLOROMETHANE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	75-25-2	BROMOFORM	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	74-83-9	BROMOMETHANE	10/27/99	18	ug/Kg	Y	N	UJ	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	85-68-7	BUTYLBENZYL PHTHALATE	10/27/99	590	ug/Kg	Y	N	R	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-43-9	CADMIUM	10/27/99	0.41	mg/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-70-2	CALCIUM	10/27/99	36400	mg/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	86-74-8	CARBAZOLE	10/27/99	430	ug/Kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	75-15-0	CARBON DISULFIDE	10/27/99	18	ug/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	56-23-5	CARBON TETRACHLORIDE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	108-90-7	CHLOROBENZENE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	124-48-1	CHLORODIBROMOMETHANE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	75-00-3	CHLOROETHANE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	67-66-3	CHLOROFORM	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	74-87-3	CHLOROMETHANE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-47-3	CHROMIUM	10/27/99	53.9	mg/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	218-01-9	CHRYSENE	10/27/99	7900	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	156-59-2	CIS-1,2-DICHLOROETHENE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-48-4	COBALT	10/27/99	15.6	mg/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-50-8	COPPER	10/27/99	74.1	mg/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	57-12-5	CYANIDE	10/27/99	0.88	mg/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	EPA 335.2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	319-86-8	DELTA-BHC	10/27/99	5.9	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	53-70-3	DIBENZO(A,H)ANTHRACENE	10/27/99	1100	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	132-64-9	DIBENZOFURAN	10/27/99	320	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	60-57-1	DIELDRIN	10/27/99	5.9	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	84-66-2	DIETHYL PHTHALATE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	131-11-3	DIMETHYL PHTHALATE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	84-74-2	DI-N-BUTYL PHTHALATE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	117-84-0	DI-N-OCTYL PHTHALATE	10/27/99	590	ug/Kg	Y	N	R	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	959-98-8	ENDOSULFAN I	10/27/99	5.9	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	33213-65-9	ENDOSULFAN II	10/27/99	13	ug/Kg	Y	Y	JN	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	1031-07-8	ENDOSULFAN SULFATE	10/27/99	13	ug/Kg	Y	Y	JN	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	72-20-8	ENDRIN	10/27/99	69	ug/Kg	Y	Y	JN	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7421-93-4	ENDRIN ALDEHYDE	10/27/99	12	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	53494-70-5	ENDRIN KETONE	10/27/99	35	ug/Kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	100-41-4	ETHYLBENZENE	10/27/99	18	ug/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	206-44-0	FLUORANTHENE	10/27/99	10000	ug/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	86-73-7	FLUORENE	10/27/99	13000	ug/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	58-89-9	GAMMA-BHC (LINDANE)	10/27/99	5.9	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	5566-34-7	GAMMA-CHLORDANE	10/27/99	5.9	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	76-44-8	HEPTACHLOR	10/27/99	5.9	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	1024-57-3	HEPTACHLOR EPOXIDE	10/27/99	7.8	ug/Kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	118-74-1	HEXACHLOROBENZENE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	87-68-3	HEXACHLOROBUTADIENE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	67-72-1	HEXACHLOROETHANE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	193-39-5	INDENO(1,2,3-CD)PYRENE	10/27/99	3600	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7439-89-6	IRON	10/27/99	29600	mg/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	78-59-1	ISOPHORONE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7439-92-1	LEAD	10/27/99	154	mg/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7439-95-4	MAGNESIUM	10/27/99	6330	mg/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7439-96-5	MANGANESE	10/27/99	153	mg/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7439-97-6	MERCURY	10/27/99	1.2	mg/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	245.5M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	72-43-5	METHOXYCHLOR	10/27/99	59	ug/Kg	Y	N	UJ	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	22967-92-6	METHYL MERCURY	10/27/99	2.81	ng/g	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	1630/NONE
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	75-09-2	METHYLENE CHLORIDE	10/27/99	18	ug/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	91-20-3	NAPHTHALENE	10/27/99	780	ug/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-02-0	NICKEL	10/27/99	26.8	mg/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	98-95-3	NITROBENZENE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	86-30-6	N-NITROSODIPHENYLAMINE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	87-86-5	PENTACHLOROPHENOL	10/27/99	1500	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	85-01-8	PHENANTHRENE	10/27/99	5500	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	108-95-2	PHENOL	10/27/99	200	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-09-7	POTASSIUM	10/27/99	1020	mg/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	129-00-0	PYRENE	10/27/99	22000	ug/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-2
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7782-49-2	SELENIUM	10/27/99	4.4	mg/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE1.5in	SIEVE NO. 1.5INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE0.5in	SIEVE NO. 1/2INCH, PERCENT PASSIN	10/27/99	94.4	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE0.25in	SIEVE NO. 1/4INCH, PERCENT PASSIN	10/27/99	89.4	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE10	SIEVE NO. 10, PERCENT PASSING	10/27/99	77.7	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE1in	SIEVE NO. 1INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE200	SIEVE NO. 200, PERCENT PASSING	10/27/99	16	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE2in	SIEVE NO. 2INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE0.75in	SIEVE NO. 3/4INCH, PERCENT PASSIN	10/27/99	98	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE0.375in	SIEVE NO. 3/8INCH, PERCENT PASSIN	10/27/99	92.7	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE30	SIEVE NO. 30, PERCENT PASSING	10/27/99	53	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE3in	SIEVE NO. 3INCH, PERCENT PASSIN	10/27/99	100	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE4	SIEVE NO. 4, PERCENT PASSING	10/27/99	87.3	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE40	SIEVE NO. 40, PERCENT PASSING	10/27/99	46.2	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE100	SIEVE, NO. 100, PERCENT PASSING	10/27/99	25.9	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	SIEVE60	SIEVE, NO. 60, PERCENT PASSING	10/27/99	35.1	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	ASTM D422
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-22-4	SILVER	10/27/99	0.27	mg/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-23-5	SODIUM	10/27/99	400	mg/kg	Y	Y	J	1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	100-42-5	STYRENE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	127-18-4	TETRACHLOROETHENE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-28-0	THALLIUM	10/27/99	1.8	mg/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	108-88-3	TOLUENE	10/27/99	18	ug/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	TOC	TOTAL ORGANIC CARBON	10/27/99	188000	mg/Kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	SW9060
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	TSO	TOTAL SOLIDS	10/27/99	56.8	%	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	2540-G
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	8001-35-2	TOXAPHENE	10/27/99	590	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-3
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	156-60-5	TRANS-1,2-DICHLOROETHENE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	79-01-6	TRICHLOROETHENE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-62-2	VANADIUM	10/27/99	39.9	mg/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	75-01-4	VINYL CHLORIDE	10/27/99	18	ug/Kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	1330-20-7	XYLENES, TOTAL	10/27/99	18	ug/kg	Y	N	U	1117383	921437.1	0	0.5	SED	SOIL	Soil	ASP 95-1
Tributary 5A	Sediment	WA-5A-SED-4	WA9033	7440-66-6	ZINC	10/27/99	158	mg/kg	Y	Y		1117383	921437.1	0	0.5	SED	SOIL	Soil	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	71-55-6	1,1,1-TRICHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	79-00-5	1,1,2-TRICHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	75-34-3	1,1-DICHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	75-35-4	1,1-DICHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	120-82-1	1,2,4-TRICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	95-50-1	1,2-DICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	107-06-2	1,2-DICHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	78-87-5	1,2-DICHLOROPROPANE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	541-73-1	1,3-DICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	106-46-7	1,4-DICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	95-95-4	2,4,5-TRICHLOROPHENOL	10/25/99	26	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	88-06-2	2,4,6-TRICHLOROPHENOL	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	120-83-2	2,4-DICHLOROPHENOL	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	105-67-9	2,4-DIMETHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	51-28-5	2,4-DINITROPHENOL	10/25/99	26	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	121-14-2	2,4-DINITROTOLUENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	606-20-2	2,6-DINITROTOLUENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	78-93-3	2-BUTANONE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	91-58-7	2-CHLORONAPHTHALENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	95-57-8	2-CHLOROPHENOL	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	591-78-6	2-HEXANONE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	91-57-6	2-METHYLNAPHTHALENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	95-48-7	2-METHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	88-74-4	2-NITROANILINE	10/25/99	26	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	88-75-5	2-NITROPHENOL	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	91-94-1	3,3'-DICHLOROBENZIDINE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	99-09-2	3-NITROANILINE	10/25/99	26	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	72-54-8	4,4'-DDD	10/25/99	0.1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	72-55-9	4,4'-DDE	10/25/99	0.1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	50-29-3	4,4'-DDT	10/25/99	0.1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/25/99	26	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	59-50-7	4-CHLORO-3-METHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	106-47-8	4-CHLOROANILINE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	108-10-1	4-METHYL-2-PENTANONE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	106-44-5	4-METHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	100-01-6	4-NITROANILINE	10/25/99	26	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	100-02-7	4-NITROPHENOL	10/25/99	26	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	83-32-9	ACENAPHTHENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	208-96-8	ACENAPHTHYLENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	67-64-1	ACETONE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	309-00-2	ALDRIN	10/25/99	0.052	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	319-84-6	ALPHA-BHC	10/25/99	0.052	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	5103-71-9	ALPHA-CHLORDANE	10/25/99	0.052	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7429-90-5	ALUMINUM	10/25/99	0.0516	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7429-90-5	ALUMINUM	10/25/99	0.304	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	120-12-7	ANTHRACENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-36-0	ANTIMONY	10/25/99	0.0025	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-36-0	ANTIMONY	10/25/99	0.0025	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	12674-11-2	AROCLOR-1016	10/25/99	1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	11104-28-2	AROCLOR-1221	10/25/99	2.1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	11141-16-5	AROCLOR-1232	10/25/99	1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	53469-21-9	AROCLOR-1242	10/25/99	1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	12672-29-6	AROCLOR-1248	10/25/99	1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	11097-69-1	AROCLOR-1254	10/25/99	1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	11096-82-5	AROCLOR-1260	10/25/99	1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	11100-14-4	AROCLOR-1268	10/25/99	2	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-38-2	ARSENIC	10/25/99	0.0025	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-38-2	ARSENIC	10/25/99	0.0025	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-39-3	BARIUM	10/25/99	0.0635	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-39-3	BARIUM	10/25/99	0.0706	mg/L	Y	Y	J	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	71-43-2	BENZENE	10/25/99	6	ug/L	Y	Y	J	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	56-55-3	BENZO(A)ANTHRACENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	50-32-8	BENZO(A)PYRENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	205-99-2	BENZO(B)FLUORANTHENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	191-24-2	BENZO(G,H,I)PERYLENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	207-08-9	BENZO(K)FLUORANTHENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-41-7	BERYLLIUM	10/25/99	0.00004	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-41-7	BERYLLIUM	10/25/99	0.00004	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	319-85-7	BETA-BHC	10/25/99	0.052	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	39638-32-9	BIS(2-CHLOROISOPROPYL)ETHER	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	75-27-4	BROMODICHLOROMETHANE	10/25/99	2	ug/L	Y	Y	J	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	75-25-2	BROMOFORM	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	74-83-9	BROMOMETHANE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	85-68-7	BUTYLBENZYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-43-9	CADMIUM	10/25/99	0.0003	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-43-9	CADMIUM	10/25/99	0.003	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-70-2	CALCIUM	10/25/99	146	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-70-2	CALCIUM	10/25/99	151	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	86-74-8	CARBAZOLE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	124-38-9	CARBON DIOXIDE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	56-23-5	CARBON TETRACHLORIDE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	108-90-7	CHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	124-48-1	CHLORODIBROMOMETHANE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	75-00-3	CHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	67-66-3	CHLOROFORM	10/25/99	7	ug/L	Y	Y	J	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	74-87-3	CHLOROMETHANE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-47-3	CHROMIUM	10/25/99	0.0148	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-47-3	CHROMIUM	10/25/99	0.0048	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	218-01-9	CHRYSENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	156-59-2	CIS-1,2-DICHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-48-4	COBALT	10/25/99	0.0031	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-48-4	COBALT	10/25/99	0.0043	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-50-8	COPPER	10/25/99	0.0064	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-50-8	COPPER	10/25/99	0.0034	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	57-12-5	CYANIDE	10/25/99	0.01	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	EPA 335.2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	319-86-8	DELTA-BHC	10/25/99	0.052	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	53-70-3	DIBENZO(A,H)ANTHRACENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	132-64-9	DIBENZOFURAN	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	60-57-1	DIELDRIN	10/25/99	0.1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	84-66-2	DIETHYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	131-11-3	DIMETHYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	84-74-2	DI-N-BUTYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	117-84-0	DI-N-OCTYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	959-98-8	ENDOSULFAN I	10/25/99	0.052	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	33213-65-9	ENDOSULFAN II	10/25/99	0.1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	1031-07-8	ENDOSULFAN SULFATE	10/25/99	0.1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	72-20-8	ENDRIN	10/25/99	0.1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7421-93-4	ENDRIN ALDEHYDE	10/25/99	0.1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	53494-70-5	ENDRIN KETONE	10/25/99	0.1	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	100-41-4	ETHYLBENZENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	206-44-0	FLUORANTHENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	86-73-7	FLUORENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	58-89-9	GAMMA-BHC (LINDANE)	10/25/99	0.052	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	5566-34-7	GAMMA-CHLORDANE	10/25/99	0.052	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	HARD	HARDNESS (AS CACO3)	10/25/99	464	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	2340-B
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	76-44-8	HEPTACHLOR	10/25/99	0.052	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	1024-57-3	HEPTACHLOR EPOXIDE	10/25/99	0.052	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	118-74-1	HEXACHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	87-68-3	HEXACHLOROBUTADIENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	67-72-1	HEXACHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	193-39-5	INDENO(1,2,3-CD)PYRENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7439-89-6	IRON	10/25/99	0.428	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7439-89-6	IRON	10/25/99	0.0243	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	78-59-1	ISOPHORONE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7439-92-1	LEAD	10/25/99	0.0013	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7439-92-1	LEAD	10/25/99	0.0013	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7439-95-4	MAGNESIUM	10/25/99	21	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7439-95-4	MAGNESIUM	10/25/99	20.3	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7439-96-5	MANGANESE	10/25/99	0.0391	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7439-96-5	MANGANESE	10/25/99	0.0537	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7439-97-6	MERCURY	10/25/99	0.00011	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	245.5M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7439-97-6	MERCURY	10/25/99	0.00011	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	245.5M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	72-43-5	METHOXYCHLOR	10/25/99	0.052	ug/L	Y	N	UJ	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	22967-92-6	METHYL MERCURY	10/25/99	315	ng/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	1630/NONE
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	75-09-2	METHYLENE CHLORIDE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	91-20-3	NAPHTHALENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-02-0	NICKEL	10/25/99	0.999	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-02-0	NICKEL	10/25/99	0.11	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	98-95-3	NITROBENZENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	1621-64-7	N-NITROSODI-N-PROPYLAMINE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	86-30-6	N-NITROSODIPHENYLAMINE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	87-86-5	PENTACHLOROPHENOL	10/25/99	26	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	85-01-8	PHENANTHRENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	108-95-2	PHENOL	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-09-7	POTASSIUM	10/25/99	4.25	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-09-7	POTASSIUM	10/25/99	4.14	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	129-00-0	PYRENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7782-49-2	SELENIUM	10/25/99	0.003	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7782-49-2	SELENIUM	10/25/99	0.003	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-22-4	SILVER	10/25/99	0.00078	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-22-4	SILVER	10/25/99	0.00078	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-23-5	SODIUM	10/25/99	309	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-23-5	SODIUM	10/25/99	299	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	EIM-132	SOLIDS, TOTAL SUSPENDED (TSS)	10/25/99	12	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	EPA 160.2
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	100-42-5	STYRENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	127-18-4	TETRACHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-28-0	THALLIUM	10/25/99	0.0051	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-28-0	THALLIUM	10/25/99	0.0051	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	108-88-3	TOLUENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	ALK	TOTAL ALKALINITY	10/25/99	140	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	EPA 310.1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	8001-35-2	TOXAPHENE	10/25/99	5.2	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	156-60-5	TRANS-1,2-DICHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	79-01-6	TRICHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-62-2	VANADIUM	10/25/99	0.0025	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-62-2	VANADIUM	10/25/99	0.005	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	75-01-4	VINYL CHLORIDE	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	1330-20-7	XYLENES, TOTAL	10/25/99	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	WATER	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334	7440-66-6	ZINC	10/25/99	0.0099	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-1	WA9334F	7440-66-6	ZINC	10/25/99	0.0078	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	71-55-6	1,1,1-TRICHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	79-00-5	1,1,2-TRICHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	75-34-3	1,1-DICHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	75-35-4	1,1-DICHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	120-82-1	1,2,4-TRICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	95-50-1	1,2-DICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	107-06-2	1,2-DICHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	78-87-5	1,2-DICHLOROPROPANE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	541-73-1	1,3-DICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	106-46-7	1,4-DICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	95-95-4	2,4,5-TRICHLOROPHENOL	10/25/99	26	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	88-06-2	2,4,6-TRICHLOROPHENOL	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	120-83-2	2,4-DICHLOROPHENOL	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	105-67-9	2,4-DIMETHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	51-28-5	2,4-DINITROPHENOL	10/25/99	26	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	121-14-2	2,4-DINITROTOLUENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	606-20-2	2,6-DINITROTOLUENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	78-93-3	2-BUTANONE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	91-58-7	2-CHLORONAPHTHALENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	95-57-8	2-CHLOROPHENOL	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	591-78-6	2-HEXANONE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	91-57-6	2-METHYLNAPHTHALENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	95-48-7	2-METHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	88-74-4	2-NITROANILINE	10/25/99	26	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	88-75-5	2-NITROPHENOL	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	91-94-1	3,3'-DICHLOROBENZIDINE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	99-09-2	3-NITROANILINE	10/25/99	26	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	72-54-8	4,4'-DDD	10/25/99	0.11	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	72-55-9	4,4'-DDE	10/25/99	0.11	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	50-29-3	4,4'-DDT	10/25/99	0.11	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/25/99	26	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	59-50-7	4-CHLORO-3-METHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	106-47-8	4-CHLOROANILINE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	108-10-1	4-METHYL-2-PENTANONE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	106-44-5	4-METHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	100-01-6	4-NITROANILINE	10/25/99	26	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	100-02-7	4-NITROPHENOL	10/25/99	26	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	83-32-9	ACENAPHTHENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	208-96-8	ACENAPHTHYLENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	67-64-1	ACETONE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	309-00-2	ALDRIN	10/25/99	0.054	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	319-84-6	ALPHA-BHC	10/25/99	0.054	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	5103-71-9	ALPHA-CHLORDANE	10/25/99	0.054	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7429-90-5	ALUMINUM	10/25/99	0.0447	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7429-90-5	ALUMINUM	10/25/99	0.665	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	120-12-7	ANTHRACENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-36-0	ANTIMONY	10/25/99	0.0026	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-36-0	ANTIMONY	10/25/99	0.003	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	12674-11-2	AROCLOR-1016	10/25/99	1.1	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	11104-28-2	AROCLOR-1221	10/25/99	2.2	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	11141-16-5	AROCLOR-1232	10/25/99	1.1	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	53469-21-9	AROCLOR-1242	10/25/99	1.1	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	12672-29-6	AROCLOR-1248	10/25/99	1.1	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	11097-69-1	AROCLOR-1254	10/25/99	1.1	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	11096-82-5	AROCLOR-1260	10/25/99	1.1	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	11100-14-4	AROCLOR-1268	10/25/99	2	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-38-2	ARSENIC	10/25/99	0.0025	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-38-2	ARSENIC	10/25/99	0.0025	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-39-3	BARIUM	10/25/99	0.0547	mg/L	Y	Y	J	1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-39-3	BARIUM	10/25/99	0.0481	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	71-43-2	BENZENE	10/25/99	20	ug/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	56-55-3	BENZO(A)ANTHRACENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	50-32-8	BENZO(A)PYRENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	205-99-2	BENZO(B)FLUORANTHENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	191-24-2	BENZO(G,H,I)PERYLENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	207-08-9	BENZO(K)FLUORANTHENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-41-7	BERYLLIUM	10/25/99	0.00004	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-41-7	BERYLLIUM	10/25/99	0.00004	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	319-85-7	BETA-BHC	10/25/99	0.054	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	75-27-4	BROMODICHLOROMETHANE	10/25/99	2	ug/L	Y	Y	J	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	75-25-2	BROMOFORM	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	74-83-9	BROMOMETHANE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	85-68-7	BUTYLBENZYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-43-9	CADMIUM	10/25/99	0.0003	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-43-9	CADMIUM	10/25/99	0.0003	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-70-2	CALCIUM	10/25/99	165	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-70-2	CALCIUM	10/25/99	161	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	86-74-8	CARBAZOLE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	75-15-0	CARBON DISULFIDE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	56-23-5	CARBON TETRACHLORIDE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	108-90-7	CHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	124-48-1	CHLORODIBROMOMETHANE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	75-00-3	CHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	67-66-3	CHLOROFORM	10/25/99	8	ug/L	Y	Y	J	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	74-87-3	CHLOROMETHANE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-47-3	CHROMIUM	10/25/99	0.0047	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-47-3	CHROMIUM	10/25/99	0.016	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	218-01-9	CHRYSENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	156-59-2	CIS-1,2-DICHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-48-4	COBALT	10/25/99	0.0052	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-48-4	COBALT	10/25/99	0.36	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-50-8	COPPER	10/25/99	0.003	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-50-8	COPPER	10/25/99	0.0071	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	57-12-5	CYANIDE	10/25/99	0.01	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	EPA 335.2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	319-86-8	DELTA-BHC	10/25/99	0.054	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	53-70-3	DIBENZO(A,H)ANTHRACENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	132-64-9	DIBENZOFURAN	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	60-57-1	DIELDRIN	10/25/99	0.017	ug/L	Y	Y	J	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	84-66-2	DIETHYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	131-11-3	DIMETHYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	84-74-2	DI-N-BUTYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	117-84-0	DI-N-OCTYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	959-98-8	ENDOSULFAN I	10/25/99	0.054	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	33213-65-9	ENDOSULFAN II	10/25/99	0.11	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	1031-07-8	ENDOSULFAN SULFATE	10/25/99	0.11	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	72-20-8	ENDRIN	10/25/99	0.11	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7421-93-4	ENDRIN ALDEHYDE	10/25/99	0.11	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	53494-70-5	ENDRIN KETONE	10/25/99	0.11	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	100-41-4	ETHYLBENZENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	206-44-0	FLUORANTHENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	86-73-7	FLUORENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	58-89-9	GAMMA-BHC (LINDANE)	10/25/99	0.054	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	5566-34-7	GAMMA-CHLORDANE	10/25/99	0.054	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	HARD	HARDNESS (AS CACO3)	10/25/99	507	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	2340-B
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	76-44-8	HEPTACHLOR	10/25/99	0.054	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	1024-57-3	HEPTACHLOR EPOXIDE	10/25/99	0.054	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	118-74-1	HEXACHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	87-68-3	HEXACHLOROBUTADIENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	67-72-1	HEXACHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	193-39-5	INDENO(1,2,3-CD)PYRENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7439-89-6	IRON	10/25/99	0.0107	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7439-89-6	IRON	10/25/99	0.446	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	78-59-1	ISOPHORONE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7439-92-1	LEAD	10/25/99	0.0013	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7439-92-1	LEAD	10/25/99	0.0013	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7439-95-4	MAGNESIUM	10/25/99	22.7	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7439-95-4	MAGNESIUM	10/25/99	23.2	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7439-96-5	MANGANESE	10/25/99	0.0551	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7439-96-5	MANGANESE	10/25/99	0.0453	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7439-97-6	MERCURY	10/25/99	0.00011	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	WATER	245.1M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7439-97-6	MERCURY	10/25/99	0.00011	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	245.1M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	72-43-5	METHOXYCHLOR	10/25/99	0.54	ug/L	Y	N	UJ	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	22967-92-6	METHYL MERCURY	10/25/99	0.592	ng/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	1630/NONE
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	75-09-2	METHYLENE CHLORIDE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	91-20-3	NAPHTHALENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-02-0	NICKEL	10/25/99	0.132	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-02-0	NICKEL	10/25/99	0.123	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	98-95-3	NITROBENZENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	86-30-6	N-NITROSODIPHENYLAMINE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	87-86-5	PENTACHLOROPHENOL	10/25/99	26	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	85-01-8	PHENANTHRENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	108-95-2	PHENOL	10/25/99	1	ug/L	Y	Y	J	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-09-7	POTASSIUM	10/25/99	4.08	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-09-7	POTASSIUM	10/25/99	3.93	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	129-00-0	PYRENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7782-49-2	SELENIUM	10/25/99	0.003	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7782-49-2	SELENIUM	10/25/99	0.003	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-22-4	SILVER	10/25/99	0.00078	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-22-4	SILVER	10/25/99	0.00078	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-23-5	SODIUM	10/25/99	363	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-23-5	SODIUM	10/25/99	370	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	100-42-5	STYRENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	SS	NDED SOLIDS (RESIDUE, NON-FILTE	10/25/99	11	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	EPA 160.2
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	127-18-4	TETRACHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-28-0	THALLIUM	10/25/99	0.0051	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-28-0	THALLIUM	10/25/99	0.0051	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	108-88-3	TOLUENE	10/25/99	3	ug/L	Y	Y	J	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	ALK	TOTAL ALKALINITY	10/25/99	130	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	EPA 310.1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	8001-35-2	TOXAPHENE	10/25/99	5.4	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	156-60-5	TRANS-1,2-DICHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	79-01-6	TRICHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-62-2	VANADIUM	10/25/99	0.0024	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-62-2	VANADIUM	10/25/99	0.0024	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	75-01-4	VINYL CHLORIDE	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	1330-20-7	XYLENES, TOTAL	10/25/99	10	ug/L	Y	N	U	1118897.7	920576.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034F	7440-66-6	ZINC	10/25/99	0.0054	mg/L	Y	N	U	1118897.7	920576.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-2	WA9034	7440-66-6	ZINC	10/25/99	0.012	mg/L	Y	Y		1118897.7	920576.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	71-55-6	1,1,1-TRICHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	79-00-5	1,1,2-TRICHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	75-34-3	1,1-DICHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	75-35-4	1,1-DICHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	120-82-1	1,2,4-TRICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	95-50-1	1,2-DICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	107-06-2	1,2-DICHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	78-87-5	1,2-DICHLOROPROPANE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	541-73-1	1,3-DICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	106-46-7	1,4-DICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	95-95-4	2,4,5-TRICHLOROPHENOL	10/25/99	26	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	88-06-2	2,4,6-TRICHLOROPHENOL	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	120-83-2	2,4-DICHLOROPHENOL	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	105-67-9	2,4-DIMETHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	51-28-5	2,4-DINITROPHENOL	10/25/99	26	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	121-14-2	2,4-DINITROTOLUENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	606-20-2	2,6-DINITROTOLUENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	78-93-3	2-BUTANONE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	91-58-7	2-CHLORONAPHTHALENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	95-57-8	2-CHLOROPHENOL	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	591-78-6	2-HEXANONE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	91-57-6	2-METHYLNAPHTHALENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	95-48-7	2-METHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	88-74-4	2-NITROANILINE	10/25/99	26	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	88-75-5	2-NITROPHENOL	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	91-94-1	3,3'-DICHLOROBENZIDINE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	99-09-2	3-NITROANILINE	10/25/99	26	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	72-54-8	4,4'-DDD	10/25/99	0.11	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	72-55-9	4,4'-DDE	10/25/99	0.11	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	50-29-3	4,4'-DDT	10/25/99	0.11	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/25/99	26	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	59-50-7	4-CHLORO-3-METHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	106-47-8	4-CHLOROANILINE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	108-10-1	4-METHYL-2-PENTANONE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	106-44-5	4-METHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	100-01-6	4-NITROANILINE	10/25/99	26	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	100-02-7	4-NITROPHENOL	10/25/99	26	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	83-32-9	ACENAPHTHENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	208-96-8	ACENAPHTHYLENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	67-64-1	ACETONE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	309-00-2	ALDRIN	10/25/99	0.053	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	319-84-6	ALPHA-BHC	10/25/99	0.053	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	5103-71-9	ALPHA-CHLORDANE	10/25/99	0.053	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7429-90-5	ALUMINUM	10/25/99	0.0096	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7429-90-5	ALUMINUM	10/25/99	0.0702	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	120-12-7	ANTHRACENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-36-0	ANTIMONY	10/25/99	0.0025	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-36-0	ANTIMONY	10/25/99	0.0025	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	12674-11-2	AROCLOR-1016	10/25/99	1.1	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	11104-28-2	AROCLOR-1221	10/25/99	2.1	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	11141-16-5	AROCLOR-1232	10/25/99	1.1	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	53469-21-9	AROCLOR-1242	10/25/99	1.1	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	12672-29-6	AROCLOR-1248	10/25/99	1.1	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	11097-69-1	AROCLOR-1254	10/25/99	1.1	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	11096-82-5	AROCLOR-1260	10/25/99	1.1	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	11100-14-4	AROCLOR-1268	10/25/99	2	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-38-2	ARSENIC	10/25/99	0.0035	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-38-2	ARSENIC	10/25/99	0.0058	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-39-3	BARIUM	10/25/99	0.0446	mg/L	Y	Y	J	1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-39-3	BARIUM	10/25/99	0.0398	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	71-43-2	BENZENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	56-55-3	BENZO(A)ANTHRACENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	50-32-8	BENZO(A)PYRENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	205-99-2	BENZO(B)FLUORANTHENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	191-24-2	BENZO(G,H,I)PERYLENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	207-08-9	BENZO(K)FLUORANTHENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-41-7	BERYLLIUM	10/25/99	0.00004	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-41-7	BERYLLIUM	10/25/99	0.00004	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	319-85-7	BETA-BHC	10/25/99	0.053	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	75-27-4	BROMODICHLOROMETHANE	10/25/99	2	ug/L	Y	Y	J	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	75-25-2	BROMOFORM	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	74-83-9	BROMOMETHANE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	85-68-7	BUTYLBENZYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-43-9	CADMIUM	10/25/99	0.0003	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-43-9	CADMIUM	10/25/99	0.0003	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-70-2	CALCIUM	10/25/99	75.4	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-70-2	CALCIUM	10/25/99	70.3	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	86-74-8	CARBAZOLE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	75-15-0	CARBON DISULFIDE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	56-23-5	CARBON TETRACHLORIDE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	108-90-7	CHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	124-48-1	CHLORODIBROMOMETHANE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	75-00-3	CHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	67-66-3	CHLOROFORM	10/25/99	5	ug/L	Y	Y	J	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	74-87-3	CHLOROMETHANE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-47-3	CHROMIUM	10/25/99	0.004	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-47-3	CHROMIUM	10/25/99	0.0089	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	218-01-9	CHRYSENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	156-59-2	CIS-1,2-DICHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-48-4	COBALT	10/25/99	0.006	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-48-4	COBALT	10/25/99	0.0042	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-50-8	COPPER	10/25/99	0.0054	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-50-8	COPPER	10/25/99	0.0121	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	57-12-5	CYANIDE	10/25/99	0.01	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	EPA 335.2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	319-86-8	DELTA-BHC	10/25/99	0.0054	ug/L	Y	Y	J	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	53-70-3	DIBENZO(A,H)ANTHRACENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	132-64-9	DIBENZOFURAN	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	60-57-1	DIELDRIN	10/25/99	0.11	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	84-66-2	DIETHYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	131-11-3	DIMETHYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	84-74-2	DI-N-BUTYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	117-84-0	DI-N-OCTYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	959-98-8	ENDOSULFAN I	10/25/99	0.053	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	33213-65-9	ENDOSULFAN II	10/25/99	0.11	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	1031-07-8	ENDOSULFAN SULFATE	10/25/99	0.11	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	72-20-8	ENDRIN	10/25/99	0.11	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7421-93-4	ENDRIN ALDEHYDE	10/25/99	0.11	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	53494-70-5	ENDRIN KETONE	10/25/99	0.11	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	100-41-4	ETHYLBENZENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	206-44-0	FLUORANTHENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	86-73-7	FLUORENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	58-89-9	GAMMA-BHC (LINDANE)	10/25/99	0.053	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	5566-34-7	GAMMA-CHLORDANE	10/25/99	0.053	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	HARD	HARDNESS (AS CACO3)	10/25/99	250	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	2340-B
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	76-44-8	HEPTACHLOR	10/25/99	0.053	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	1024-57-3	HEPTACHLOR EPOXIDE	10/25/99	0.053	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	118-74-1	HEXACHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	87-68-3	HEXACHLOROBUTADIENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	67-72-1	HEXACHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	193-39-5	INDENO(1,2,3-CD)PYRENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7439-89-6	IRON	10/25/99	0.0253	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7439-89-6	IRON	10/25/99	0.486	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	78-59-1	ISOPHORONE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7439-92-1	LEAD	10/25/99	0.0013	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7439-92-1	LEAD	10/25/99	0.0013	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7439-95-4	MAGNESIUM	10/25/99	14.1	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7439-95-4	MAGNESIUM	10/25/99	15.1	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7439-96-5	MANGANESE	10/25/99	0.0286	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7439-96-5	MANGANESE	10/25/99	0.0224	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7439-97-6	MERCURY	10/25/99	0.00011	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	WATER	245.1M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7439-97-6	MERCURY	10/25/99	0.00011	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	245.1M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	72-43-5	METHOXYCHLOR	10/25/99	0.53	ug/L	Y	N	UJ	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	22967-92-6	METHYL MERCURY	10/25/99	0.033	ng/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	1630/NONE
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	75-09-2	METHYLENE CHLORIDE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	91-20-3	NAPHTHALENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-02-0	NICKEL	10/25/99	0.004	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-02-0	NICKEL	10/25/99	0.0036	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	98-95-3	NITROBENZENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	86-30-6	N-NITROSODIPHENYLAMINE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	87-86-5	PENTACHLOROPHENOL	10/25/99	26	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	85-01-8	PHENANTHRENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	108-95-2	PHENOL	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-09-7	POTASSIUM	10/25/99	2.28	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-09-7	POTASSIUM	10/25/99	2.39	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	129-00-0	PYRENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7782-49-2	SELENIUM	10/25/99	0.003	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7782-49-2	SELENIUM	10/25/99	0.003	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-22-4	SILVER	10/25/99	0.00078	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-22-4	SILVER	10/25/99	0.0078	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-23-5	SODIUM	10/25/99	24.5	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-23-5	SODIUM	10/25/99	26.1	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	100-42-5	STYRENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	SS	NDED SOLIDS (RESIDUE, NON-FILTE	10/25/99	5	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	EPA 160.2
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	127-18-4	TETRACHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-28-0	THALLIUM	10/25/99	0.0051	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-28-0	THALLIUM	10/25/99	0.0051	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	108-88-3	TOLUENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	ALK	TOTAL ALKALINITY	10/25/99	180	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	EPA 310.1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	8001-35-2	TOXAPHENE	10/25/99	5.3	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	156-60-5	TRANS-1,2-DICHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	79-01-6	TRICHLOROETHENE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-62-2	VANADIUM	10/25/99	0.0064	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-62-2	VANADIUM	10/25/99	0.0038	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	75-01-4	VINYL CHLORIDE	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	1330-20-7	XYLENES, TOTAL	10/25/99	10	ug/L	Y	N	U	1118507.8	920174.2			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035F	7440-66-6	ZINC	10/25/99	0.0057	mg/L	Y	N	U	1118507.8	920174.2			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-3	WA9035	7440-66-6	ZINC	10/25/99	0.0076	mg/L	Y	Y		1118507.8	920174.2			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	71-55-6	1,1,1-TRICHLOROETHANE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	79-34-5	1,1,2,2-TETRACHLOROETHANE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	79-00-5	1,1,2-TRICHLOROETHANE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	75-34-3	1,1-DICHLOROETHANE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	75-35-4	1,1-DICHLOROETHENE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	120-82-1	1,2,4-TRICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	95-50-1	1,2-DICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	107-06-2	1,2-DICHLOROETHANE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	540-59-0	1,2-DICHLOROETHENE (TOTAL)	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	78-87-5	1,2-DICHLOROPROPANE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	541-73-1	1,3-DICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	106-46-7	1,4-DICHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	108-60-1	2,2'-OXYBIS(1-CHLOROPROPANE)	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	95-95-4	2,4,5-TRICHLOROPHENOL	10/25/99	26	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	88-06-2	2,4,6-TRICHLOROPHENOL	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	120-83-2	2,4-DICHLOROPHENOL	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	105-67-9	2,4-DIMETHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	51-28-5	2,4-DINITROPHENOL	10/25/99	26	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	121-14-2	2,4-DINITROTOLUENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	606-20-2	2,6-DINITROTOLUENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	78-93-3	2-BUTANONE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	91-58-7	2-CHLORONAPHTHALENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	95-57-8	2-CHLOROPHENOL	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	591-78-6	2-HEXANONE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	91-57-6	2-METHYLNAPHTHALENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	95-48-7	2-METHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	88-74-4	2-NITROANILINE	10/25/99	26	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	88-75-5	2-NITROPHENOL	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	91-94-1	3,3'-DICHLOROBENZIDINE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	99-09-2	3-NITROANILINE	10/25/99	26	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	72-54-8	4,4'-DDD	10/25/99	0.11	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	72-55-9	4,4'-DDE	10/25/99	0.11	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	50-29-3	4,4'-DDT	10/25/99	0.11	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	534-52-1	4,6-DINITRO-2-METHYLPHENOL	10/25/99	26	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	101-55-3	4-BROMOPHENYL PHENYL ETHER	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	59-50-7	4-CHLORO-3-METHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	106-47-8	4-CHLOROANILINE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7005-72-3	4-CHLOROPHENYL PHENYL ETHER	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	108-10-1	4-METHYL-2-PENTANONE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	106-44-5	4-METHYLPHENOL	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	100-01-6	4-NITROANILINE	10/25/99	26	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	100-02-7	4-NITROPHENOL	10/25/99	26	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	83-32-9	ACENAPHTHENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	208-96-8	ACENAPHTHYLENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	67-64-1	ACETONE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	309-00-2	ALDRIN	10/25/99	0.053	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	319-84-6	ALPHA-BHC	10/25/99	0.053	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	5103-71-9	ALPHA-CHLORDANE	10/25/99	0.053	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7429-90-5	ALUMINUM	10/25/99	0.0274	mg/L	Y	Y		1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7429-90-5	ALUMINUM	10/25/99	0.0727	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	120-12-7	ANTHRACENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-36-0	ANTIMONY	10/25/99	0.0025	mg/L	Y	N	U	1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-36-0	ANTIMONY	10/25/99	0.0025	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	12674-11-2	AROCLOR-1016	10/25/99	1.1	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	11104-28-2	AROCLOR-1221	10/25/99	2.1	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	11141-16-5	AROCLOR-1232	10/25/99	1.1	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	53469-21-9	AROCLOR-1242	10/25/99	1.1	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	12672-29-6	AROCLOR-1248	10/25/99	1.1	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	11097-69-1	AROCLOR-1254	10/25/99	1.1	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	11096-82-5	AROCLOR-1260	10/25/99	1.1	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	11100-14-4	AROCLOR-1268	10/25/99	2	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-38-2	ARSENIC	10/25/99	0.0025	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-38-2	ARSENIC	10/25/99	0.0042	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-39-3	BARIUM	10/25/99	0.0271	mg/L	Y	Y	J	1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-39-3	BARIUM	10/25/99	0.0229	mg/L	Y	Y		1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	71-43-2	BENZENE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	56-55-3	BENZO(A)ANTHRACENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	50-32-8	BENZO(A)PYRENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	205-99-2	BENZO(B)FLUORANTHENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	191-24-2	BENZO(G,H,I)PERYLENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	207-08-9	BENZO(K)FLUORANTHENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-41-7	BERYLLIUM	10/25/99	0.00004	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-41-7	BERYLLIUM	10/25/99	0.00004	mg/L	Y	N	U	1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	319-85-7	BETA-BHC	10/25/99	0.053	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	111-91-1	BIS(2-CHLOROETHOXY)METHANE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	111-44-4	BIS(2-CHLOROETHYL)ETHER	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	75-27-4	BROMODICHLOROMETHANE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	75-25-2	BROMOFORM	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	74-83-9	BROMOMETHANE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	85-68-7	BUTYLBENZYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-43-9	CADMIUM	10/25/99	0.0003	mg/L	Y	N	U	1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-43-9	CADMIUM	10/25/99	0.0003	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-70-2	CALCIUM	10/25/99	70.1	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-70-2	CALCIUM	10/25/99	57.1	mg/L	Y	Y		1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	86-74-8	CARBAZOLE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	75-15-0	CARBON DISULFIDE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	56-23-5	CARBON TETRACHLORIDE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	108-90-7	CHLOROBENZENE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	124-48-1	CHLORODIBROMOMETHANE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	75-00-3	CHLOROETHANE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	67-66-3	CHLOROFORM	10/25/99	2	ug/L	Y	Y	J	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	74-87-3	CHLOROMETHANE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-47-3	CHROMIUM	10/25/99	0.002	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-47-3	CHROMIUM	10/25/99	0.0031	mg/L	Y	N	U	1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	218-01-9	CHRYSENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	156-59-2	CIS-1,2-DICHLOROETHENE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	10061-01-5	CIS-1,3-DICHLOROPROPENE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-48-4	COBALT	10/25/99	0.0017	mg/L	Y	N	U	1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-48-4	COBALT	10/25/99	0.0017	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-50-8	COPPER	10/25/99	0.0011	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-50-8	COPPER	10/25/99	0.0018	mg/L	Y	N	U	1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	57-12-5	CYANIDE	10/25/99	0.01	mg/L	Y	N	U	1117383	921437.1			SW	WATER	Water	EPA 335.2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	319-86-8	DELTA-BHC	10/25/99	0.053	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	53-70-3	DIBENZO(A,H)ANTHRACENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	132-64-9	DIBENZOFURAN	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	60-57-1	DIELDRIN	10/25/99	0.11	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	84-66-2	DIETHYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	131-11-3	DIMETHYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	84-74-2	DI-N-BUTYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	117-84-0	DI-N-OCTYL PHTHALATE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	959-98-8	ENDOSULFAN I	10/25/99	0.053	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	33213-65-9	ENDOSULFAN II	10/25/99	0.11	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	1031-07-8	ENDOSULFAN SULFATE	10/25/99	0.11	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	72-20-8	ENDRIN	10/25/99	0.11	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7421-93-4	ENDRIN ALDEHYDE	10/25/99	0.11	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	53494-70-5	ENDRIN KETONE	10/25/99	0.11	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	100-41-4	ETHYLBENZENE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	206-44-0	FLUORANTHENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	86-73-7	FLUORENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	58-89-9	GAMMA-BHC (LINDANE)	10/25/99	0.053	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	5566-34-7	GAMMA-CHLORDANE	10/25/99	0.053	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	HARD	HARDNESS (AS CACO3)	10/25/99	189	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	2340-B

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	76-44-8	HEPTACHLOR	10/25/99	0.053	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	1024-57-3	HEPTACHLOR EPOXIDE	10/25/99	0.053	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	118-74-1	HEXACHLOROBENZENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	87-68-3	HEXACHLOROBUTADIENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	77-47-4	HEXACHLOROCYCLOPENTADIENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	67-72-1	HEXACHLOROETHANE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	193-39-5	INDENO(1,2,3-CD)PYRENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7439-89-6	IRON	10/25/99	0.153	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7439-89-6	IRON	10/25/99	0.0164	mg/L	Y	Y		1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	78-59-1	ISOPHORONE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7439-92-1	LEAD	10/25/99	0.0013	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7439-92-1	LEAD	10/25/99	0.0013	mg/L	Y	N	U	1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7439-95-4	MAGNESIUM	10/25/99	3.46	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7439-95-4	MAGNESIUM	10/25/99	3.27	mg/L	Y	Y		1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7439-96-5	MANGANESE	10/25/99	0.0095	mg/L	Y	Y		1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7439-96-5	MANGANESE	10/25/99	0.0159	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7439-97-6	MERCURY	10/25/99	0.00011	mg/L	Y	N	U	1117383	921437.1			SW	WATER	Water	245.1M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7439-97-6	MERCURY	10/25/99	0.00011	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	245.1M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	72-43-5	METHOXYCHLOR	10/25/99	0.53	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	22967-92-6	METHYL MERCURY	10/25/99	0.339	ng/L	Y	Y		1117383	921437.1			SW	WATER	Water	1630/NONE
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	75-09-2	METHYLENE CHLORIDE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	91-20-3	NAPHTHALENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-02-0	NICKEL	10/25/99	0.001	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-02-0	NICKEL	10/25/99	0.0092	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	98-95-3	NITROBENZENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	621-64-7	N-NITROSO-DI-N-PROPYLAMINE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	86-30-6	N-NITROSODIPHENYLAMINE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	87-86-5	PENTACHLOROPHENOL	10/25/99	26	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	85-01-8	PHENANTHRENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	108-95-2	PHENOL	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-09-7	POTASSIUM	10/25/99	29.4	mg/L	Y	Y		1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-09-7	POTASSIUM	10/25/99	30.7	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	129-00-0	PYRENE	10/25/99	10	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7782-49-2	SELENIUM	10/25/99	0.0039	mg/L	Y	Y		1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7782-49-2	SELENIUM	10/25/99	0.0062	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-22-4	SILVER	10/25/99	0.00078	mg/L	Y	N	U	1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-22-4	SILVER	10/25/99	0.00078	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-23-5	SODIUM	10/25/99	176	mg/L	Y	Y		1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-23-5	SODIUM	10/25/99	187	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	100-42-5	STYRENE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	SS	NDED SOLIDS (RESIDUE, NON-FILTE	10/25/99	5	mg/L	Y	N	U	1117383	921437.1			SW	WATER	Water	EPA 160.2
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	127-18-4	TETRACHLOROETHENE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-28-0	THALLIUM	10/25/99	0.0051	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-28-0	THALLIUM	10/25/99	0.0051	mg/L	Y	N	U	1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	108-88-3	TOLUENE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	ALK	TOTAL ALKALINITY	10/25/99	100	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	EPA 310.1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	8001-35-2	TOXAPHENE	10/25/99	5.3	ug/L	Y	N	U	1117383	921437.1			SW	WATER	Water	ASP 95-3
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	156-60-5	TRANS-1,2-DICHLOROETHENE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	10061-02-6	TRANS-1,3-DICHLOROPROPENE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	79-01-6	TRICHLOROETHENE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-62-2	VANADIUM	10/25/99	0.0383	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-62-2	VANADIUM	10/25/99	0.352	mg/L	Y	Y		1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	75-01-4	VINYL CHLORIDE	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	1330-20-7	XYLENES, TOTAL	10/25/99	10	ug/L	Y	N	UJ	1117383	921437.1			SW	WATER	Water	ASP 95-1
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036F	7440-66-6	ZINC	10/25/99	0.49	mg/L	Y	N	U	1117383	921437.1			SW	WATER	WATER	200.7M
Tributary 5A	Surface Water	WA-5A-SW-4	WA9036	7440-66-6	ZINC	10/25/99	0.0073	mg/L	Y	Y		1117383	921437.1			SW	WATER	Water	200.7M
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	106-46-7	1,4-DICHLOROBENZENE	1/17/91	11	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	95-95-4	2,4,5-TRICHLOROPHENOL	1/17/91	4	ug/L	Y	Y	J	1119218.5	921108.2			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7429-90-5	ALUMINUM	1/17/91	0.208	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-36-0	ANTIMONY	1/17/91	0.05	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-38-2	ARSENIC	1/17/91	0.002	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-39-3	BARIUM	1/17/91	0.317	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	71-43-2	BENZENE	1/17/91	79	ug/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-41-7	BERYLLIUM	1/17/91	0.001	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/17/91	10	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	75-27-4	BROMODICHLOROMETHANE	1/17/91	2	ug/L	Y	Y	J	1119218.5	921108.2			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-43-9	CADMIUM	1/17/91	0.003	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-70-2	CALCIUM	1/17/91	92.8	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	75-15-0	CARBON DISULFIDE	1/17/91	5	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	108-90-7	CHLOROBENZENE	1/17/91	5	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	67-66-3	CHLOROFORM	1/17/91	7	ug/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-47-3	CHROMIUM	1/17/91	0.02	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-48-4	COBALT	1/17/91	0.008	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-50-8	COPPER	1/17/91	0.02	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	57-12-5	CYANIDE	1/17/91	0.01	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	84-66-2	DIETHYL PHTHALATE	1/17/91	11	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	84-74-2	DI-N-BUTYL PHTHALATE	1/17/91	11	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7439-89-6	IRON	1/17/91	0.597	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7439-92-1	LEAD	1/17/91	0.002	mg/L	Y	N	UJ	1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7439-95-4	MAGNESIUM	1/17/91	12.5	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7439-96-5	MANGANESE	1/17/91	0.154	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7439-97-6	MERCURY	1/17/91	0.0002	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	91-20-3	NAPHTHALENE	1/17/91	11	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-02-0	NICKEL	1/17/91	0.068	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	86-30-6	N-NITROSODIPHENYLAMINE	1/17/91	11	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	87-86-5	PENTACHLOROPHENOL	1/17/91	6	ug/L	Y	Y	J	1119218.5	921108.2			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-09-7	POTASSIUM	1/17/91	3.08	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	129-00-0	PYRENE	1/17/91	11	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7782-49-2	SELENIUM	1/17/91	0.003	mg/L	Y	N	UJ	1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-22-4	SILVER	1/17/91	0.002	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-23-5	SODIUM	1/17/91	128	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-28-0	THALLIUM	1/17/91	0.003	mg/L	Y	N	UJ	1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	108-88-3	TOLUENE	1/17/91	10	ug/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-62-2	VANADIUM	1/17/91	0.006	mg/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	1330-20-7	XYLENES, TOTAL	1/17/91	3	ug/L	Y	Y	J	1119218.5	921108.2			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9037	7440-66-6	ZINC	1/17/91	0.016	mg/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-D	WA9038	71-43-2	BENZENE	6/25/91	33	ug/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9038	67-66-3	CHLOROFORM	6/25/91	16	ug/L	Y	Y		1119218.5	921108.2			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-D	WA9038	108-88-3	TOLUENE	6/25/91	5	ug/L	Y	N	U	1119218.5	921108.2			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	106-46-7	1,4-DICHLOROBENZENE	1/17/91	10	ug/L	Y	N	U	1118855	920521.4			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	95-95-4	2,4,5-TRICHLOROPHENOL	1/17/91	1	ug/L	Y	Y	J	1118855	920521.4			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7429-90-5	ALUMINUM	1/17/91	0.318	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-36-0	ANTIMONY	1/17/91	0.05	mg/L	Y	N	U	1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-38-2	ARSENIC	1/17/91	0.0024	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-39-3	BARIUM	1/17/91	0.053	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	71-43-2	BENZENE	1/17/91	110	ug/L	Y	Y		1118855	920521.4			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-41-7	BERYLLIUM	1/17/91	0.001	mg/L	Y	N	U	1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/17/91	10	ug/L	Y	N	U	1118855	920521.4			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	75-27-4	BROMODICHLOROMETHANE	1/17/91	1	ug/L	Y	Y	J	1118855	920521.4			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-43-9	CADMIUM	1/17/91	0.003	mg/L	Y	N	U	1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-70-2	CALCIUM	1/17/91	93.3	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	75-15-0	CARBON DISULFIDE	1/17/91	1	ug/L	Y	Y	J	1118855	920521.4			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	108-90-7	CHLOROBENZENE	1/17/91	5	ug/L	Y	N	U	1118855	920521.4			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	67-66-3	CHLOROFORM	1/17/91	7	ug/L	Y	Y		1118855	920521.4			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-47-3	CHROMIUM	1/17/91	0.055	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-48-4	COBALT	1/17/91	0.01	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-50-8	COPPER	1/17/91	0.021	mg/L	Y	N	U	1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	57-12-5	CYANIDE	1/17/91	0.01	mg/L	Y	N	U	1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	84-66-2	DIETHYL PHTHALATE	1/17/91	4	ug/L	Y	Y	J	1118855	920521.4			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	84-74-2	DI-N-BUTYL PHTHALATE	1/17/91	5	ug/L	Y	Y	J	1118855	920521.4			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7439-89-6	IRON	1/17/91	1.02	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7439-92-1	LEAD	1/17/91	0.002	mg/L	Y	N	UJ	1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7439-95-4	MAGNESIUM	1/17/91	13.3	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7439-96-5	MANGANESE	1/17/91	0.198	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7439-97-6	MERCURY	1/17/91	0.0002	mg/L	Y	N	U	1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	91-20-3	NAPHTHALENE	1/17/91	1	ug/L	Y	Y	J	1118855	920521.4			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-02-0	NICKEL	1/17/91	0.097	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	86-30-6	N-NITROSODIPHENYLAMINE	1/17/91	10	ug/L	Y	N	U	1118855	920521.4			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	87-86-5	PENTACHLOROPHENOL	1/17/91	50	ug/L	Y	N	U	1118855	920521.4			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-09-7	POTASSIUM	1/17/91	2.78	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	129-00-0	PYRENE	1/17/91	10	ug/L	Y	N	U	1118855	920521.4			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7782-49-2	SELENIUM	1/17/91	0.0033	mg/L	Y	N	R	1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-22-4	SILVER	1/17/91	0.002	mg/L	Y	N	U	1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-23-5	SODIUM	1/17/91	144	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS

APPENDIX B
Database - All Exposure Areas
Honeywell, Willis Avenue Chlorobenzene Site, Geddes, New York

Exposure Area	Exposure Medium	Location ID	Sample Code	CAS #	Chemical	Sample Date	Result	Result Unit	Reportable Result	Detect Flag	Interpreted Qualifier[a]	X Coord	Y Coord	Start Depth	End Depth	Sample Type Code[b]	Sample Matrix Code	Lab Matrix Code	Analytical Method
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-28-0	THALLIUM	1/17/91	0.003	mg/L	Y	N	UJ	1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	108-88-3	TOLUENE	1/17/91	13	ug/L	Y	Y		1118855	920521.4			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-62-2	VANADIUM	1/17/91	0.008	mg/L	Y	Y		1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	1330-20-7	XYLENES, TOTAL	1/17/91	3	ug/L	Y	Y	J	1118855	920521.4			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9040	7440-66-6	ZINC	1/17/91	0.031	mg/L	Y	N	U	1118855	920521.4			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-M	WA9041	71-43-2	BENZENE	6/25/91	31	ug/L	Y	Y		1118855	920521.4			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9041	67-66-3	CHLOROFORM	6/25/91	14	ug/L	Y	Y		1118855	920521.4			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-M	WA9041	108-88-3	TOLUENE	6/25/91	5	ug/L	Y	N	U	1118855	920521.4			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	106-46-7	1,4-DICHLOROBENZENE	1/17/91	2	ug/L	Y	Y	J	1117407.3	921404.6			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	95-95-4	2,4,5-TRICHLOROPHENOL	1/17/91	1	ug/L	Y	Y	J	1117407.3	921404.6			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7429-90-5	ALUMINUM	1/17/91	0.176	mg/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-36-0	ANTIMONY	1/17/91	0.05	mg/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-38-2	ARSENIC	1/17/91	0.0082	mg/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-39-3	BARIUM	1/17/91	0.038	mg/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	71-43-2	BENZENE	1/17/91	18	ug/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-41-7	BERYLLIUM	1/17/91	0.001	mg/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	1/17/91	870	ug/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	75-27-4	BROMODICHLOROMETHANE	1/17/91	5	ug/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-43-9	CADMIUM	1/17/91	0.003	mg/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-70-2	CALCIUM	1/17/91	53.1	mg/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	75-15-0	CARBON DISULFIDE	1/17/91	5	ug/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	108-90-7	CHLOROBENZENE	1/17/91	0.5	ug/L	Y	Y	J	1117407.3	921404.6			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	67-66-3	CHLOROFORM	1/17/91	3	ug/L	Y	Y	J	1117407.3	921404.6			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-47-3	CHROMIUM	1/17/91	0.005	mg/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-48-4	COBALT	1/17/91	0.005	mg/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-50-8	COPPER	1/17/91	0.024	mg/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	57-12-5	CYANIDE	1/17/91	0.023	mg/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	84-66-2	DIETHYL PHTHALATE	1/17/91	2	ug/L	Y	Y	J	1117407.3	921404.6			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	84-74-2	DI-N-BUTYL PHTHALATE	1/17/91	10	ug/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7439-89-6	IRON	1/17/91	0.324	mg/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7439-92-1	LEAD	1/17/91	0.002	mg/L	Y	N	UJ	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7439-95-4	MAGNESIUM	1/17/91	6.67	mg/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7439-96-5	MANGANESE	1/17/91	0.011	mg/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7439-97-6	MERCURY	1/17/91	0.0002	mg/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	91-20-3	NAPHTHALENE	1/17/91	10	ug/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-02-0	NICKEL	1/17/91	0.015	mg/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	86-30-6	N-NITROSODIPHENYLAMINE	1/17/91	70	ug/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	87-86-5	PENTACHLOROPHENOL	1/17/91	50	ug/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-09-7	POTASSIUM	1/17/91	15.4	mg/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	129-00-0	PYRENE	1/17/91	2	ug/L	Y	Y	J	1117407.3	921404.6			SW	WATER	Water	SVOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7782-49-2	SELENIUM	1/17/91	0.0032	mg/L	Y	Y	J	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-22-4	SILVER	1/17/91	0.002	mg/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-23-5	SODIUM	1/17/91	420	mg/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-28-0	THALLIUM	1/17/91	0.015	mg/L	Y	N	UJ	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	108-88-3	TOLUENE	1/17/91	0.8	ug/L	Y	Y	J	1117407.3	921404.6			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-62-2	VANADIUM	1/17/91	0.012	mg/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	1330-20-7	XYLENES, TOTAL	1/17/91	5	ug/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9042	7440-66-6	ZINC	1/17/91	0.017	mg/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	METALS
Tributary 5A	Surface Water	WA-5A-WA-U	WA9043	71-43-2	BENZENE	6/25/91	30	ug/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9043	67-66-3	CHLOROFORM	6/25/91	14	ug/L	Y	Y		1117407.3	921404.6			SW	WATER	Water	VOA
Tributary 5A	Surface Water	WA-5A-WA-U	WA9043	108-88-3	TOLUENE	6/25/91	5	ug/L	Y	N	U	1117407.3	921404.6			SW	WATER	Water	VOA

Notes:
a - Only data with acceptable qualifiers ("U", "J", "UJ", or no qualifier) were utilized in the HHRA.
b - Sample type codes: MW (monitoring well), SB (soil boring), TP (test pit), SW (surface water), SS (Soil), SED (sediment)

APPENDIX C

Volatilization Factor Calculation

APPENDIX C
SOIL-TO-AIR VOLATILIZATION FACTORS
SOIL/DITCH SEDIMENT CONSTITUENTS OF POTENTIAL CONCERN SUBJECT TO INHALATION PATHWAY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Soil COC List	COPC Evaluated for Soil Vapor or Dust
Metals	
ALUMINUM	dust
ARSENIC	dust
BARIUM	dust
CHROMIUM	dust
COPPER	dust
IRON	dust
LEAD	dust
MANGANESE	dust
MERCURY	dust
NICKEL	dust
SILVER	dust
VANADIUM	dust
ZINC	dust
PCBs	
Highly Chlorinated PCBs	dust
Less Chlorinated PCBs	dust
Total PCBs	dust
Pesticides	
ALDRIN	dust
DELTA-BHC	dust
DIELDRIN	dust
ENDOSULFAN I	dust
HEPTACHLOR	dust
SVOCs	
1,2,3-TRICHLOROBENZENE	dust
ACENAPHTHYLENE	dust
BENZO(A)ANTHRACENE	dust
BENZO(A)PYRENE	dust
BENZO(B)FLUORANTHENE	dust
BENZO(G,H,I)PERYLENE	dust
BENZO(K)FLUORANTHENE	dust
DIBENZO(A,H)ANTHRACENE	dust
HEXACHLOROBENZENE	dust
HEXACHLOROBUTADIENE	dust
INDENO(1,2,3-CD)PYRENE	dust
NAPHTHALENE	dust
PHENANTHRENE	dust

APPENDIX C
SOIL-TO-AIR VOLATILIZATION FACTORS
SOIL/DITCH SEDIMENT CONSTITUENTS OF POTENTIAL CONCERN SUBJECT TO INHALATION PATHWAY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Soil COC List	COPC Evaluated for Soil Vapor or Dust
VOCs	
1,2,3-TRICHLOROBENZENE	vapor
1,2,4-TRICHLOROBENZENE	vapor
1,2,4-TRIMETHYLBENZENE	vapor
1,2-DICHLOROBENZENE	vapor
1,3,5-TRIMETHYLBENZENE	vapor
1,3-DICHLOROBENZENE	vapor
1,4-DICHLOROBENZENE	vapor
BENZENE	vapor
CHLOROBENZENE	vapor
ETHYLBENZENE	vapor
SEC-BUTYLBENZENE	vapor
TERT-BUTYLBENZENE	vapor
TOLUENE	vapor
TRICHLOROETHENE	vapor
XYLENES, TOTAL	vapor

Notes:
Compound list generated from surface and subsurface soil COPCs selected in RAGS 2 Series.
Only volatile organic compounds are considered for the vapor inhalation pathway. All other compound classes are considered for the inhalation of fugitive dust particles.

APPENDIX C
SOIL-TO-AIR VOLATILIZATION FACTORS
CALCULATING Q/Cvol
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Exposure Areas for Construction Worker*	Area (acres)	Total Area for receptor	Q/C_{vol} (g/m^2-s per kg/m^3)
Plant Area	14.83	20.95	53.39
Former Chlorination	1.16		
Onsite Ditches	0.04		
Southwest Off-Site/Outfall 006 Area	1.23		
Chlorobenzene Hot Spot Area	1.92		
Petroleum Storage Area	1.77		

$$Q/Cvol = A \times \exp\left[\frac{(\ln A_s - B)^2}{C}\right]$$

t D-3, USEPA 2002

Variable	Value	Units/Rationale/Source
A =	16.8653	unitless, Chicago Zone 7 values, Exhibit D-3, USEPA 2002
B =	18.7848	unitless, Chicago Zone 7 values, Exhibit D-3, USEPA 2002
C =	215.0624	unitless, Chicago Zone 7 values, Exhibit D-3, USEPA 2002

Notes:
* Only those areas that contain soil or sediment are presented.
Reference:
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Solid Waste and Emergency Response. OSWER 9355.4-24. December 2002.

APPENDIX C
SOIL-TO-AIR VOLATILIZATION FACTORS
APPARENT DIFFUSIVITY CALCULATIONS
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Parameter	Units	Value	Source
Soil Particle Density	(g/cm^3)	2.65	default value, USEPA, 2002, Equation 4-8
Water-filled Soil Porosity	(L_{water}/L_{soil})	0.15	default value, USEPA, 2002, Equation 4-8
Total Soil Porosity	(L_{pore}/L_{soil})	0.43	default value, USEPA, 2002, Equation 4-8
Air-filled Soil Porosity	(L_{air}/L_{soil})	0.28	default value, USEPA, 2002, Equation 4-8
Dry Soil Bulk Density	(g/cm^3)	1.5	default value, USEPA, 2002, Equation 4-8
Exposure Interval	(s)	9.50E+08	default value, USEPA, 2002, Equation 4-8
Fraction Organic Carbon in Soil	g/g	6.00E-03	default value, USEPA, 2002, Equation 4-8

Compound	Diffusivity in Air (D_i) (cm^2/s)	Dimensionless Henry's Law (H') Constant	Diffusivity in Water(D_w) (cm^2/s)	Soil-Water Partition Coefficent (K_d) (cm^3/g)	Soil Organic Carbon Partition Coefficient (K_{oc}) (cm^3/g)	Apparent Diffusivity (D_A) (cm^2/s)
1,2,3-TRICHLOROBENZENE[a]	3.00E-02	5.82E-02	8.23E-06	1.07E+01	1.78E+03	8.39E-06
1,2,4-TRICHLOROBENZENE	3.00E-02	5.82E-02	8.23E-06	1.07E+01	1.78E+03	8.39E-06
1,2,4-TRIMETHYLBENZENE[b]	6.44E-02	2.52E-01	7.92E-06	1.29E+01	2.15E+03	6.44E-05
1,2-DICHLOROBENZENE	6.90E-02	7.79E-02	7.90E-06	3.70E+00	6.17E+02	7.30E-05
1,3,5-TRIMETHYLBENZENE[b]	6.02E-02	3.59E-01	8.67E-06	1.29E+01	2.15E+03	8.57E-05
1,3-DICHLOROBENZENE[c]	6.46E-02	2.29E-01	8.29E-06	8.30E+00	1.38E+03	8.94E-05
1,4-DICHLOROBENZENE	6.90E-02	9.96E-02	7.90E-06	3.70E+00	6.17E+02	9.32E-05
BENZENE	8.80E-02	2.28E-01	9.80E-06	3.53E-01	5.89E+01	2.10E-03
CHLOROBENZENE	7.30E-02	1.52E-01	8.70E-06	1.31E-04	2.19E-02	4.47E-03
ETHYLBENZENE	7.50E-02	3.23E-01	7.80E-06	2.18E+00	3.63E+02	5.37E-04
SEC-BUTYLBENZENE	NV	NV	NV	NV	NV	NV
TERT-BUTYLBENZENE	NV	NV	NV	NV	NV	NV
TOLUENE	8.70E-02	2.72E-01	8.60E-06	1.09E+00	1.82E+02	9.86E-04
TRICHLOROETHENE	7.90E-02	4.22E-01	9.10E-06	9.96E-01	1.66E+02	1.47E-03
XYLENES, TOTAL[d]	7.80E-02	1.30E+02	8.75E-06	2.32E+00	3.86E+02	1.97E-02

Notes:
Values are from USEPA 2002 unless otherwise noted.
a = 1,2,4-Trichlorobenze used as surrogate.
b = Values taken from Risk Assessment Information System: Chemical Specific Factors Database, Accessed February 2008.
c= Average of values for 1,4-Dichlorobenzene and 1,2-Dichlorobenzene
d = Average values for m-xylene, o-xylene, and p-xylene.
Apparent Diffusivity (Da) calculated using equation 4-8 USEPA 2002.
K_d for organic was calculated as per USEPA 2002: $K_{oc} \times F_{oc}$

Reference:

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Solid Waste and Emergency Response.

APPENDIX C
SOIL-TO-AIR VOLATILIZATION FACTORS
VOLATILIZATION FACTOR CALCULATIONS
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

$$VF(m^3/kg) = Q/C \times \frac{(3.14 \times D_A \times T)^{1/2}}{(2 \times \rho_b \times D_A)} \times 10^{-4}(m^2/cm^2)$$

Constituent	Volatilization Factor (mg^3/kg)
1,2,3-TRICHLOROBENZENE[a]	3.36E+04
1,2,4-TRICHLOROBENZENE	3.36E+04
1,2,4-TRIMETHYLBENZENE[b]	1.21E+04
1,2-DICHLOROBENZENE	1.14E+04
1,3,5-TRIMETHYLBENZENE[b]	1.05E+04
1,3-DICHLOROBENZENE[c]	1.03E+04
1,4-DICHLOROBENZENE	1.01E+04
BENZENE	2.12E+03
CHLOROBENZENE	1.45E+03
ETHYLBENZENE	4.20E+03
SEC-BUTYLBENZENE	NV
TERT-BUTYLBENZENE	NV
TOLUENE	3.09E+03
TRICHLOROETHENE	2.54E+03
XYLENES, TOTAL[d]	6.93E+02

Notes:
Values are from USEPA 2002 unless otherwise noted.
a = 1,2,4-Trichlorobenze used as surrogate.
b = Values taken from Risk Assessment Information System: Chemical Specific Factors Database, Accessed February 2008.
c= Average of values for 1,4-Dichlorobenzene and 1,2-Dichlorobenzene
d = Average values for m-xylene, o-xylene, and p-xylene.

APPENDIX D

Particulate Emissions Factor Calculation

APPENDIX D
PARTICULATE EMISSIONS FACTOR (PEF) CALCULATIONS
PEF TO BE USED FOR CONSTRUCTION WORKER/FUGITIVE DUST SCENARIO
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

$$Q/C_{sr} = A \times \exp\left[\frac{(\ln A_s - B)^2}{C}\right]$$

Equation E-19, USEPA 2002

Variable		Value	Units	Rationale
A =		12.935	unitless	default as per USEPA 2002
B =		5.738	unitless	default as per USEPA 2002
C =		71.771	unitless	default as per USEPA 2002
A_s =		0.439	acres	area of road that bisects a 20.95 acre square[1].
$Q/C_{sr\ EU1}$ =		**23.5704**	**g/m^2-s per kg/m^3**	

$$F_D = 0.1852 + \frac{5.3537}{t} + \frac{-9.6318}{t^2}$$

Equation E-16, USEPA 2002

Variable		Value	Units	Rationale
t =		48.50	hours	Time vehicles are on the road during the year. (assumes 10 vehicles traversing the length of the road (0.291 km) 4 times per day for 100 days traveling an average of 24 km per hour).
F_D =		**0.2915**	**unitless**	

$$PEF_{const} = Q/C_{sr} \times \frac{1}{F_D} \times \frac{T \times A_R}{556 \times (W/3)^{0.4} \times \left[\frac{(365 - p)}{365}\right] \times \sum VKT}$$

Variable		Value	Units	Rationale
T =		2880000	seconds	Total time of construction (8 hours/day X 100 days X 1 year)
A_R =		1775.10	m2	Area of contaminated road (L_R = 291 meters, W_R = 6.1 meters)
W =		11.5	tons	Mean vehicle weight (average of 5 pickup trucks (3 tons) and 5 dump trucks (20 tons))
ΣVKT =		1164	km	Sum of vehicle km traveled (10 vehicles X 4 trips/day/vehicle X 291 meters/trip X 100 days). 291 is the length of side of a square 20.95 acre area
p =		171	days	Mean number of days with 0.01 inches precipitation or more. Data for Syracuse, NY collected by Cornell University NRCC.
PEF_{const}:		**7.02E+05**	**m^3/kg**	

1. 20.95 acres is the spatial extent of areas visited by the construction worker receptor, as follows:

Exposure Area	Acres	Ft^2
Plant Area	14.83	645,997.02
Former Chlorination Building	1.16	50,427.26
Onsite Ditches	0.04	1,780.76
SW Exposure Area (Outfall-006)	1.23	53,571.24
Chlorobenzene Hot Spot Area	1.92	83,823.20
Petroleum Storage Area	1.77	77,178.99

Source:

USEPA 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-
Northeast Regional Climate Center. Cornell University. Accessed 1/15/08 <http://www.nrcc.cornell.edu/ccd.html>

APPENDIX E

Exposure Parameters Summary

APPENDIX E
EXPOSURE PARAMETERS SUMMARY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Receptor:			Child Resident, 0-6 years old			
Parameter		**Units**	**RME**	**Source/Rationale**	**CT**	**Source/Rationale**
Chemical Concentration in Soil	CS	mg/kg	NA	NA	NA	NA
Chemical Concentration in Water	CW	ug/L	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Air	CA	mg/m^3	NA	NA	NA	NA
Unit Conversion Factor for Soil	CF	kg/mg	NA	NA	NA	NA
Unit Conversion Factor for Water	CF	mg/ug	0.001	Unit Conversion	0.001	Unit Conversion
Ingestion Rate of Soil	IR	mg/day	NA	NA	NA	NA
Ingestion Rate of Water	IR	L/day	1	USEPA 2006; Table 4-1, 90th-95th percentiles	1	USEPA 2006; Table 4-1, 90th-95th percentiles
Fraction Ingested from Soil	FI	unitless	NA	NA	NA	NA
Fraction Absorbed	FA	unitless	NA	NA	NA	NA
Skin Surface Area	SA	cm^2	NA	NA	NA	NA
Skin Surface Area Available for Contact	SA	cm^2	NA	NA	NA	NA
Soil to Skin Adherence Factor (Soil)	AF	mg/cm^3	NA	NA	NA	NA
Soil to Skin Adherence Factor (Sediment)	AF	mg/cm^3	NA	NA	NA	NA
Dermal Absorption Factor	ABS	unitless	NA	NA	NA	NA
Permeability Constant	K_P	cm/hour	NA	NA	NA	NA
Exposure Time	ET	hours/day	NA	NA	NA	NA
Event Duration	t_{event}	hr/event	NA	NA	NA	NA
Lag Time per Event	τ_{event}	hr/event	NA	NA	NA	NA
Time to Reach Steady-State	t*	hr	NA	NA	NA	NA
Exposure Frequency	EF	days/year	350	USEPA 2004, Exhibit 3-2	350	USEPA 2004, Exhibit 3-2
Exposure Duration	ED	years	6	USEPA 2004, Exhibit 3-2	6	USEPA 2004, Exhibit 3-2
Body Weight	BW	kg	15	USEPA 1991, Section 6.0 Summary Table	15	USEPA 1991, Section 6.0 Summary Table
Averaging Time - Non-Cancer	AT-NC	days	2190	USEPA 1989, Exhibits 6-11 through 6-16	2190	USEPA 1989, Exhibits 6-11 through 6-16
Averaging Time - Cancer	AT-C	days	25550	USEPA 1989, Exhibits 6-11 through 6-16	25550	USEPA 1989, Exhibits 6-11 through 6-16
Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	B	unitless	NA	NA	NA	NA

APPENDIX E
EXPOSURE PARAMETERS SUMMARY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Receptor:			Adult Resident			
Parameter		**Units**	**RME**	**Source/Rationale**	**CT**	**Source/Rationale**
Chemical Concentration in Soil	CS	mg/kg	NA	NA	NA	NA
Chemical Concentration in Water	CW	ug/L	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Air	CA	mg/m^3	NA	NA	NA	NA
Unit Conversion Factor for Soil	CF	kg/mg	NA	NA	NA	NA
Unit Conversion Factor for Water	CF	mg/ug	0.001	Unit Conversion	0.001	Unit Conversion
Ingestion Rate of Soil	IR	mg/day	NA	NA	NA	NA
Ingestion Rate of Water	IR	L/day	2.0	USEPA, 1991	2.0	USEPA, 1991
Inhalation Rate	InR	m^3/hr	NA	NA	NA	NA
Fraction Ingested from Soil	FI	unitless	NA	NA	NA	NA
Fraction Absorbed	FA	unitless	NA	NA	NA	NA
Skin Surface Area	SA	cm^2	NA	NA	NA	NA
Skin Surface Area Available for Contact	SA	cm^2	NA	NA	NA	NA
Soil to Skin Adherence Factor (Soil)	AF	mg/cm^3	NA	NA	NA	NA
Soil to Skin Adherence Factor (Sediment)	AF	mg/cm^3	NA	NA	NA	NA
Dermal Absorption Factor	ABS	unitless	NA	NA	NA	NA
Permeability Constant	K_P	cm/hour	NA	NA	NA	NA
Exposure Time	ET	hours/day	NA	NA	NA	NA
Event Duration	t_{event}	hr/event	NA	NA	NA	NA
Lag Time per Event	τ_{event}	hr/event	NA	NA	NA	NA
Time to Reach Steady-State	t*	hr	NA	NA	NA	NA
Exposure Frequency	EF	days/year	350	USEPA 2004, Exhibit 3-2	350	USEPA 2004, Exhibit 3-2
Exposure Duration	ED	years	30	USEPA 2004, Exhibit 3-2	9	USEPA 2004, Exhibit 3-2
Body Weight	BW	kg	70	USEPA 1991, Section 6.0 Summary Table	70	USEPA 1991, Section 6.0 Summary Table
Averaging Time - Non-Cancer	AT-NC	days	10950	USEPA 1989, Exhibits 6-11 through 6-16	3285	USEPA 1989, Exhibits 6-11 through 6-16
Averaging Time - Cancer	AT-C	days	25550	USEPA 1989, Exhibits 6-11 through 6-16	25550	USEPA 1989, Exhibits 6-11 through 6-16
Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	B	unitless	NA	NA	NA	NA

APPENDIX E
EXPOSURE PARAMETERS SUMMARY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

		Receptor:	Construction Worker			
Parameter		**Units**	**RME**	**Source/Rationale**	**CT**	**Source/Rationale**
Chemical Concentration in Soil	CS	mg/kg	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Water	CW	ug/L	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Air	CA	mg/m^3	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Unit Conversion Factor for Soil	CF	kg/mg	0.000001	Unit Conversion	0.000001	Unit Conversion
Unit Conversion Factor for Water	CF	mg/ug	0.001	Unit Conversion	0.001	Unit Conversion
Ingestion Rate of Soil	IR	mg/day	330	USEPA 2002, Section 5.3.2. Equation 5-1 for construction worker	330	USEPA 2002, Section 5.3.2. Equation 5-1 for construction worker
Ingestion Rate of Water	IR	L/day	0.03	USEPA 1989; Section 6.6.1, incidental ingestion by a non-simmwer, 0.03 L.hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.	0.01	USEPA 1989; Section 6.6.1, Best Professional Judgement
Inhalation Rate	InR	m^3/hr	3.2	USEPA 1997, Table 5-23, adult, heavy activity	1.6	USEPA 1997, Table 5-23, adult, moderate activity
Fraction Ingested from Soil	FI	unitless	1	BPJ, assumes entire dose comes from onsite	1	BPJ, assumes entire dose comes from onsite
Fraction Absorbed	FA	unitless	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Skin Surface Area	SA	cm^2	3300	USEPA 2002; Exhibit 1-2, as construction worker.	3300	USEPA 2002; Exhibit 1-2, as construction worker
Skin Surface Area Available for Contact	SA	cm^2	3300	USEPA 2002; Exhibit 1-2, as construction worker	3300	USEPA 2002; Exhibit 1-2, as construction worker
Soil to Skin Adherence Factor (Soil)	AF	mg/cm^3	0.3	USEPA 2004; Exhibit 3-3, 95th percentile for construction worker	0.1	USEPA 2004; Exhibit 3-3, geometric mean for construction worker
Soil to Skin Adherence Factor (Sediment)	AF	mg/cm^3	NA	NA	NA	NA
Dermal Absorption Factor	ABS	unitless	Chemical Specific	USEPA 2004; Exhibit 3-4	Chemical Specific	USEPA, 2004; Exhibit 3-4
Permeability Constant	K_P	cm/hour	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Exposure Time	ET	hours/day	8	Best Professional Judgement	8	Best Professional Judgement
Event Duration	t_{event}	hr/event	8	Best Professional Judgement	8	Best Professional Judgement
Lag Time per Event	τ_{event}	hr/event	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Time to Reach Steady-State	t*	hr	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Exposure Frequency	EF	days/year	100	NYSDEC, 2004	100	NYSDEC, 2004
Exposure Duration	ED	years	1	USEPA 1991	1	USEPA 1991
Body Weight	BW	kg	70	USEPA 1991; Section 2.2	70	USEPA 1991; Section 2.2
Averaging Time - Non-Cancer	AT-NC	days	365	USEPA 1989, Exhibits 6-11 through 6-16	365	USEPA 1989, Exhibits 6-11 through 6-16
Averaging Time - Cancer	AT-C	days	25550	USEPA 1989, Exhibits 6-11 through 6-16	25550	USEPA 1989, Exhibits 6-11 through 6-16
Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	B	unitless	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4

APPENDIX E
EXPOSURE PARAMETERS SUMMARY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Receptor:			Surveillance Worker			
Parameter		**Units**	**RME**	**Source/Rationale**	**CT**	**Source/Rationale**
Chemical Concentration in Soil	CS	mg/kg	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Water	CW	ug/L	NA	NA	NA	NA
Chemical Concentration in Air	CA	mg/m^3	NA	NA	NA	NA
Unit Conversion Factor for Soil	CF	kg/mg	0.000001	Unit Conversion	0.000001	Unit Conversion
Unit Conversion Factor for Water	CF	mg/ug	NA	NA	NA	NA
Ingestion Rate of Soil	IR	mg/day	100	USEPA 2002, Exhibit 1-2, Outdoor commercial/industrial worker	50	USEPA 1997; Table 4-23 adult, average
Ingestion Rate of Water	IR	L/day	NA	NA	NA	NA
Inhalation Rate	InR	m^3/hr	NA	NA	NA	NA
Fraction Ingested from Soil	FI	unitless	1	BPJ, NSDEC 2008 comment 11	1	BPJ, NSDEC 2008 comment 11
Fraction Absorbed	FA	unitless	NA	NA	NA	NA
Skin Surface Area	SA	cm^2	NA	NA	NA	NA
Skin Surface Area Available for Contact	SA	cm^2	3300	USEPA 2004, Exhibit 3-5, Industrial Worker	3300	USEPA 2004, Exhibit 3-5, Industrial Worker
Soil to Skin Adherence Factor (Soil)	AF	mg/cm^3	0.3	USEPA 2004; Exhibit 3-3, as construction worker	0.3	USEPA 2004; Exhibit 3-3, as construction worker
Soil to Skin Adherence Factor (Sediment)	AF	mg/cm^3	NA	NA	NA	NA
Dermal Absorption Factor	ABS	unitless	Chemical Specific	USEPA 2004; Exhibit 3-4	Chemical Specific	USEPA 2004; Exhibit 3-4
Permeability Constant	K_P	cm/hour	NA	NA	NA	NA
Exposure Time	ET	hours/day	NA	NA	NA	NA
Event Duration	t_{event}	hr/event	NA	NA	NA	NA
Lag Time per Event	τ_{event}	hr/event	NA	NA	NA	NA
Time to Reach Steady-State	t*	hr	NA	NA	NA	NA
Exposure Frequency	EF	days/year	31	USEPA 2004, Exhibit 3-5, RME for industrial workers. 250 divided by 8 because of assumption that surveillance worker is only onsite outside of his/her vehicle for 60 minutes per work day. NYSDEC, 2007 comment S23. NYSDEC, 2008 comment 11	5	USEPA 2004, Exhibit 3-5, CT for industrial workers. 219 divided by 48 because of assumption that surveillance worker is only onsite outside of his/her vehicle for 10 minutes per work day. NYSDEC, 2007 comment S23. NYSDEC, 2008 comment 11
Exposure Duration	ED	years	25	USEPA 2004, Exhibit 3-5, RME for industrial workers	9	USEPA 2004, Exhibit 3-5, CT for industrial workers
Body Weight	BW	kg	70	USEPA, 1991; Section 2.2	70	USEPA, 1991; Section 2.2
Averaging Time - Non-Cancer	AT-NC	days	9125	USEPA 1989, Exhibits 6-11 through 6-16	3285	USEPA 1989, Exhibits 6-11 through 6-16
Averaging Time - Cancer	AT-C	days	25550	USEPA 1989, Exhibits 6-11 through 6-16	25550	USEPA 1989, Exhibits 6-11 through 6-16
Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	B	unitless	NA	NA	NA	NA

APPENDIX E
EXPOSURE PARAMETERS SUMMARY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Receptor:			Utility Worker			
Parameter		**Units**	**RME**	**Source/Rationale**	**CT**	**Source/Rationale**
Chemical Concentration in Soil	CS	mg/kg	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Water	CW	ug/L	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Air	CA	mg/m^3	NA	NA	NA	NA
Unit Conversion Factor for Soil	CF	kg/mg	0.000001	Unit Conversion	0.000001	Unit Conversion
Unit Conversion Factor for Water	CF	mg/ug	0.001	Unit Conversion	0.001	Unit Conversion
Ingestion Rate of Soil	IR	mg/day	330	USEPA 2002, Section 5.3.2. Equation 5-1 for construction worker	330	USEPA 2002, Section 5.3.2. Equation 5-1 for construction worker
Ingestion Rate of Water	IR	L/day	0.03	USEPA 1989; Section 6.6.1, incidental ingestion by a non-simmwer, 0.03 L.hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.	0.01	USEPA 1989; Section 6.6.1, Best Professional Judgement
Inhalation Rate	InR	m^3/hr	NA	NA	NA	NA
Fraction Ingested from Soil	FI	unitless	1	BPJ, assumes entire dose comes from onsite	1	BPJ, assumes entire dose comes from onsite
Fraction Absorbed	FA	unitless	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Skin Surface Area	SA	cm^2	3300	USEPA 2002, Exhibit 1-2, Construction Worker	3300	USEPA 2002, Exhibit 1-2, Construction Worker
Skin Surface Area Available for Contact	SA	cm^2	3300	USEPA 2002, Exhibit 1-2, Construction Worker	3300	USEPA 2002, Exhibit 1-2, Construction Worker
Soil to Skin Adherence Factor (Soil)	AF	mg/cm^3	0.9	USEPA 2004; Exhibit 3-3, as pipe layer, dry soil	0.2	USEPA 2004; Exhibit 3-3, as pipe layer, dry soil
Soil to Skin Adherence Factor (Sediment)	AF	mg/cm^3	NA	NA	NA	NA
Dermal Absorption Factor	ABS	unitless	Chemical Specific	USEPA 2004; Exhibit 3-4	Chemical Specific	USEPA, 2004; Exhibit 3-4
Permeability Constant	K_P	cm/hour	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Exposure Time	ET	hours/day	NA	NA	NA	NA
Event Frequency	EV	event/day	1	NA	1	NA
Event Duration	t_{event}	hr/event	8	BPJ, assumes 8 hr work day	8	BPJ, assumes 8 hr work day
Lag Time per Event	τ_{event}	hr/event	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Time to Reach Steady-State	t*	hr	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Exposure Frequency	EF	days/year	75	BPJ, NYSDEC 2004	75	BPJ, NYSDEC 2004
Exposure Duration	ED	years	1	USEPA 1991	1	USEPA 1991
Body Weight	BW	kg	70	USEPA 1991; Section 2.2	70	USEPA 1991; Section 2.2
Averaging Time - Non-Cancer	AT-NC	days	365	USEPA 1989, Exhibits 6-11 through 6-16	365	USEPA 1989, Exhibits 6-11 through 6-16
Averaging Time - Cancer	AT-C	days	25550	USEPA 1989, Exhibits 6-11 through 6-16	25550	USEPA 1989, Exhibits 6-11 through 6-16
Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	B	unitless	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4

APPENDIX E
EXPOSURE PARAMETERS SUMMARY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Receptor:			Adolescent Trespasser, 7-16 years old			
Parameter		**Units**	**RME**	**Source/Rationale**	**CT**	**Source/Rationale**
Chemical Concentration in Soil	CS	mg/kg	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Water	CW	ug/L	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Air	CA	mg/m^3	NA	NA	NA	NA
Unit Conversion Factor for Soil	CF	kg/mg	0.000001	Unit Conversion	0.000001	Unit Conversion
Unit Conversion Factor for Water	CF	mg/ug	0.001	Unit Conversion	0.001	Unit Conversion
Ingestion Rate of Soil	IR	mg/day	100	USEPA 2002; Exhibit 1-2, as adult resident	100	USEPA 1997, Table 4-23, mean, children
Ingestion Rate of Water	IR	L/day	0.03	USEPA 1989; Section 6.6.1, incidental ingestion by a non-simmwer, 0.03 L.hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.	0.01	USEPA 1989; Section 6.6.1, Best Professional Judgement
Inhalation Rate	InR	m^3/hr	NA	NA	NA	NA
Fraction Ingested from Soil	FI	unitless	1	BPJ, assumes entire dose comes from onsite	1	BPJ, assumes entire dose comes from onsite
Fraction Absorbed	FA	unitless	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Skin Surface Area	SA	cm^2	4250	USEPA 2004, Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)	4250	USEPA 2004, Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)
Skin Surface Area Available for Contact	SA	cm^2	4250	USEPA 2004, Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)	4250	USEPA 2004, Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)
Soil to Skin Adherence Factor (Soil)	AF	mg/cm^3	0.3	USEPA 2004; Exhibit 3-3, as residential gardener, 95th percentile	0.15	USEPA, 2004; Exhibit 3-3
Soil to Skin Adherence Factor (Sediment)	AF	mg/cm^3	0.3	USEPA 2004; Exhibit 3-3, as residential gardener, 95th percentile	0.15	USEPA, 2004; Exhibit 3-3, as residential gardener, geometric mean
Dermal Absorption Factor	ABS	unitless	Chemical Specific	USEPA 2004; Exhibit 3-4	Chemical Specific	USEPA, 2004; Exhibit 3-4
Permeability Constant	K_P	cm/hour	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Exposure Time	ET	hours/day	NA	NA	NA	NA
Event Frequency	EV	event/day	1	NA	1	NA
Event Duration	t_{event}	hr/event	2	Honeywell, 2004	2	Honeywell, 2004
Lag Time per Event	τ_{event}	hr/event	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Time to Reach Steady-State	t*	hr	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Exposure Frequency	EF	days/year	42	BPJ, Honeywell, 2008b, comment 12	32	BPJ, Honeywell, 2008b, comment 12
Exposure Duration	ED	years	9	BPJ, NYSDEC 2004	9	BPJ, NYSDEC 2004
Body Weight	BW	kg	45	USEPA 1997, Table 7-3, Mean of boys & girls aged 7 - 16 years	45	USEPA 1997, Table 7-3, Mean of boys & girls aged 7 - 16 years
Averaging Time - Non-Cancer	AT-NC	days	3285	USEPA 1989, Exhibits 6-11 through 6-16	3285	USEPA 1989, Exhibits 6-11 through 6-16
Averaging Time - Cancer	AT-C	days	25550	USEPA 1989, Exhibits 6-11 through 6-16	25550	USEPA 1989, Exhibits 6-11 through 6-16
Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	B	unitless	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4

APPENDIX E
EXPOSURE PARAMETERS SUMMARY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Receptor:			Adult Trespasser			
Parameter		**Units**	**RME**	**Source/Rationale**	**CT**	**Source/Rationale**
Chemical Concentration in Soil	CS	mg/kg	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Water	CW	ug/L	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Air	CA	mg/m^3	NA	NA	NA	NA
Unit Conversion Factor for Soil	CF	kg/mg	0.000001	Unit Conversion	0.000001	Unit Conversion
Unit Conversion Factor for Water	CF	mg/ug	0.001	Unit Conversion	0.001	Unit Conversion
Ingestion Rate of Soil	IR	mg/day	50	USEPA 1997, Table 4-23, mean, adult	50	USEPA 1997, Table 4-23, mean, adult
Ingestion Rate of Water	IR	L/day	0.03	USEPA 1989; Section 6.6.1	0.01	USEPA 1989; Section 6.6.1
Inhalation Rate	InR	m^3/hr	NA	NA	NA	NA
Fraction Ingested from Soil	FI	unitless	1	BPJ, assumes entire dose comes from onsite	0.5	BPJ, Harborbrook HHRA
Fraction Absorbed	FA	unitless	NA	NA	NA	NA
Skin Surface Area	SA	cm^2	NA	NA	NA	NA
Skin Surface Area Available for Contact	SA	cm^2	5700	USEPA 2004, Exhibit 3-5, adult resident	5700	USEPA 2004, Exhibit 3-5, adult resident
Soil to Skin Adherence Factor (Soil)	AF	mg/cm^3	0.3	USEPA 2004; Exhibit 3-3, as residential gardener, 95th percentile	0.15	USEPA, 2004; Exhibit 3-3
Soil to Skin Adherence Factor (Sediment)	AF	mg/cm^3	0.3	USEPA 2004; Exhibit 3-3, as residential gardener, 95th percentile	0.15	USEPA, 2004; Exhibit 3-3
Dermal Absorption Factor	ABS	unitless	Chemical Specific	USEPA 2004; Exhibit 3-4	Chemical Specific	USEPA 2004; Exhibit 3-4
Permeability Constant	K_P	cm/hour	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Exposure Time	ET	hours/day	NA	NA	NA	NA
Event Frequency	EV	event/day	1	NA	1	NA
Event Duration	t_{event}	hr/event	4	BPJ	2	BPJ
Lag Time per Event	τ_{event}	hr/event	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Time to Reach Steady-State	t*	hr	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4
Exposure Frequency	EF	days/year	42	Haborbrook HHRA	32	Best Professional Judgement
Exposure Duration	ED	years	30	USEPA, 2004; Exhibit 3-2	9	USEPA, 2004; Exhibit 3-2
Body Weight	BW	kg	70	USEPA 1991; Section 2.2	70	USEPA 1991; Section 2.2
Averaging Time - Non-Cancer	AT-NC	days	10950	USEPA 1989, Exhibits 6-11 through 6-16	3285	USEPA 1989, Exhibits 6-11 through 6-16
Averaging Time - Cancer	AT-C	days	25550	USEPA 1989, Exhibits 6-11 through 6-16	25550	USEPA 1989, Exhibits 6-11 through 6-16
Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	B	unitless	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4	Chemical Specific	USEPA 2004, Exhibits B-3 & B-4

APPENDIX E
EXPOSURE PARAMETERS SUMMARY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Receptor:			Industrial Worker			
Parameter		**Units**	**RME**	**Source/Rationale**	**CT**	**Source/Rationale**
Chemical Concentration in Soil	CS	mg/kg	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Water	CW	ug/L	NA	NA	NA	NA
Chemical Concentration in Air	CA	mg/m^3	NA	NA	NA	NA
Unit Conversion Factor for Soil	CF	kg/mg	0.000001	Unit Conversion	0.000001	Unit Conversion
Unit Conversion Factor for Water	CF	mg/ug	NA	NA	NA	NA
Ingestion Rate of Soil	IR	mg/day	50	USEPA 2002, Exhibit 1-2, indoor industrial worker	50	USEPA, 1997; Table 4-23, adult, average
Ingestion Rate of Water	IR	L/day	NA	NA	NA	NA
Inhalation Rate	InR	m^3/hr	NA	NA	NA	NA
Fraction Ingested from Soil	FI	unitless	1	BPJ, assumes entire dose comes from onsite	1	BPJ, assumes entire dose comes from onsite
Fraction Absorbed	FA	unitless	NA	NA	NA	NA
Skin Surface Area	SA	cm^2	NA	NA	NA	NA
Skin Surface Area Available for Contact	SA	cm^2	3300	USEPA, 2004; Exhibit 3-5	3300	USEPA, 2004; Exhibit 3-5
Soil to Skin Adherence Factor (Soil)	AF	mg/cm^3	0.2	USEPA, 2004; Section 3.2.2.3	0.02	USEPA, 2004; Exhibit 3-3, as commercial grounds keeper
Soil to Skin Adherence Factor (Sediment)	AF	mg/cm^3	NA	NA	NA	NA
Dermal Absorption Factor	ABS	unitless	Chemical Specific	USEPA, 2004; Exhibit 3-4	Chemical Specific	USEPA, 2004; Exhibit 3-4
Permeability Constant	K_P	cm/hour	NA	NA	NA	NA
Exposure Time	ET	hours/day	NA	NA	NA	NA
Event Duration	t_{event}	hr/event	NA	NA	NA	NA
Lag Time per Event	τ_{event}	hr/event	NA	NA	NA	NA
Time to Reach Steady-State	t*	hr	NA	NA	NA	NA
Exposure Frequency	EF	days/year	188	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover. See Attachment A	164	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover. See Attachment A
Exposure Duration	ED	years	25	USEPA, 1991	9	USEPA, 1991
Body Weight	BW	kg	70	USEPA, 1991; Section 2.2	70	USEPA, 1991; Section 2.2
Averaging Time - Non-Cancer	AT-NC	days	9125	USEPA 1989, Exhibits 6-11 through 6-16	3285	USEPA 1989, Exhibits 6-11 through 6-16
Averaging Time - Cancer	AT-C	days	25550	USEPA 1989, Exhibits 6-11 through 6-16	25550	USEPA 1989, Exhibits 6-11 through 6-16
Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	B	unitless	NA	NA	NA	NA

APPENDIX E
EXPOSURE PARAMETERS SUMMARY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

			Receptor:	Transient Adult (State Fair Visitor)		
Parameter		**Units**	**RME**	**Source/Rationale**	**CT**	**Source/Rationale**
Chemical Concentration in Soil	CS	mg/kg	See Table 3	See RAGS Table 3 Series	See Table 3	See RAGS Table 3 Series
Chemical Concentration in Water	CW	ug/L	NA	NA	NA	NA
Chemical Concentration in Air	CA	mg/m^3	NA	NA	NA	NA
Unit Conversion Factor for Soil	CF	kg/mg	0.000001	Unit Conversion	0.000001	Unit Conversion
Unit Conversion Factor for Water	CF	mg/ug	NA	NA	NA	NA
Ingestion Rate of Soil	IR	mg/day	100	USEPA 2002; Exhibit 1-2, adult resident	100	USEPA 1997, Table 4-23, mean, adult
Ingestion Rate of Water	IR	L/day	NA	NA	NA	NA
Inhalation Rate	InR	m^3/hr	NA	NA	NA	NA
Fraction Ingested from Soil	FI	unitless	1	BPJ, assumes entire dose comes from onsite	1	BPJ, assumes entire dose comes from onsite
Fraction Absorbed	FA	unitless	NA	NA	NA	NA
Skin Surface Area	SA	cm^2	NA	NA	NA	NA
Skin Surface Area Available for Contact	SA	cm^2	5700	USEPA 2004, Exhibit 3-5, adult resident	5700	USEPA 2004, Exhibit 3-5, adult resident
Soil to Skin Adherence Factor (Soil)	AF	mg/cm^3	0.06	USEPA, 2004; Exhibit 3-3, as residential grounds keeper	0.01	USEPA, 2004; Exhibit 3-3, as residential grounds keeper
Soil to Skin Adherence Factor (Sediment)	AF	mg/cm^3	NA	NA	NA	NA
Dermal Absorption Factor	ABS	unitless	Chemical Specific	USEPA, 2004; Exhibit 3-4	Chemical Specific	USEPA, 2004; Exhibit 3-4
Permeability Constant	K_P	cm/hour	NA	NA	NA	NA
Exposure Time	ET	hours/day	NA	NA	NA	NA
Event Duration	t_{event}	hr/event	NA	NA	NA	NA
Lag Time per Event	τ_{event}	hr/event	NA	NA	NA	NA
Time to Reach Steady-State	t*	hr	NA	NA	NA	NA
Exposure Frequency	EF	days/year	14	Honeywell, 2008b, comment 34	2	NYSDEC, 2004
Exposure Duration	ED	years	9	NYSDEC, 2004	9	NYSDEC, 2004
Body Weight	BW	kg	70	USEPA, 1991; Section 2.2	70	USEPA 1991; Section 2.2
Averaging Time - Non-Cancer	AT-NC	days	3285	USEPA 1989, Exhibits 6-11 through 6-16	3285	USEPA 1989, Exhibits 6-11 through 6-16
Averaging Time - Cancer	AT-C	days	25550	USEPA 1989, Exhibits 6-11 through 6-16	25550	USEPA 1989, Exhibits 6-11 through 6-16
Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	B	unitless	NA	NA	NA	NA

APPENDIX E
EXPOSURE PARAMETERS SUMMARY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Receptor:		Adult Resident			
Parameter	**Units**	**RME**	**Source/Rationale**	**CT**	**Source/Rationale**

Notes:
BPJ = Best Professional Judgement
NA = Not Applicable

References:

NYSDEC. 2008. Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4".

Honeywell. 2004. Letter to Richard Mustico from John McAuliffe of Honeywell presenting responses to comments that were incorporated into the 2004 Human Health Risk Assessment. December.

NYSDEC. 2004. Electronic correspondence from Richard Mustico of the NYSDEC to Al Labuz of Honeywell regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004. (See Appendix H)

NYSDEC. 2007. Electronic correspondance dated August 29, 2007 to Richard Mustico of the NYSDEC regarding comments by NYSDEC March 13, 2007 pertaining to the Willis Avenue Chlorobenzene Site 2004 HHRA. (See Appendix G1).

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.

USEPA. 1989a. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.

USEPA. 1997a. Exposure Factors Handbook - Volume 1 General Factors. Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002c. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.

USEPA. 2004a. Risk Assessment Guidance for Superfund (RAGS), Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005.

USEPA. 2006b. Child-Specific Exposure Factors Handbook (External Draft). EPA/600/R/-6/096A. September.

APPENDIX F

Chemical Specific Values

APPENDIX F
CHEMICAL SPECIFIC VALUES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

CHEMICAL	PC	t*	B	τ	FA	ABS_d	ABS_{GI}
DIOXINS							
2,3,7,8-TCDD Equivalent*	0.8100	30.09	5.60	6.82	0.50	0.03	0.7
METALS							
ALUMINUM	0.0010	NA	NA	NA	NA	0.001	1
ANTIMONY	0.0010	NA	NA	NA	NA	0.001	0.15
ARSENIC	0.0010	NA	NA	NA	NA	0.03	0.95
BARIUM	0.0010	NA	NA	NA	NA	0.001	0.07
BERYLLIUM	0.0010	NA	NA	NA	NA	0.001	0.007
CADMIUM	0.0010	NA	NA	NA	NA	0.001	0.025
CHROMIUM	0.0020	NA	NA	NA	NA	0.1	0.025
COBALT	0.0004	NA	NA	NA	NA	0.1	1
COPPER	0.0010	NA	NA	NA	NA	0.001	1
CYANIDE	0.0010	NA	NA	NA	NA	0.1	1
IRON	0.0010	NA	NA	NA	NA	0.001	1
LEAD	0.0001	NA	NA	NA	NA	0.001	1
MANGANESE	0.0010	NA	NA	NA	NA	0.001	0.04
MERCURY	0.0010	NA	NA	NA	NA	0.001	0.07
METHYL MERCURY	0.0001	NA	NA	NA	NA	0.1	1
NICKEL	0.0002	NA	NA	NA	NA	0.001	0.04
SELENIUM	0.0010	NA	NA	NA	NA	0.001	0.8
SILVER	0.0006	NA	NA	NA	NA	0.001	0.04
VANADIUM	0.0010	NA	NA	NA	NA	0.001	0.026
ZINC	0.0006	NA	NA	NA	NA	0.001	1
PCBs							
LESS CHLORINATED	0.4331	NA	NA	NA	NA	0.14	0.96
HIGHLY CHLORINATED	0.8782	NA	NA	NA	NA	0.14	0.96
PESTICIDES							
ALDRIN	0.0014	28.54	0.00	11.89	1.00	0.1	1
DELTA-BHC	0.0189	0.00	0.00	0.00	0.00	0.1	1
DIELDRIN	0.0120	35.09	0.10	14.62	0.80	0.1	1
ENDOSULFAN I	0.0018	0.00	0.00	0.00	0.00	NV	1
HEPTACHLOR	0.2160	31.85	0.10	13.27	0.80	0.1	1
SVOCs							
2,4,6-TRICHLOROPHENOL	0.0350	3.27	0.20	1.36	1.00	0.1	1
2,4-DICHLOROPHENOL	0.0210	2.10	0.10	0.87	1.00	0.1	1
2-CHLOROPHENOL	0.0080	1.34	0.00	0.56	1.00	0.01	1
2-METHYLNAPHTHALENE	0.1307	0.00	0.00	0.00	0.00	0.13	1
2-NITROPHENOL	0.0040	1.54	0.00	0.64	1.00	0.1	1
4-CHLORO-3-METHYLPHENOL	0.0290	1.61	0.10	0.67	1.00	0.1	1
4-METHYLPHENOL	0.0077	1.03	0.00	0.43	1.00	0.1	1
4-NITROPHENOL	0.0048	1.54	0.00	0.64	1.00	0.1	1
ACENAPHTHYLENE	0.0617	0.00	0.00	0.00	0.00	0.13	0.89
BENZO(A)ANTHRACENE	0.4700	8.53	2.80	2.03	1.00	0.13	0.89
BENZO(A)PYRENE	0.7000	11.67	4.30	2.69	1.00	0.13	0.89
BENZO(B)FLUORANTHENE	0.7000	12.03	4.30	2.77	1.00	0.13	0.89
BENZO(G,H,I)PERYLENE	0.8933	0.00	0.00	0.00	0.00	0.13	1
BENZO(K)FLUORANTHENE	0.6118	0.00	0.00	0.00	0.00	0.13	0.89
BIS(2-ETHYLHEXYL)PHTHALATE	0.0250	39.93	0.20	16.64	0.80	0.1	1
CHRYSENE	0.4700	8.53	2.80	2.03	1.00	0.13	0.89
DIBENZO(A,H)ANTHRACENE	1.5000	17.57	9.70	3.88	0.60	0.13	0.89
DIBENZOFURAN	0.1027	0.00	0.00	0.00	0.00	0.1	1

APPENDIX F
CHEMICAL SPECIFIC VALUES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

CHEMICAL	PC	t*	B	τ	FA	ABS_d	ABS_{GI}
HEXACHLOROBENZENE	0.1300	16.21	0.90	4.22	0.90	0.1	1
HEXACHLOROBUTADIENE	0.0810	7.42	0.50	3.09	0.90	0.1	1
INDENO(1,2,3-CD)PYRENE	1.0000	16.83	6.70	3.78	0.60	0.13	0.89
NAPHTHALENE	0.0470	1.34	0.20	0.56	1.00	0.13	0.89
N-NITROSODIPHENYLAMINE	0.0196	3.31	0.10	1.38	1.00	0.1	1
PENTACHLOROPHENOL	0.3900	13.82	2.50	3.33	0.90	0.25	0.76
PHENANTHRENE	0.1400	4.11	0.70	1.06	1.00	0.13	0.89
VOCs							
1,1,2,2-TETRACHLOROETHANE	0.0069	2.24	0.00	0.93	1.00	0.01	1
1,2,3-TRICHLOROBENZENE	0.0492	0.00	0.00	0.00	0.00	0.1	1
1,2,4-TRICHLOROBENZENE	0.0660	2.66	0.30	1.11	1.00	0.01	1
1,2,4-TRIMETHYLBENZENE	0.1051	0.00	0.00	0.00	0.00	0.1	1
1,2-DICHLOROBENZENE	0.0410	1.71	0.20	0.71	1.00	0.01	1
1,2-DICHLOROETHANE	0.0042	0.92	0.00	0.38	1.00	0.01	1
1,2-DICHLOROPROPANE	0.0078	1.10	0.00	0.46	1.00	0.01	1
1,3,5-TRIMETHYLBENZENE	0.0843	0.00	0.00	0.00	0.00	0.1	1
1,3-DICHLOROBENZENE	0.0580	1.71	0.30	0.71	1.00	0.01	1
1,4-DICHLOROBENZENE	0.0420	1.71	0.20	0.71	1.00	0.01	1
ACETONE	0.0005	0.00	0.00	0.00	0.00	0.01	1
BENZENE	0.0150	0.70	0.10	0.29	1.00	0.01	1
BROMODICHLOROMETHANE	0.0046	2.12	0.00	0.88	1.00	0.01	1
CARBON DISULFIDE	0.0170	0.72	0.10	0.30	1.00	0.01	1
CHLOROBENZENE	0.0280	1.09	0.10	0.46	1.00	0.01	1
CHLOROFORM	0.0068	1.19	0.00	0.50	1.00	0.01	1
ETHYLBENZENE	0.0490	1.01	0.20	0.42	1.00	0.01	1
METHYLENE CHLORIDE	0.0035	0.76	0.00	0.32	1.00	0.01	1
SEC-BUTYLBENZENE	0.1119	NA	NA	NA	NA	0.1	1
TERT-BUTYLBENZENE	0.1031	NA	NA	NA	NA	0.1	1
TETRACHLOROETHENE	0.0330	2.18	0.20	0.91	1.00	0.01	1
TOLUENE	0.0310	0.84	0.10	0.35	1.00	0.01	1
TRICHLOROETHENE	0.0120	1.39	0.10	0.58	1.00	0.01	1
XYLENES, TOTAL	0.0522	NA	NA	NA	NA	0.01	1

PC = Permeability Constant (K_P)

t* = Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)

B = Time to Reach Steady State

τ = Lag Time Per Event

FA = Fraction Absorbed

ABS_d = Dermal Absorption Factor

ABS_{GI} = Gastrointestinal (Oral) Absorption Efficiency

*= Assumption of organic soil content being less than 10%. If it is greater than 10%, a ABS of 0.001 will be used.

USEPA. 2004b. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

APPENDIX G1

Honeywell 2007 Response to NYSDEC Comments

September 5, 2007

Mr. Richard A. Mustico
Project Manager
New York State Department of Environmental Conservation
Remedial Bureau B
625 Broadway, 12th Floor
Albany, NY 12233-7016

Re: Willis Avenue Chlorobenzene Site Consent Order #R7-0201-87-08
Human Health Risk Assessment (HHRA)

Dear Mr. Mustico:

This letter provides responses to NYSDEC comments on the October 2004 Revised Human Health Risk Assessment (2004 HHRA) that were submitted to Honeywell in a letter dated March 13, 2007. These responses were originally submitted to NYSDEC on May 17, 2007, but have been revised to reflect discussions between NYSDEC, Honeywell, USEPA, and O'Brien & Gere in the May 30, 2007 conference call.

The May 30, 2007 conference call was to discuss comments G2, G4, S18, S38, S44, T32, and T26. During the conference call and in subsequent email correspondence, the NYSDEC also brought up additional specific notes regarding the following comments: S5, S43, S23, T22, T28, S35, T26, and T29. These responses have been revised to reflect the discussions during the conference call and subsequent email correspondence.

During the phone call, Michael Sivak of the USEPA agreed to provide alternative toxicological values for constituents without approved values in the USEPA IRIS database. A list of constituents with Provisional Peer Reviewed Toxicity Values (PPRTV) was provided by USEPA for review. The PPRTVs will be incorporated into the risk assessment as appropriate.

Responses to the comments listed above are highlighted in yellow in the attachment. We have also enclosed a CD containing the HHRA database. The HHRA database is the same as the Site wide database with the addition of two columns, subsite and medium, which will allow the user to differentiate data subsets used in the risk calculations.

Should you have any additional questions or concerns regarding this matter, please feel free to contact me or Chris Calkins of O'Brien & Gere.

Sincerely,

John P. McAuliffe, P.E.
Program Director, Syracuse

Enc.: Attachment

cc: David L. Wickersham – Honeywell
Alfred J. Labuz – Honeywell
Brian Israel, Esquire – Arnold & Porter
Gregg Townsend – NYSDEC Region 7
Mark Van Valkenburg – NYSDOH
Robert Nunes – USEPA Region 2
Henriette Hamel – NYSDOH
Michael Spera – TAMS
Chris Calkins – O'Brien & Gere
William Schew – O'Brien & Gere
Carol Conyers, Esq. - NYSDEC

ATTACHMENT: Responses to Comments submitted to Honeywell in a letter from NYSDEC dated March 13, 2007on the October 2004 Human Health Risk Assessment for the Willis Avenue Chlorobenzene Site.

Comment numbers below correspond to the New York State Department of Environmental Conservation (NYSDEC) July 19, 2004 Comments on the June 2002 HHRA and Honeywell's Response to Comments from the December 2, 2004 letter from John P. McAuliffe, P.E. of Honeywell to Richard A. Mustico of the NYSDEC.

Bulleted items represent new comments on the October 2004 HHRA.

General Comments

G1

· *In Honeywell's December 2, 2004 Response to Comments several responses indicate that revisions will be incorporated into the final HHRA to be submitted after NYSDEC review of the October 2004 HHRA (e.g., Response to Comment Nos. 38, 63, 77, 87, 88). Please ensure that these corrections/revisions are made for the final document.*

The corrections/revisions noted in Honeywell's December 2, 2004 Response to Comments will be implemented in the final HHRA.

G2

5. NYSDEC requests a copy of the database in the format required in the consent order, which should include all data generated for the site, including data for the baseline ecological risk assessment and interim remedial measures.

In addition, the data set specific to the HHRA should be presented as an attachment (preferably electronically) in a format that can be used to verify the calculations in the HHRA. Data were not presented in a manner which was conducive to calculations being checked.

A copy of the database and an attachment with the HHRA data set will be presented in advance of the final HHRA. The HHRA data set will contain a "Subsite" and "Medium" field to indicate the exposure area and sample medium for each sample. Site exposure area maps and sample summary tables will also be provided to show which samples are located in which exposure area

G3

· *The adolescent trespasser has not been evaluated as a potentially exposed future population. The revised HHRA does not appear to do this. It is reasonable to assume that, given the expected future land use at the site, the exposure scenarios and parameters used for the current trespasser would be consistent with those for the future receptor as well. Incorporating the future trespasser will only require slight revisions of the text and RAGS tables and is not likely to require new tables or renumbering of existing tables. As an example of what should be done in terms of RAGS tables, please see Table 7.1.CT where the Time Scenario is already labeled "current/future." The future receptor should be added to RAGS 1.1a, b, f, and g (and subsequent affected tables).*

The current adolescent trespasser will be changed to the current/future adolescent trespasser in the RAGS tables and text.

G4

· *The data evaluation section should indicate whether mercury was speciated. If it was not, what assumptions were used to determine the form it might realistically be present in and how was it dealt with in the quantitative assessment? Information on the form of mercury present in the environment is important in understanding the potential for the chemical to migrate into indoor air, as well as for understanding its toxicity. Data in the Table 2 series indicate that at least one sample was analyzed for methylmercury in most areas. For the initial contaminant screening, EPA recommends, in the absence of speciation, mercury should be assumed to be in its most toxic form, methylmercury, and screened against these PRG/RBC values. It is understood that the assumption that not all the mercury at the Willis Chlorobenzene Site is present in the organic form. However, the quantitative assessment must clearly indicate in the text the data and assumptions used to establish any assumptions regarding the form of mercury in specific media and specific locations. In addition, the uncertainty assessment section of the HHRA should include a sensitivity analysis indicating the effect on the risk calculations if the actual fraction methylmercury is higher than the value assumed for risk characterization.*

The data evaluation section will discuss the form of mercury present on Site by evaluating available methylmercury data with respect to total mercury data. In the absence of data regarding speciation, mercury will be screened against methylmercury PRG/RBC values. In the risk characterization, the highest observed fraction of methylmercury from speciated samples will be used to determine mercury toxicity. For Site sediment, this fraction is 7% (rounded up from 6.90%; see table below) and for Site soil, it is 1% (rounded up from 0.61%; see table below). The uncertainty section will include a sensitivity analysis indicating the effect on the risk calculations if the actual fraction of methylmercury is higher than the value assumed for the risk characterization. It should be noted that the adolescent trespasser exposed to On-site Ditch surface soil (0-2 ft) is the only receptor for which the choice of the methylmercury fraction can result in changing the hazard index from less than 1 to greater than 1. This receptor will be discussed in the uncertainty section.

Sample ID	Sample Date	Exposure Area	Sample Depth (ft)	Mercury (µg/kg)	Methyl Mercury (µg/kg)	Methyl Mercury/Mercury Ratio
Sediment						
WA-5A-SD-D	10/27/1999	Tributary 5A	0-0.5 Ft	1100	4.65	0.42%
WA-5A-SED-2	10/27/1999	Tributary 5A	0-0.5 Ft	130	1.92	1.48%
WA-5A-SED-3	10/27/1999	Tributary 5A	0-0.5 Ft	60	4.14	6.90%
WA-5A-SED-4	10/27/1999	Tributary 5A	0-0.5 Ft	1200	2.81	0.23%
Soil						
WA-CHSA-SS	10/26/1999	Chlorobenzene hot spot area	0-0.5 Ft	1100	3.67	0.33%
WA-FCB-SS	10/26/1999	Former Chlorination Building	0-0.5 Ft	1200	3.3	0.28%
WA-MPS-SS	10/26/1999	General Plant Area	0-0.5 Ft	430	2.61	0.61%
WA-NW DITCH-S	10/26/1999	On-site ditches	0-0.5 Ft	4780000	686	0.01%
WA-OUT006-SS	10/26/1999	Southwest Off-Site/ Outfall 006	0-0.5 Ft	429000	83.7	0.02%
WA-PSA-SS	10/26/1999	Petroleum Storage Area	0-0.5 Ft	14200	3.44	0.02%

Specific Comments

Section 2

S1

· *Section 2.2, Page 6. Please provide an explanation of activities that occurred in the Chlorobenzene Hotspot Area so that historic contamination can be better understood. Otherwise, provide a reference to the RI that would provide this information.*

An explanation of activities that occurred in the chlorobenzene hotspot area will be included.

Section 3 – Conceptual Site Model

S2

· *Section 3.2 (Page 10), Footnote 3. The footnote indicates a fire occurred at the chlorination building in 1930. This information should be included in Section 2 on site history since it pertains to historical contamination and is essential to understanding the formation of dioxins, furans, and PAHs at the site.*

The information in the footnote will be included in Section 2.

S3

· *General, Sections 3.2 through 3.9. The individual exposure areas were reorganized (sequence changed) and in some cases were renamed. Are the renamed areas the same as those to which they correspond in the 2002 HHRA, or does the renaming indicate that the definition of the area (and hence the sample data included) has also changed?*

· *General, Sections 3.3 through 3.9. The descriptions of the individual areas were removed. The descriptions are useful to the reader and should be retained. Furthermore, the descriptions should clearly indicated which samples were used for each exposure area. Tables should be used to represent this information and referenced in the text.*

The descriptions of individual areas will be restored and any renamed areas will be described.

S4

· *Section 3.8 (Page 12). This section indicates that in the absence of deep soil samples in some areas, those collected from the General Plant Area were used as substitutes. The effects on the overall assessment from this lack of data should be acknowledged in the uncertainty section and should either be discussed qualitatively or identified as a data gap that may need to be filled at a later stage in the remediation process.*

The effects of using samples from the General Plant Area as substitutes will be discussed in the uncertainty section.

S5

· *Section 3.11.2. This section should discuss the exposure parameters applied to each potentially exposed population, as well as the reference for those values. This is*

especially important for those parameters based on best professional judgement. Simply directing the reader to the tables in Appendix L-C is insufficient.

The rationale and supporting references for each of the exposure parameters in the RAGS D Table 4 Series will be discussed in Section 3.11.2. This Section along with the updated RAGS D Table 4 Series will be submitted to NYSDEC in advance of the full HHRA.

Section 4 – Data Evaluation

S6

· *Section 4.1.3. Although exposure to high levels of mercury may first result in acute health effects, this HHRA should address chronic exposure to elemental mercury in any media or locations where it has been observed or its presence is suspected. Chronic exposure to some concentrations of elemental mercury is associated with adverse health effects. Please make adjustments to the risk assessment appropriately. Acute effects can be addressed as part of the Health and Safety Plan for remediation. The HHRA should indicate, as minimum, whether or not the pathway (exposure to mercury or its vapors) is complete under both current and future scenarios, and address the risks at least qualitatively if it is not possible to do so quantitatively.*

Chronic rather than acute effects of potential exposure to mercury will be addressed, including discussion of complete exposure pathways and corresponding risks.

S7

26, 27, 28. New Table L-3 has been provided to address these comments; Table L-3 should be referenced in Section 4.1.1. However, the areas listed in the table do not appear to match up with the areas listed in the text (e.g., "Northwest Off-Site/Outfall 004" shown as "State Fair Boulevard/Outfall 004" on Table L-3). Please use consistent nomenclature (and also consistent sequence) so that it is apparent which Table L-3 areas match the Section 4.1 areas. For example, it would be helpful to note in the text that the general plant area includes the Plant Area, Former Chlorination Building, and Off-Site Ditches sub-areas (as shown on Table L-3).

Table L-3 will be referenced in Section 4.1.1. and will use consistent nomenclature with the text.

S8

· *It would be clearer if all discussion of the groundwater data was presented in Section 4.1.10. As currently written, the sub-area groundwater data don't appear to always match the discussion (e.g., the last paragraph of Section 4.1.3 appears inconsistent with Table L-3; WA-6, which is evidently included in the count of 11 samples in the text, is included in the 006 area in Table L-3). A table identifiying (listing) all the groundwater samples (including year sampled, well ID, and parameters anlayzed) used for the site-wide drinking water pathway should be provided so that the discrepancy can be resolved. See also comment 37, below.*

All discussion of the groundwater data will be presented in Section 4.1.10, and a table listing all the groundwater samples used for the site-wide drinking water pathway will be provided.

S9

34. In new Table L-3, there is no depth cited for surface soil sample PAS #1. Please provide the depth in the revised table.

PAS#1 is not a surface soil sample. This sample was collected from the pipe bedding material around the P.A. Sewer. The sample was collected at 11 ft below ground surface. The Table will be corrected.

S10

35. *Petroleum Storage Area – second bullet. Based on Table L-3, should this state 4 (rather than 3) additional upper soil samples (i.e., PSA1, PSA2, and two samples from PSA3)?*

The text will be changed to state 4 additional upper soil samples.

S11

36. Chlorobenzene Hot Spot Area – first bullet. Based on Table L-3, should this be 7 (not 6) samples?

The text will be changed to state 7 surface soil samples.

S12

37. Groundwater was treated as one area (as requested), but the number of samples appears inconsistent (29 in the text but 35 in the table). It appears that 35 is the correct number of wells. Please correct the text as appropriate.

In addition, the date range shown appears to be incorrect. As noted in Table L-3 and confirmed in Honeywell's December 2, 2004 response, the only groundwater sample data used were from samples collected in 1992, 1995, and 1997. Therefore, the date range should be 1992 to 1997 (not 1991 to 2002). Please provide a tabulation of all the groundwater data used as noted in the bullet immediately above comment 34, above.

The number of samples and data range will be corrected. A table listing all the groundwater samples used for the site-wide drinking water pathway will be provided.

S13

38. The October 2004 report is incorrect; however, Honeywell's December 2, 2004 letter indicates this will be corrected. Based on the letter, this is provisionally acceptable.

Agreed.

S14

39. The comment was addressed; however, the new text is unclear and perhaps incorrect. It appears that the third sentence was mis-written (should it have meant to state that "analytes were retained as COPCs if the reporting limit was greater than the screening value"?). However, the third sentence of the new text seems to contradict the fourth sentence. Also, what does the phrase "retained as COPCs in the uncertainty analysis" mean? Were these not retained as COPCs in the quantitative assessment, but the impact of not including them is discussed in Section 8? Please re-write this paragraph to address inconsistencies and more clearly describe what was done.

The third sentence will be rewritten as: "For non-detect constituents with reporting limits that were greater than screening values, the constituents were not retained as COPCs in the

quantitative assessment, but the impact of not including them is discussed in the uncertainty analysis (Attachment L-A, Section 8).

S15

· *Section 4.3.1. EPA Region 2 also identifies any Group A (known human) carcinogens as COPCs and retains these chemicals in the quantitative risk assessment. Any chemical that is identified in the IRIS database as a Group A carcinogen should therefore be flagged for inclusion in the baseline human health risk assessment regardless of frequency of detection or if the maximum detected concentration exceeds risk-based limits. This list includes arsenic, benzene, vinyl chloride, and chromium (hexavalent chromium is a known human carcinogen via inhalation). The rationale for inclusion of these chemicals to be used in Table 2 is "TOX." Review of the tables indicates that Honeywell did not screen any of these out based on frequency of detection. Vinyl chloride was not detected, and arsenic was not screened out. However, benzene and chromium were screened out by Honeywell (because concentrations were below the screening level) in the following RAGS series 2 tables: 2.5 (Cr), 2.6 (Cr), 2.9 (benzene), 2.11 (benzene), 2.17 (benzene), 2.18 (benzene), and 2.21 (benzene). These should be included in the quantitative assessment.*

Group A carcinogens will be retained as COPCs in the quantitative assessment.

Section 5 – Exposure Assessment

S16

46. The first two references were added, but the standard default exposure factors (USEPA, 1991) was not. Honeywell's 12/2/04 response indicates that the references have been added, and they are all now in the references. USEPA, 1991 still needs to be added to the text.

USEPA (1991) will be added to the references.

S17

· *Section 5.1.3 (Page 32). Please include the following document in the list of EPA guidance: Calculating the Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites (USEPA, 2002a).*

This document will be added to the references.

S18

· *Section 5.1.4 (Page 33). Please discuss and provide a statistical reference which provides for a minimum sample number which provides for a meaningful statistical value. Please provide the reference for using the maximum detected concentration as the EPC in cases where there were fewer than 8 samples or the frequency of detection was less than 40 percent (i.e., see RAGS Volume 1, Part A, page 6-22). (Please note that RAGS allows for use of the maximum when there are insufficient data; however, the statistical criteria used for determining when a data set is insufficient need to be documented.)*

The reference for using the maximum detected value as the EPC (instead of the 95% UCL) for frequency of detection less than 50% (corrected from 40% stated above) is USEPA (2006; EPA/240/B-06/003) *Data Quality Assessment: Statistical Methods for Practitioners*. USEPA

(2006) provides guidance on statistical methods for estimating central values (e.g., 95% UCLs) of distributions containing non-detect data (Section 4.7). Methods are provided for data containing less than 15% non-detects and between 15-50% non-detects (Sections 4.7.1 and 4.7.2). However, when the proportion of non-detects exceeds 50%, the guidance recommends switching the parameter of interest from the distribution's center to a parameter to the right of center (using a test of proportions; Section 4.7.3). In sum, we will use 50% frequency of detection as the threshold below which an upper confidence limit on the mean will not be estimated.

Regarding the minimum sample size, the minimum sample size for calculating a 95% UCL using ProUCL 3.0 is 4. Therefore, the maximum detected concentration, instead of the 95% UCLs, will be used as the EPC for data sets with fewer than 4 samples. For data sets with at least 4 samples, non-detect values will be replaced by one-half of the reporting limit, and ProUCL will be used to calculate a 95% UCL, as long as the detection frequency is at least 50%. The calculated 95% UCL will be used as the EPC unless it exceeds the maximum detected concentration, in which case the latter will be used. This approach is consistent with USEPA (1989) RAGS A (p. 6-22),which cautions that if there is great variability in concentration values (due for example to low sample size or low detection frequency), an upper confidence limit may be high and may exceed the maximum detected concentration. In these cases, the maximum detected concentration may be used to estimate the exposure point concentration.

The approach for calculating each exposure point concentration will be documented in the RAGS Table 3 series, which (along with the RAGS Table 2 series) will be submitted in advance of the final HHRA.

S19

The Shapiro-Wilk test is not the only distribution test available in ProUCL and it is typically only used when there are fewer than 50 samples. Please mention other distribution tests, such as the Lilliefors and Empirical Distribution, available in the ProUCL program and whether they were used. [EPA]

The other goodness-of-fit tests available in ProUCL will be discussed.

S20

48. The response is acceptable. However, the typo should be fixed (reference to "Section XX").

The reference to Section XX in section 5.1.3 will be corrected.

S21

· *Section 5.1.5 (Page 34, VOCs) refers to USEPA 2003 Users' Guide but text in Section 4.3.1 refers to the 2002 version of the model. Please correct.*

Consistent references for the vapor intrusion model will be used.

S22

56. The explanation (response) in the 12/2/04 letter should be added to the text here.

The following text will be added to section 5.2.2: "The area containing soils supersaturated with mercury was not evaluated as a hot spot. Since the area is small and will be slated for remediation, an area-specific "hot-spot" evaluation was not undertaken."

S23

· *Section 5.2.1 (Page 36). An adequate explanation of the 10 minutes per day exposure duration for the surveillance worker, along with the rationale for the Fraction Ingested (FI) of 0.1, should be provided. These exposure parameters have not been adequately explained. The document must clearly state why this time was selected (e.g., the surveillance is only a 'windshield survey' and the worker only leaves the vehicle to check the lock on the gate). Additionally, the FI value of 0.1 is lower than EPA's default recommendation (i.e., assuming 100 percent ingested unless site-specific information suggests otherwise).*

Because the surveillance worker surveys the Site from inside a vehicle and only leaves the vehicle to check fence gate locks, it is estimated that the exposure time for the surveillance worker is less than one hour per day. As a result, only a fraction of the surveillance worker's daily soil ingestion rate (50 mg/day) is expected to result from exposure to Site soils. To account for this fractional intake of Site soils, an FI less than 1 is used. This approach is consistent with NYSDEC comment 49 in Honeywell's December 2, 2004 response letter to NYSDEC. For the CT scenario, an FI of 0.02 is used, corresponding to the ratio of 10 minutes on-Site per workday to the 480 minutes for an 8 hour workday. For the RME scenario, an FI of 0.125 is used, corresponding to the ratio of 60 minutes on-Site per workday to the 480 minutes for an 8 hour workday. This explanation will be included in Section 5.2.1.

S24

57. End of Section 5.2.2 (page 37). Please fix the justification of the last sentence in the last paragraph of the subsection (i.e., spacing between "Attachment" and "L-C2").

Agreed.

S25

59. Section 5.4. Terminology changed to "Northwest Off-site/Outfall-4" – is this the same area as the State Fair Boulevard/Outfall 4 area in the 2002 HHRA? Please clarify.

The "State Fair Boulevard/Outfall 4/Niagara Mohawk Area" in the 2002 HHRA is the same as the "Northwest Off-site/Outfall-4 Area" in the 2004 HHRA. These changes reflect only a renaming.

S26

· *Section 5.4.2 (Page 39). This section and those that follow suggest that the maximum detected concentration was used for the EPC to be conservative, rather than because the dataset was small. This implication is incorrect. Please amend the text to explain that the maximum was used because of the "fewer than 8 samples" and "frequency of detection less than 40 percent" criteria stated earlier.*

The correct rationale for why the maximum detected concentration was used for the EPC will be noted.

S27

· *Section 5.7.1 (Page 42). The PA sewer workers would be exposed to surface and subsurface soils as well as deep soils. Honeywell states that the sewer worker could be exposed to soils as deep as 20 ft bgs. The data set used for this receptor should be consistent with this assumption. It appears that the data set in the tables does not always match up with the data set described in the text. For example, RAGS Table 2.18 includes a depth interval from 0-10 feet. Please correct the text, as well as the appropriate RAGS tables, to reflect this.*

The soil depth for the PA sewer workers listed in the text and tables will be made consistent as 0-20 ft.

S28

· *Section 5.8.1 (Page 43). The last paragraph contains text on the General Plant Area rather than the CHSA. Please correct this mistake.*

The last paragraph of section 5.8.1. will discuss the CHSA instead of the General Plant Area.

Section 6 – Toxicity Assessment

S29

· *Section 6.1 (Page 47). The ethyl alcohol example should be deleted. It is not relevant to the HHRA and should be removed.*

The example will be deleted.

S30

· *Section 6.1.2 (Page 48). Please remove the italics from "including sensitive subpopulations" in the first paragraph.*

The italics will be removed.

S31

63. Section 6.2.1, second bullet (Page 49). The footnote was re-numbered as requested, but the actual footnote was deleted. Please replace the footnote.

The footnote will be replaced.

S32

· *Section 6.3 (Page 50): This section does not reflect EPA's current toxicity hierarchy as outlined in the OSWER Directive 9285.7-53, "Human Health Toxicity Values in Superfund Risk Assessments" (December 2003). Please revise using the following hierarchy:*

> ***Tier I:*** *IRIS*
> ***Tier II:*** *EPA's Provisional Peer Reviewed Toxicity Values. (These must be requested from USEPA; consultants do not have direct access to these files.)*
> ***Tier III:*** *Other current toxicity values, which include California EPA, ATSDR and HEAST. Consultation with the Superfund Technical Support Center (STSC) at the National Center for Environmental Assessment (NCEA) is recommended*

before anything in Tier III (including HEAST) is used in a quantitative assessment.

This hierarchy will be used in selection of toxicity factors.

S33

- *Section 6.3.1. Section title should be "elemental" mercury, not "elementary."*

- *This section (6.3.1) should be re-named (e.g., Mercury – other forms) – or perhaps better, a new subsection 6.3.2 should be added – and include not only a discussion of elemental mercury but also methylmercury. The section could be introduced with a brief statement as to where these forms were either detected or may be present on site. See also first bullet on Chapter 4.*

"Elementary" will be changed to "elemental" and a new subsection (6.3.2) discussing methylmercury will be added.

S34

- *Section 6.4.1 (pages 51 and 52). (a) The last two paragraphs of the dioxin/furan discussion are irrelevant to the risk assessment and should be removed (i.e., last two paragraph of this section which occur on page 52). Any legitimate concerns with the toxicological values may be presented in the uncertainty section. A helpful addition would be to include, either in the text or as an appendix, the TEF values from the World Health Organization that were utilized in this assessment. (b) In addition to the oral slope factor of $1.5x10^{5}$ used in this assessment, mention of the draft oral slope factor of $1x10^{6}$ and how use of this new slope factor may affect the assessment should be included in the uncertainty section. The draft review of dioxin can be found at http://www.epa.gov/ncea/pdfs/dioxin/nas-review/.*

The last two paragraphs will be removed. The WHO TEF values are provided in Table L-5. The draft oral slope factor will be discussed in the uncertainty section.

S35

- *Section 6.4.2 (Page 52). Please attribute the toxicity values used for PCBs to the proper source. (a) The CSF of 2.0 $(mg/kg\text{-}day)^{-1}$ for PCBs comes from IRIS, not the Risk Assessment Information System (RAIS). Toxicity values from RAIS are not part of EPA's hierarchy and should not be used unless recommended by NCEA. Additionally, EPA's IRIS database currently recommends using the high risk and persistence oral CSF of 2.0 $(mg/kg\text{-}day)^{-1}$ for inhalation of an aerosol or dust contaminated with PCBs. The dermal CSF should be the same as the oral since according to Exhibit 4-1 of RAGS, Part E, no gastrointestinal absorption efficiency for PCBs should be applied. (b) Aroclors 1242 and 1268 were detected in addition to 1016, 1248, 1254, and 1260 as stated in the text. EPA recommends that for Aroclors with percent chlorine less than or equal to 42 (i.e., Aroclor 1242) the RfD for Aroclor 1016 be used. Alternatively, for Aroclors with percent chlorine greater than 42 (i.e., Aroclor 1248, 1260 and 1268) the RfD for Aroclor 1254 should be used. The reference for this recommendation is a February 25, 2005, email communication with Stanley Barone, Chemical Manager for PCBs and Research Biologist with NCEA/ORD. Please update Table 5.1 to reflect this recommendation.*

The reference to RAIS will be changed to IRIS. The dermal and oral CSF will be the same. Aroclors with percent chlorine less than or equal to 42 (i.e., Aroclor 1242) will use the RfD for

Aroclor 1016. Aroclors with percent chlorine greater than 42 (i.e., Aroclor 1248, 1260 and 1268 will use the RfD for Aroclor 1254.

S36

· *Section 6.4.3 (Page 53): The reference for the TEF (or more correctly, the relative potency) approach to PAHs described in this section should not be attributed to Region 4, but rather to EPA's "Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons" (EPA/600/R-93/089, July 1993). Also, RAGS, Part E does not recommend adjusting the oral slope factor for benzo(a)pyrene for the dermal route. Please amend the text appropriately.*

The reference for the relative potency approach to PAHs will be changed as suggested. The oral slope factor for benzo(a)pyrene will not be adjusted for the dermal route.

S37

· *Section 6.4.4 (Page 53). The oral slope factor of $4.2x10^{1}$ $(mg/kg\text{-}day)^{-1}$ for Chromium VI is derived from the inhalation unit risk from IRIS, not RAIS. Please correct the reference.*

The reference will be changed from RAIS to IRIS.

S38

· *Section 6.4.5 (Page 53). EPA suggests that surrogate analysis be performed, or at least approved, by ORD, STSC-NCEA. Currently, RAGS Tables 5 and 6 were not adequately referenced with respect to what surrogates were applied and generally the sources of the toxicity values used. EPA recommends that the tables be revised to more clearly document the origin of the toxicity values. Once these revised tables are submitted for review, the surrogate values listed in Table L-6 will be submitted to NCEA for approval. Due to the time necessary for this review (which also includes identifying COPCs for which current PPRTVs are available), it is recommended that the toxicity tables – with the source of values clearly identified – be submitted for review in advance of the full HHRA.*

RAGS Tables 5 and 6 and will be updated to document use of surrogates and origin of toxicity values. These tables and Table L-6 will be submitted in advance of the full HHRA. O'Brien & Gere will coordinate with USEPA (Michael Sivak, Region 2) to obtain toxicity values that follow the EPA preferred hierarchy of sources (IRIS; PPRTV; other sources including CALEPA, ATSDR, HEAST).

Section 7 – Risk Characterization

S39

68. *In the first sentence, the exponent was fixed. In the second sentence, the comment about the NCP citation was not properly addressed. Honeywell should use the text from the NYSDEC July 19, 2004 comments in the discussion of cancer risk:*

". . . acceptable exposure levels are generally concentration levels that represent an excess upper bound cancer to an individual of between 10^{-4} to 10^{-6} . . . The 10^{-6} risk level shall be used as the point of departure for determining remediation goals . . ." (40 CFR §300.430[e][2][i][A][2]). These target risk levels are also often applied by other agencies responsible for protecting human health (New York State Department of Health [NYSDOH] and Agency for Toxic Substances and Disease Registry [ATSDR]).

The above text will be inserted.

S40

· *Some of the area names have been changed (e.g., in Section 7.2 "Outfall 006" has been added; in Section 7.3 what had been "State Fair Boulevard/Outfall 005/ Nimo" is now "Northwest Off-Site/Outfall 004"). Do these changes reflect only a renaming of the previous (2002) areas, or have the actual areas (including samples and data) associated with these area names also changed?*

The "State Fair Boulevard/Outfall 4/Niagara Mohawk Area" (mislabeled as "State Fair Boulevard/Outfall 5/Niagara Mohawk Area" in Section 7.3) in the 2002 HHRA is the same as the "Northwest Off-site/Outfall-4 Area" in the 2004 HHRA. The "Southwest Off-Site/Outfall 006" Exposure Area (mislabeled as "Southwest Off-Site Exposure Area" in Section 7.2) in the 2002 HHRA is the same as the "Southwest Off-Site/Outfall 006 Exposure Area" in the 2004 HHRA. These changes reflect only a renaming.

S41

73. *Section 7.5.1. Lakeshore Property Area, Current receptors, Adult Trespasser. As it states in Honeywell's Response 73, the recreational fisherman scenario, which evaluates the risk associated with the consumption of fish, was addressed in the Onondaga Lake HHRA. Also in Response 73, it states that the Adult Trespasser scenario considers the potential exposure of a recreational fisherman to surface soil at the Lakeshore Property Area. Since, for this specific scenario, it does not really matter if the Adult Trespasser is a "recreational fisherman" or just a plain adult trespasser, as the exposure is to surface soil, we suggest deleting the term "recreational fisherman" and using "Adult Trespasser" in order to avoid confusion. See also Section 5.6.1.*

The recreational fisherman will be changed to an adult trespasser.

Section 8 – Uncertainty Assessment

S42

77. Section 8.2.1. The comment was not addressed in the October 2004 HHRA. However, based on Honeywell's 12/2/04 letter, this comment has been addressed. See also Comment 38.

Agreed.

S43

· *Section 8.2.2 (Page 69). It is not necessary to have air monitoring data to estimate exposure to fugitive dust and volatile emissions from construction activities. This exposure route could potentially be significant and should be evaluated quantitatively. Consult the "Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites" (OSWER 9355.4-24, December 2002) for the equations to estimate the particulate emission factor (PEF) during hypothetical construction activities. Intake equations can be adapted from the Soil Screening Level equations found on page 23 and 24 of the "Soil Screening Guidance: User's Guide" (OSWER 9355.4-23, July 1996).*

USEPA (2002) Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites will be used to develop a Site-specific particulate emission factor (Equation 5-5), chemical-specific volatilization factors (Equations 5-14 and 5-17), fugitive dust intake equations (Equations 5-3 and 5-4), and volatile intake equations (Equations 5-12 and 5-13) for evaluating

the inhalation exposure route for a construction worker. Site-specific data will be used when available, and literature values will be used when Site-specific data is not available.

S44

· *Section 8.2.3 (Page 69). There are several reasons noted in the text as to why there is a great deal of uncertainty associated with applying the Johnson & Ettinger Model to the site – the main one being the heterogenous nature of the subsurface geology. With such complex subsurface conditions, applying a model that assumes homogeneous soil properties in a horizontal plane may not provide useful information. Other site conditions that question the use of the model are: a) there is no information on how the contaminants may react with the subsurface Solvay Waste, b) NAPL may be present, and c) very shallow groundwater exists at some portions of the site making attenuation difficult to model. Site groundwater data can be compared qualitatively to the generic screening levels in the USEPA Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (EPA 530-F-02-052), Table 2 series for risks at various levels (10^{-4} through 10^{-6}), with the caveat that USEPA Region 2 uses the risk-based value for vapor intrusion screening and does not default to the MCL (as is the case in the cited Vapor Intrusion Guidance).*

The above site conditions that question the use of the J&E model will be included in the text. Site groundwater data will be compared qualitatively to the risk-based generic screening levels for vapor intrusion in the uncertainty analysis. [Note: this response did not require further revision.]

S45

79. *Section 8.2.3. As described in the J&E model manual and USEPA guidance, when models are used to predict exposure a sensitivity analysis should be performed. Given the inherent uncertainties in models and the selection of model parameters, a sensitivity analysis should be conducted to provide a range of upper and lower bound conditions in order to assess the potential for exposure. Sensitivity analyses are particularly appropriate in this case since parameters of the model have been changed from the defaults without much (if any) documentation. In addition, the most recent Johnson and Ettinger model and manual should be used.*

The most recent J&E model/manual will be used and a sensitivity analysis will be conducted using a range of upper and lower bound conditions.

S46

85. *Section 8.3.2. The USEPA recommendation of 330 mg/day is now specifically recommended in "Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites" (USEPA OSWER 9335.4-24, 2002b). This should now be cited in the first sentence of Section 8.4.1 (instead of "as per the NYSDEC's direction"). Also, as the 480 mg/day ingestion rate is no longer used or recommended by USEPA, please delete the second, third, and fifth paragraphs of this section.*

The reference for 330 mg/day will be changed to the USEPA reference, and the second, third, and fifth paragraphs of the section will be deleted.

S47

88. Section 8.4.1. The comment was not addressed in the October 2004 revision; however, the 12/2/04 Honeywell response is acceptable.

Agreed.

S48

90. Section 8.4.2. It does not appear that the comment was adequately addressed. The ATSDR MRLs are now shown, but site data do not appear to be incorporated (i.e., no comparison of site data to the MRLs is presented). With regard to the dioxin reassessment (EPA, 2003), it is acknowledged that the requested citation is a review draft. It is on that basis that values from that document are only to be used in the uncertainty assessment section of the HHRA and are not used quantitatively. The fact that the document is a draft does not preclude its use as a source used in evaluation of the uncertainty associated with dioxin toxicity data. The recent National Academy of Sciences (NAS, 2006) review of the 2003 draft may be cited in the uncertainty section, provided however that use of the NAS review is done in a balanced manner. (For example, the NAS review did not dispute the quantitative values developed by USEPA; but did suggest that carcinogenic potency be assessed by non-linear methods, in addition to the linear manner in which the 2003 draft values were prepared.)

Site dioxin data will be compared qualitatively to ATSDR MRLs and EPA (2003) draft values in the uncertainty section, and the NAS (2006) review of EPA (2003) will be cited.

Section 9 – Conclusions

S49

92. Section 9, first paragraph. Please make the conclusions consistent with changes necessitated by other comments. This comment may also be applicable to the Executive Summary section of the report.

The conclusions section and the Executive Summary section will be revised to address the other changes incorporated into the HHRA.

References

S50

93. The USEPA 2002a (Calculating the Upper Confidence Limits for Exposure Point Concentrations at Hazardous Waste Sites, USEPA, 2002a), 2002b (cited in Comment 85), and 2003 (OSWER Directive 9285.7-53, "Human Health Toxicity Values in Superfund Risk Assessments", December 2003) references should be added. For the ORNL 2004 citation, please provide the full link to where the data used can be found (the existing citation is only to the RAIS home page).

- *Please fix the typo in the spelling of the date in USEPA 2002c.*
- *References should be updated as appropriate.*

The three references will be added, the ORNL 2004 citation will be updated, and the typo in the USEPA 2002c reference will be corrected.

TABLES

T1

· *Table L-1. Gastrointestinal Absorption Factors should come from RAGS, Part E, Exhibit 4-1. Dermal Absorption Factors should come from RAGS, Part E, Exhibit 3-4. Permeability Coefficients should come from RAGS, Part E, Exhibits B-2 and B-3.*

The GI Absorption factors and permeability coefficients will be obtained from RAGS Part E.

Tables L-2 through L-11, Analytical Data Summary Tables

T2

96. Based on Honeywell's 12/2/04 response, this comment appears to have been adequately addressed. Does "Trench areas" in this response mean "On-Site Ditches" as reference in Table L-3?

Yes, trench areas refer to the on-site ditches.

T3

· *Note that Tables L-6 (and documentation of L-5) will require revision to address previous agency comments regarding surrogates and hierarchy of toxicity values. Also, please fix typo in Table L-6, Footnote 2 (replace XXX).*

Tables L-6 and L-5 will be revised in accordance with the surrogate and toxicity value updates. The type in Table L-6, Footnote 2 will be corrected.

T4

98. *The Old Table L-7a had 7 to 10 data points per analyte. The New Table 2.13 only has 4 per analyte, still only MeHg, not Hg, shown; please explain, clarify, or correct as necessary. However, old Table L-7b and new Table 2.14 seem to have the same number of samples.*

Mercury concentrations will be reported in Table 2.13. Table 2.13 will be corrected to have 7 to 10 data points per analyte as were present in the old Table L-7a.

Tables L-12 through L-21, COPC Selection Summary Tables [Now RAGS Tables 2.1 through 2.25]

T5

· *Screening tables – general. The note for "ca*" is not relevant to this HHRA and can be deleted from the table and notes. Screening values for "ca**" (or the analog notation '!' in the Region 3 tables) should be replaced with the nc value divided by 10 to obtain the appropriate conservative screening value (at HI of 0.1).*

The "ca*" note will be removed from the screening tables and "ca**" screening values will be replaced by "nc" values corresponding to an HI of 0.1.

T6

· *As noted in earlier comments, class A carcinogens should not be screened out (i.e., benzene and chromium which were screened out as 'BSL' should be retained – rationale is "TOX").*

Class A carcinogens will be retained for quantitative assessment.

T7

· *General. Please follow the RAGS, Part D, format and include the ARAR/TBC column in the tables, even if ARARs/TBCs have not been established at this time.*

The ARAR/TBC column will be included in the screening tables.

T8

· *General. Please cite the appropriate RBC/PRG value in footnotes 4 and 5. For example, Table 2.1 states that values were taken from the Region 9 PRG table for tap water instead of soil.*

Footnotes 4 and 5 will be corrected.

T9

· *Several of the tables present water pathways but the units on PRGs/RBCs are shown as mg/kg (e.g., 2.7, 2.13, 2.16, 2.19, 2.23, 2.24, 2.25). Please correct the units or provide the correct RBC/PRG values.*

The screening criteria units will be corrected.

T10

· *Table 2.5. Please correct the Exposure Point. It should be FCB instead of CHSA.*

The Exposure Point in Table 2.5. will be corrected.

T11

· *Table 2.7. The maximum concentration of lead in groundwater is high and well above EPA's action level of 15 µg/L. A qualitative discussion of lead in drinking water should be included in the text (e.g., add new section 8.4.3 in text to discuss).*

A new subsection will be added to the uncertainty section to qualitatively discuss lead in drinking water.

T12

· *Table 2.8. The groundwater screen against vapor intrusion values from Table 2c of the EPA's draft Vapor Intrusion Guidance does not follow RAGS, Part D format and therefore should not be in the Table 2 series, but rather a separate appendix. All tables evaluating vapor intrusion should be included in a separate appendix so that they can be evaluated together as a unit.*

All vapor intrusion tables will be moved to a separate appendix.

Tables L-22 through L-33, COPC Exposure Summary Tables *[Now RAGS Tables 3.1 through 3.25]*

T13

- *General, RAGS Table 3 series. The final column in Table 3 should contain the rationale for why the statistic used in calculating the 95% UCL was chosen. For example, if the statistic suggested is the "95% Student's-t," the rationale should be, "The Shapiro-Wilk test for samples <50 suggest data are normally distributed. Analytical process suggests using the Student's-t statistic for normally distributed data." This information can be included in a footnote.*

The rationale in the Table 3 series will be updated and supplemented with descriptive footnotes.

T14

108. *The New Tables 3.1 and 3.2 have more than seven samples, but no values – please explain. There are also problems in some of the tables (specifically 3.1 and 3.2) in the manner in which the entries appear in the columns. For example, in Table 3.1, a value of zero is entered into the 95 percent UCL field. The value is not zero; it should be "NC" (not calculated) if in fact no UCL value was calculated (although for this table we believe a value should have been calculated, as there were 50 general plant area surface soil samples listed on Table L-3). The "Value" column under the Exposure Point Concentration field should not be blank; the actual value used for the EPC should be shown (if that value is the maximum, then the maximum should be shown in this column). EPCs should be identified in Table 3.1 along with the proper rationale even if the 95% UCL cannot be calculated due to lack of data.*

The EPC value column in the Table 3 series will be updated to include the actual EPC value. If a UCL value could not be calculated, the UCL field will be reported as NC.

T15

- *Table 3.3. Please explain how the mean can be greater than the maximum detected concentration (i.e., 2-Hexanone). This is likely due to the fact that ½ the detection limit was used in place of non-detects; however, a footnote explaining this would be helpful. The data as presented also suggest that Honeywell did not remove data points with anomalously high SQLs; this should have been done so that ND values don't drive the EPC calculation (see Guidance in RAGS Volume 1, Part A, Section 5.3.2).*

Data with anomalously high SQLs will be removed, and footnotes will be provided to explain remaining examples of means that exceed maximum detected values.

T16

- *Table 3.7. The EPC for benzene does not appear in this table, yet it is detected at significant concentrations in the groundwater and is listed as a COPC in Tables 2.7/16/19/23/25. Please correct this omission and include all COPCs in the Table 3 series.*

All COPCs identified in the Table 2 series will be included in the Table 3 series, including benzene for Table 3.7.

T17

· *Table 3.8. Please remove this table from the series. It does not follow RAGS Part D format and does not represent indoor air EPCs, but rather those of groundwater. All tables evaluating vapor intrusion should be included in a separate appendix so that they can be evaluated together as a unit.*

Table 3.8 will be moved to a separate appendix for vapor intrusion.

Tables L-34 through L-43, Chronic Exposure Parameter Tables *(Now RAGS series 4).*

T18

· *General comment on RAGS Table 4 series. The "Footnote instructions" and the text following the (1) can be deleted (leave "footnotes" and then list them). Also, the NYSDEC 2004 line has a typo, change "commont" to "comment." Also, as noted in comments elsewhere (see Comments 111 to 116 below), the Region 4 citation should be changed to USEPA 1991 (Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors) or USEPA 1997a (Exposure Factors Handbook) as appropriate.*

The footnote line beginning with (1) will be deleted. The typo in the NYSDEC reference will be corrected. The Region 4 citation will be replaced by USEPA 1991.

T19

· *General. The references for the exposure factor values in this series are often not clear and make verification difficult. It is not enough to simply give the title of the reference for the value. Page or exhibit numbers should be provided as well. For example, when citing the 1997 Exposure Factors Handbook, please give the specific page or table number for the value. Also, please indicate whether the exposure parameter represents a mean or upper bound value. For values such as the skin surface area (SA), please include the parts of the body that are included in that calculation. This is especially important since most of the SA values in the series seem high. For example, EPA recommends an SA of 3,300 cm^2 for the industrial worker (RAGS, Part E, exhibit 3-5). This same value (3,300 cm^2) is also recommended for the construction worker, as shown in Table 1-2 of EPA, 2002b. The reference for this is Exhibit 1-2 in the "Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites." (EPA, 2002b). Table 4.1.RME has this value as 5726 cm^2.*

·

Page or exhibit numbers will be added to references. Mean or upper bound values will be documented as will body part-specific values.

T20

· *General. EPA recommends using the soil ingestion rate for both the adolescent and the adult of 100 mg/day. The reference for this is Exhibit 1-2 in the "Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites." (EPA, 2002b). Use of a rate less than 100 needs to be supported clearly and defensibly. The RAGS tables should reference the specific text section in which the rationale for IR of less than 100 is presented. It is recommended that the ingestion rates in the 1991 "Standard Default Exposure Factors" (USEPA, 1991), which are the same as those utilized in Table 1-2 of the cited supplemental guidance (EPA, 2002b) be used for the RME scenario. The 'average' or 'best estimate' values cited in the Exposure Factors Handbook (EPA, 1997; section 4.7) may be used for the CT.*

The IR values in USEPA (2002b) and USEPA (1991) will be used for the RME scenario and the values from USEPA (1997) will be used for the CT scenario.

T21

· *General. Please define the age of the adolescent being evaluated.*

The age of the adolescent will be defined as 7 to <16 years.

T22

· *General. EPA recommends a default RME fraction ingested (FI) of 1.0. Use of a factor less than 1.0 needs to be supported clearly and defensibly. The RAGS tables should reference the specific text section in which the rationale for FI of less than 1.0 is presented.*

The only RME FI values less than 1 in the RAGS Table 4 series are for the surveillance worker, which is discussed in the response to comment S23. However, a number of CT FI values less than 1 are found in the RAGS Table 4 series for other receptors (trespasser, industrial worker, sewer worker). For these other receptors, an FI value of 1 will be used for the CT scenario, to match the value of 1 used for the RME scenario.

T23

· *General. The Skin Surface Area factor is an average rather than an upper-bound value. It should be the same for both the RME and CT exposure scenarios. Please amend the tables in series 4 so that this is the case.*

The RME and CT skin surface area will have the same (50th percentile) value.

T24

· *General. The dermal absorption factors (ABS) should come from RAGS, Part E, not RAIS.*

RAGS E will be the source of ABS values.

T25

111-116. *Reference for adolescent and in some cases adult body weight (USEPA [Region 4], 2000) appears incorrect; a Region 4 reference is cited, but no reference to body weight appears to be located in the cited document. USEPA 1991 or USEPA 1997a should be used for body weight defaults.*

USEPA 1991 or USEPA 1997a will be used for body weight defaults.

T26

· *Table 4.2.RME: The Exposure Assessment portion of the text states that the RME exposure frequency for the industrial worker is 250 days per year, which is the correct value. However, the tables present an EF of 193 days per year, which is also cited as the CT parameter. The CT parameter should be 219 days per year as stated in exhibit 3-5 of RAGS, Part E. If there is reason to believe that these values are too high, a clear and thorough justification for changing them must be provided. Otherwise, this table, and those following it in the series, must be corrected. As noted in RAGS Part E (Final; EPA/540/R/99/005, July 2004), Section 3.2, site-specific values may be used instead of the defaults shown on Exhibit 3-5, but adequate justification must be provided.*

The RME EF of 190 days (correction from 193 days above) assumes 250 work days per year and exposure reduced by 24% due to snow cover. Similarly, for the CT EF, 219 work days per year reduced by 24% due to snow cover yields a CT value of 166 days. These site-specific considerations will be documented in the text.

The snow cover percentage of 24% is derived from a thirty year (1971-2000) temperature and snowfall record for Syracuse, NY from the National Weather Service (Available at: http://www.erh.noaa.gov/bgm/climate/syr/syr_normals.shtml). During the months of December, January, and February, there is on average measurable snowfall (28.6, 33.2, and 24.0 inches, respectively), and average temperatures are below freezing (28.6, 22.7, and 24.5 °F, respectively). Therefore, it can be assumed that snow that falls during these months does not readily melt and provides continuous snow cover. Since the three months include 90 of the 365 days in a year, a snow cover percentage of 24% is derived. This percentage is conservative in that the months of March and November are not included. March and November on average have measurable snowfall (18.8 and 11.1 inches, respectively), but also have average temperatures above freezing (33.6 and 39.7 °F, respectively).

The *Climate of New York* issued by the New York State Climate Office (http://nysc.eas.cornell.edu/) also describes a 3 month period of snow cover for the Syracuse area: "The Southern Plateau, Great Lakes Plain in southern portions of western upstate New York, and the Hudson Valley experience a continuous snow cover from about mid-December to mid-March, with maximum depths usually occurring in February."

T27

- *Table 4.5.RME. The inhalation rate of 1.25 m^3/hr for the Industrial Worker is incorrect. EPA recommends using 1.6 m^3/hr. The reference for this is the worker involved in moderate activity from the 1997 "Exposure Factors Handbook," page 5-24, Table 5-23. It represents a mean value on an upper bound activity.*

The inhalation rate of 1.6 m^3/hr will be used.

T28

- *Table 4.11. RAGS, Part E, Exhibit 3-5 recommends changing the exposure frequency and duration when going from the RME to CT exposure scenarios. Also, the default FI for both the RME and CT should be 1.0. A clear explanation of the rationale for the factors used for the CT should be provided. Using factors other than the EPA default may be acceptable for the CT scenario so long as they are reasonable and documented, and appropriately conservative factors are used for the RME scenario. While previous agency comments agreed to the approach by which a FI for the CT of other than 1.0 may be derived, the underlying assumptions for that approach need to be documented and justified.*

Except for the surveillance worker, an FI value of 1 will be used for all receptors for both the RME and CT scenarios. See response to comment S23 for the surveillance worker.

T29

- *Table 4.14.RME. Please provide more information on the reference for the 0.01 L/day ingestion rate of water for the PA Sewer Worker. This comment also applies to the ingestion rate used for the adolescent trespasser in Table 4.21.RME.*

Section 6.6.1 of USEPA (1989) RAGS A presents an incidental ingestion rate of 0.05 L/hr for a swimmer. For a non-swimmer, the RME incidental ingestion rate has been estimated to be

lower, a value of 0.03 L/hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day. For the CT scenario, an incidental ingestion rate of 0.01 L/hr for 1 hr/day will be used, based on professional judgment. This information will be provided as a footnote in Table 4.14 and Table 4.21.

T30

· *Table 4.21.RME: The intake equation used to estimate dermal exposure to surface water is incorrect. Please consult RAGS, Part E, page 3-1 for the appropriate method.*

The intake equation will be corrected.

Tables L-44 through L-50, Toxicity Tables *(Now RAGS Tables 5- and 6-series.)*

T31

123. (Re: old Table L-49). The PAH potency values are consistent with the USEPA documented cited, but are from a different source (ORNL). The Honeywell 12/2/04 response uses the USEPA document citation, not ORNL. Please cite the USEPA recommended values when such values are available.

The USEPA recommended values will be cited.

T32

· *Many of the toxicity values listed in this table are improperly referenced or incorrect. For example, 2,6-Dinitrotoluene, 2-Butanone, and 2-Chloronaphthalene have RfD values listed in Table 5.1, but the reference to IRIS is missing. Additionally, 1,1-Dichloroethane and 1,2,4-Trichlorobenzene have extrapolated RfD values in Table 5.2, but no reference is given. The correct reference is HEAST and PPRTV (provisional peer-reviewed toxicity value), respectively. Please reference each value appropriately. It is incorrect to take toxicity values directly from the Region III RBC table published in 2002. This table is out of date (as of the writing of the reviewed HHRA, the most recent was from April 2004; as of December 2005, the October 2004 version is the one posted on the Region 9 website) and also contains values that may not be consistent with EPA's hierarchy outlined in the OSWER Directive 9285.7-53, "Human Health Toxicity Values in Superfund Risk Assessments." (EPA, 2003) EPA submitted the list of chemicals that were missing values to NCEA for review. Additionally, Quantitative Structure Activity Relationship (QSAR) analysis for 1,2,3-trichlorobenzene, 1,2,4-trimethylbenzene, and 2,4,6-trichlorophenol was performed by STSC-NCEA to determine if there are chemicals that are structurally similar enough that their RfDs may be used as surrogates. As PPRTVs have a limited "shelf life" (three years), and new toxicological data is continually being developed, Honeywell should coordinate with NYSDEC to establish communication pathways with EPA so that the appropriate toxicity values and sources are used for RAGS Tables 5 and 6. Available current PPRTVs (as of January 2007) are shown in the attached table from NCEA-STSC. (Note that the table only provides a listing of what is available; the actual PPRTVs and supporting documentation are available only through USEPA.) See also new comment on Section 6.4.5 (page 53), above.*

The toxicity values will be updated and referenced consistent with EPA's hierarchy and will be submitted to NYSDEC prior to submittal of the final HHRA. O'Brien & Gere will coordinate with USEPA (Michael Sivak, Region 2) to obtain toxicity values that follow the EPA preferred hierarchy of sources (IRIS; PPRTV; other sources including CALEPA, ATSDR, HEAST).

Table 7 Series

T33

· *General. The Table 7 series is arranged in a confusing manner. Having all the exposure areas for each receptor included in the same table (i.e., Table 7.1.RME includes every cancer risk and hazard for the adolescent trespasser) suggests cumulative risk from exposure to these separate areas. Please divide up these larger tables by exposure area, consistent with Table 1.*

The Table 7 series will be divided up by exposure area for a given receptor.

T34

- *General. Sitewide risks and hazards for the receptor that may have access to more than one exposure area at this multi-area site have not been assessed. This may be acceptable considering current and expected future land uses. However, there may be a situation where a receptor, such as the adolescent trespasser or the industrial worker, is exposed to multiple areas. It would be helpful to have possibilities for such future scenarios, where receptors are exposed to multiple areas, discussed in the uncertainty section. To illustrate the concept, it may be helpful to have summary tables where all the risks and hazards from individual exposure areas are combined for each receptor. For example, if it is reasonable that the future adolescent trespasser is exposed to the General Plant area, as well as the CHSA and the PSA, the risks and hazards for this individual could be combined and briefly discussed. The use of summary tables would not require any revisions to the RAGS, Part D tables, but would be helpful for discussion in the Risk Characterization section. See, for example, Tables 6-2 and 6-3 of the Geddes Brook/Ninemile Creek HHRA (July 2003).*

Cumulative risks and hazards from exposure to more than one area will shown in summary tables and discussed in the risk characterization section, as appropriate.

T35

- *Table 7.1.RME: The EPCs for surface soil at the General Plant Area do not appear to correspond with the EPC tables. Please verify the origin of these values and that EPCs for other receptors are correct.*

The EPCs in the Table 7 series will match those in the Table 3 series.

T36

- *Table 7.3.CT: Why are there no values in the Intake/Exposure column for some of the exposure routes? Also, on page 14 why is the intake for Aldrin 0.0?*

The missing intake values will be provided and the risk/hazard calculations updated.

Table 9 Series

T37

- *In line with the RAGS, Part D, format, please calculate the HIs for each target organ. This is especially critical for HIs that exceed 1.*

HI will be calculated for each target organ.

Table 10 Series

T38

- *Please provide RAGS Part D, Table 10. In line with RAGS Part D format, this series should follow Table 9. It serves as a summary of the cancer risks and non-cancer hazards that exceed EPA's acceptable levels.*

Table 10 series will be provided.

APPENDIX G2

Honeywell 2008 Response to NYSDEC Comments

Response to "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4'" prepared by New York State Department of Environmental Conservation, received under cover letter (Richard Mustico [NYSDEC] to John McAuliffe [Honeywell]) dated Sept. 22, 2008.

This submission responds to NYSDEC's Sept. 22, 2008 comment letter, which comments on "Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4" prepared by O'Brien and Gere for Honeywell, submitted March 7, 2008. Reviewer comments are shown in italics.

Review of 2/27/08 Responses to Comments in Appendix C

General Comments

G.2

(5) While Appendix A provides a listing of the samples used in the HHRA, there is no discussion of the analytical parameters, data sets, what each consists of, and why it was included or excluded, and any limitations or concerns regarding the data. (This discussion can also address some of the specific comments below regarding the data and how parameters are grouped and summed.) The scope and content of the text in Appendix A of the Onondaga Lake HHRA (NYSDEC/TAMS, 2002) and Geddes Brook/Ninemile Creek HHRA (NYSDEC/TAMS, 2003) can be used as a guide to the scope and content for this discussion; and see Table 1-1 of both cited HHRAs for a useful overall summary.

A discussion of the data set will be provided in the text of the HHRA.

G.4

(new) This response has been expanded. The proposed assumptions regarding the fraction of mercury assumed to be in organic form (methylmercury) (1 percent in soil and 7 percent in sediment) are acceptable, in that the assumptions are reasonable based on the available data and are at least as conservative as assumptions made for the Onondaga Lake HHRA (NYSDEC/TAMS, 2002).

Honeywell will use these assumptions.

Specific Comments

S.12

37. The original comment is no longer fully applicable, as the groundwater data presented in the (new) Appendix A show more years of data, including some samples from 2007. The HHRA should discuss how the data are used in calculating EPCs – including how multiple samples from the same location (over time) are used, and whether each sample is weighted equally or whether a single value for each point (monitoring well) is developed and then these well-specific

values are used. The uncertainty assessment should include a discussion of the age of the data and its temporal distribution.

Note that several of the subsequent comments which related to the EPC calculations using ProUCL (e.g., S26) are also affected by the release of version 4.

Each sample is treated as a separate data point for development of the UCL. Honeywell will clarify this in the text, and add a discussion of the temporal distribution of the data in the uncertainty section.

S.17

(new) The comment and response are both, to some extent, moot as the current version of ProUCL is now version 4.x. It is assumed that the data processing in ProUCL will be consistent with what was recently agreed to for the Wastebed B/Harbor Brook HHRA.

Data processing using ProUCL V. 4 will be consistent with what was agreed to for the Wastebed B/Harbor Brook HHRA.

S.23

(new) (New response from Honeywell) See comment on page A-8 below, incidental ingestion of soil.

See response to comment on A-8.

S.27

(new) See G.2 (5) above regarding the data presented in Appendix A. The data listing should be edited to remove sample points which are not used in the HHRA; for example, soil samples collected from depths greater than 20 ft bgs (or 10 ft bgs, depending on area/receptor).

Appendix A summarizes all samples in the Site database, regardless of whether they are utilized in the HHRA. A field titled "Utilized in HHRA?" will be added to Appendix A.

S36

(new) Clarification. Consistent with recent agency comments on the Wastebed B/Harbor Brook HHRA, the TEQ should be calculated for each sample; the TEQs should be the values that are then used as input ot ProUCL (not individual congener values).

Honeywell will calculate TEQs for each sample and use TEQs instead of individual congeners in tables and as input to ProUCL.

S43, S44, and S45

(new) Utilization of the approach agreed to for Wastebed B/Harbor Brook is recommended.

The approach to evaluating the vapor intrusion pathway will follow the approach agreed to for Wastebed B/Harbor Brook. Since soil vapor data are not available for Willis Ave, the ground water-to-indoor-air vapor intrusion pathway will be evaluated. For the construction worker receptor, the fugitive dust and volatile emissions pathways will be evaluated following the approach used in Wastebed B/Harbor Brook.

T7

(new) Although the "ARAR/TBC" column was re-instated as per the comment, the field is blank. It is recommended that the approach agreed to for Wastebed B/Harbor Brook be used to complete this column of RAGS Table 2.

Honeywell will complete this column using the restricted residential soil cleanup objectives for protection of public health from NYSDEC Part 375 for soil exposure media. For surface and ground water, Honeywell will use the MCL values from USEPA 2008, National Primary and Secondary Drinking Water Regulations. This follows the approach used in Wastebed B/Harbor Brook.

T19

(new) This submission includes Appendix B, listing the parameters, values, and source of value, thereby addressing the comment.

Agreed.

T26

(new) The response is acceptable. However, the fraction (snow cover) should be 25 percent (not 24 percent) – see most recent (2008) Agency comments on this issue on the Wastebed B/Harbor Brook HHRA.

The fraction snow cover will be changed from 24% to 25%. This leads to an RME EF of 188 days rather than 190 days, and a CT EF of 164 days rather than 166 days.

T29

(new) Note-this is a modified response, it appears that Honeywell has changed the non-swimmer ingestion rate to 0.03 L/d (up from 0.01 L/d in the previously-submitted response). The underlying ingestion rate (30 mL/hr) is sufficiently conservative for the non-swimmer exposure.

Agreed.

NEW COMMENTS SPECIFIC TO THIS SUBMISSION

G.1. The adolescent trespasser is quantitatively evaluated at many of the exposure areas. EPA recommends adding an adult trespasser to these areas. If it is expected that this population would have a significantly lower exposure frequency or duration that the adolescent trespasser, this population can be qualitatively evaluated, as long as the reationale for the lesser intense expousure is clearly explained.

An adult trespasser is already evaluated quantitatively in the Lakeshore Property Area (RAGS Table 1.4) for the purposes of recreational fishing in Onondaga Lake. For the other exposure areas that are unrelated to recreational fishing, an adult trespasser will be added and evaluated quantitatively based on the parameters used at Harbor Brook.

Attachment A, Discussion

1. Page A-1, paragraph at bottom of page (following table). The age ranges for the selected receptors do not include ages 16 and 17. Also, what is the rationale for defining the adolescent as 7 to less than 16 years old? Keeping the same exposure duration, an age range of 9 to less than 18 would be more reasonable (as previously noted and agreed to for comment on Table L-35 in 2004).

The adolescent age range of 7 to <16 yrs corresponds to the age range used for the Age Dependent Adjustment Factor (USEPA, 2005) used to assess child exposure to PAHs operating in mutagenic mode (as these PAHs have been identified as COCs at Willis Ave); The age gap (between 16 and 18 years of age) for which exposure is not calculated will be addressed in the uncertainty section of the HHRA.

2. Page A-2, Paragraph 5 (Outfall 006 Area). This exposure area should include an adult trespasser along with the adolescent trespasser.

A quantitative evaluation of an adult trespasser will be added (see response to G1).

3. Page A-3, "Lakeshore Property": Since fishing on this site would likely be limited to recreators fishing from the lakeshore, it is recommended that the conclusions from the Onondaga Lake HHRA, with respect to fish consumption, be summarized in this HHRA.

Honeywell will summarize the fish consumption conclusions from the Onondaga Lake HHRA.

4. Page A-3, Paragraph 5 (Tributary 5A). The text should state that this exposure area includes an adult trespasser along with the adolescent trespasser, as shown in the table on page A-1. Please clarify why a utility/construction worker (and thus subsurface sediments) are not included.

A quantitative evaluation of an adult trespasser will be added. Since there are utilities present underneath Tributary 5A, a utility worker will also be included.

5. *Page A-3, Paragraph 6 (PSA). This exposure area should include an adult trespasser along with the adolescent trespasser.*

A quantitative evaluation of an adult trespasser will be added.

6. *Page A-4, Paragraph 6 (Chlorobenzene Hot-Spot Area). This exposure area should include an adult trespasser along with the adolescent trespasser.*

A quantitative evaluation of an adult trespasser will be added.

7. *Page A-5, RAGS Table 2, media definitions, surface soil. While the definition provided here is acceptable, the sample summary table (Appendix A) is not consistent with this definition.*

Some soil samples between 0 and 2 feet have the sample code SB in the sample summary table because these samples were collected during soil boring. Soil samples from 0-2 feet are considered surface soil for the HHRA, regardless of the sample code shown in the sample summary table.

8. *RAGS Table 2, Approach to Selection of Constituents of Concern, page A-7, fourth paragraph (regarding TEFs). See S36, above.*

This paragraph will be updated to describe the recommended method of calculating the TEQ of each sample.

9. *Revised RAGS Table 4, page A-7, last paragraph. See T26, above.*

The snow cover will be changed from 24% to 25% to calculate the exposure frequency.

10. *Page A-7, "Revised RAGS Table 4": The second paragraph states that the EF for outdoor exposure is 219 days/year for the RME, while the text that follows this paragraph states that the RME EF is 190 days. Please clarify.*

The first and second paragraph will both be revised to say the RME EF is 188 days, consistent with each other and the 25% snow cover assumption. The CT EF will say 164 days in both paragraphs.

11. *Page A-8, "Incidental Ingestion of Soil": The RME Ingestion Rate of soil for the surveillance worker at the Wastebed B/Harbor Brook subsite is presented in Table 4.2 of the PAR (02/20/2008) at 100 mg/day, with an FI value of 1. This value should also be used for the Willis Ave Chlorobenzene subsite. The overall exposure of this receptor can be modified by changing the exposure frequency, as was done for the Wastebed B/Harbor Brook surveillance worker.*

Honeywell will use the IR of 100 mg/day and FI of 1, and modify the exposure frequency in the text and the Table 4 series.

12. *Page A-8, "Exposure Frequency": The exposure frequency for the adolescent receptor is listed as 39 days/year. It is recommended that the value of 42 days/year be used to be consistent with the adolescent trespasser at the Wastebed B/Harbor Brook and Wastebeds 1-8 sites.*

NYSDEC's 2004 comment letter recommended an exposure frequency of 39 days/year (comment 58) to account for trespassing occurring 3 times per week during the 13 summer weeks. However, the exposure frequency for the adolescent receptor will be changed to 42 days/year in the text and the Table 4 series.

RAGS Table 1 Series
See comments above.

13. *Table 1 Series: Table 1.3 identifies a "transient adult", but this population is called a trespassing adult. Please use consistent language. Also, please clarify the difference between the transient and the trespasser and add this to the spreadsheet.*

The transient adult refers to an adult walking along State Fair Boulevard during the NYS fair. The transient is not a trespasser since walking on the road is legal. This will be clarified in the spreadsheet.

RAGS Table 2 Series

The review of the data in the Table 2 series was limited to key contaminants such as chlorobenzene, dichlorobenzenes, and mercury. Potential discrepancies noted for these contaminants should be checked for other contaminants as necessary.

14. *RAGS Table 2 Series.*
General – Chemical-specific (also affects the subsequent tables relying on the sample data). It is acknowledged that the data used in this HHRA may have come from various sources and the same of similar parameters may have been analyzed by different methods over time. However, these analytical or reporting differences need to be reconciled for the HHRA so that a consistent set of data, oriented toward the parameters likely to be assessed quantitatively in the HHRA, is developed. Specific concerns are as follows:
    - *Xylenes – report all xylene data as "total xylenes" (sample data for which o-xylene and m&p xylenes were reported should have the detections summed and reported as total xylenes, which is the parameter for which screening and IRIS toxicity values are available).*
    - *Chlordane – sum all chlordane constituents for screening against technical chlordane criteria.*

- *PCBs – sum as 'less chlorinated' (Aroclors 1221, 1232, 1016, and 1242) for screening against Aroclor 1016 criteria and subsequent non-cancer hazard calculation; 'highly chlorinated' (Aroclors 1248, 1254, 1260 [and higher if reported]) for screening against Aroclor 1254 criteria and subsequent non-cancer hazard calculation, and 'total PCBs' (sum of all detected Aroclors); screen against Aroclor 1254 criteria and for subsequent use in quantitative HHRA for cancer risk calculation.*
- *Polychlorinated dibenzo-p-dioxins/furans. The TEQ should be calculated for each sample; then these calculated TEQs should be used for screening and completion of the remaining RAGS tables. The approach utilized in this HHRA, taking the highest congener concentration regardless of sample (shown on the RAGS 2.x.b series tables), creates a "max" value that is not associated with any individual sample (and in some cases is higher than the max in any sample) and also precludes completion of the fields in other RAGS tables.*

Xylenes are already reported as total xylenes. Chlordane constituents will be summed and screened against technical chlordane. PCB's will be summed as less chlorinated, highly chlorinated, and total PCB's and evaluated as suggested. For dioxins/furans, the TEQ will be calculated for each sample and the TEQs used for screening and in the RAGS tables.

15. *Please include the NYSDEC Part 375 value/TAGM in the Potential ARAR/TBC column. For groundwater, the appropriate groundwater standard or MCL should be included.*

The ARAR/TBC column will include the NYSDEC Part 375 value/TAGM for soil, as well as the MCL values from USEPA (2008) National Primary and Secondary Drinking Water Regulations for surface and ground water.

16. *Table 2.1a (et al.). Screening criteria for lead do not need to be adjusted for a HI of 0.1, due to differences in the way the lead screening criteria were developed. Therefore, the residential criterion for lead should be 4.0E+02, not 4.0E+01. Similarly, we would suggest that the drinking water "action level" (40 CFR 141) could be used for lead in groundwater and surface water (the value could be entered in the "ARAR/TBC" column).*

The residential criterion for lead will be changed to 4.0E+02. For groundwater and surface water, Honeywell will use the drinking water "action level" in the "ARAR/TBC" column.

17. *Endosulfan II and Endosulfan Sulfate can be screened against the values for Endosulfan.*

Endosulfan II and endosulfan sulfate will be screened against the values for endosulfan.

18. Endrin aldehyde and endrin ketone can be screened against criteria for endrin.

Endrin aldehyde and endrin ketone will be screened against criteria for endrin.

19. RAGS Table 2.1b (et al.). See comment S36, above. The approach specified for the Wastebed B/Harbor Brook HHRA should be used.

The specified approach to TEQs in comment S36 will be used.

20. RAGS Table 2.2a (et al.). 1,2,3-Trichlorobenzene (TCB) can be included as a VOC (not "other"), as was done with 1,2,4-TCB.

1,2,3-Trichlorobenzene will be included as a VOC.

21. Table 2.4, Table 2.18a. Benzoic acid is a SVOC.

Benzoic acid will be listed as an SVOC.

22. Table 2.7a. The USEPA RPG value for soil for 1,2-Dichlorobenzene should be changed from 600 mg/kg to 60 mg/kg to be consistent with the rest of the tables and approach that for noncarcinogenic compounds, guidance values are multiplied by 0.1. Also, when this value is changed, the COPC and Rationale for Selection should be corrected to "Y" and "ASL" for this compound.

The PRG will be multiplied by 0.1. The COPC and Rationale for Selection will be updated as well.

23. Table 2.8a. The data and screening of VOCs are not included. According to the database, there are VOCs detected in this exposure area in surface soil (0 to 2 ft depth). For example, concentrations of 1,4-Dichlorobenzene and 1,3-Dichlorobenzene at location WA-NW DITCH-S (depth interval of 0 to 0.5 ft) are 2.1 mg/kg and 0.073 mg/kg, respectively. Since the corresponding sample from the duplicate pair was reported as non-detect for these VOCs, the detections should be used for the screening table.

The VOC detections noted were from a QC sample (samples with Field Sample ID WA9351) and were therefore excluded. VOC detections from this sample will be included.

24. Tables 2.9a, 2.10a, 2.14a, and 2.25. With the exception of methylmercury, the remaining chemicals listed as "Other" should be grouped as VOCs.

The other chemicals will be grouped as VOCs in these tables.

25. Tables 2.9a and 2.10a. Maximum detected concentrations of 190, 76, and 430 mg/kg are shown for 1,2-, 1,3-, and 1,4-Dichlorobenzene, respectively. However,

according to the database, maximum concentrations for these compounds in the NYSDEC samples are 274.4, 116.2, and 2,098 mg/kg, respectively. Appendix A notes that the NYSDEC results are not included in the HHRA tables. However, since these concentrations are much higher than those reported by Honeywell and these data are included in the database, they should also be included in the HHRA unless justification for excluding them can be provided.

NYSDEC data was excluded because they are usually split samples from the data O'Brien and Gere collected. Consequently, the NYSDEC samples are not independent data, and including them would give excessive weight to those locations. In the new field that will be added to Appendix A titled "Utilized in HHRA?," NYSDEC data will be noted as "No."

26. *Table 2.10a. The USEPA PRG for 1,2-Dichlorobenzene, shown as 2.22E-01 mg/kg, should be changed to 6.00E+01 mg/kg, as in other tables (e.g., Table 2.3a).*

This value will be changed to 6.00E+01.

27. *Table 2.15a. The USEPA RBC and PRG values for mercury should be changed to 7.82E-01 and 6.11E-01 mg/kg, as per note c.*

The values will be changed as suggested.

28. *Table 2.15a. The USEPA RBC and PRG values for 1,2-Dichlorobenzene should be changed to 7.04E+02 and 6.00E+01 mg/kg.*

The values will be changed as suggested.

29. *Table 2.17. "Ammonia" can be removed from the table.*

Ammonia will be removed from the table.

30. *Table 2.26, "Other". Ammonia and nitrogen can be removed from the table and HHRA. Benzoic acid and benzyl alcohol are SVOC's. The remaining chemicals are VOCs.*

Ammonia and nitrogen will be removed from the table and the HHRA. Benzoic acid and benzyl alcohol will be classified as SVOC's. 1,2,3-trichlorobenzene, and 1,2,4- and 1,3,5-trimethylbenzene will be classified as VOC's.

RAGS Table 4 Series

31. *Table 4 Series, General. Where possible, recent agreements on values for exposure parameters for the Wastebed B/Harbor Brook and Wastebeds 1 through 8 sites should be used to finalize this HHRA. Also, there are discrepancies in*

some corresponding values in the Table 4 series and Appendix B (see comments below).

In general, recent agreements on exposure parameters for the Wastebed B/Harbor Brook and Wastebeds 1 through 8 sites will be used. See responses to comments below for specific changes.

32. *The age of the adolescent trespasser is listed as 7-<16 years, for an exposure duration of 9 years. However, this leaves a gap in exposure from 16-18 years, the age typically used for adults. Please clarify why the adolescent was identified up to 16 years. We assume that this was done to correspond to the age range used for the Age Dependent Adjustment Factor (USEPA, 2005), used to assess child exposure to PAHs operating in mutagenic mode (as these PAHs have been identified as COCs at Willis Ave); this explanation should be provided in the HHRA. In addition, the age gap (between 16 and 18 years of age) for which exposure is not calculated should be addressed in the uncertainty section of the HHRA.*

As noted, the adolescent age range of 7 to <16 yrs corresponds to the age range used for the Age Dependent Adjustment Factor (USEPA, 2005) used to assess child exposure to PAHs operating in mutagenic mode. The age gap (between 16 and 18 years of age) for which exposure is not calculated will be addressed in the uncertainty section of the HHRA.

33. *Table 4.1, RME. In the Rationale/Reference column for Skin Surface Area for Dermal Absorption, "USEPA 1997, See Appendix A (Honeywell 2008)" is stated as the reference. However, Appendix A of this document is the Sample Summary Table. It is believed that it should state Appendix B which is the Exposure Parameters Summary. Also, the reference for skin surface area for the adolescent trespasser in Appendix B appears to be USEPA 2004 not 1997. Please correct as appropriate.*

The Skin Surface Area for Dermal Absorption for the adolescent trespasser in Table 4.1 RME will be changed to match the value (4250 cm^2) and reference (USEPA 2004) given in Appendix B. This change will be made for the adolescent trespasser throughout the Table 4 RME series.

34. *Table 4 Series: Table 4.5a RME lists the EF for the transient adult as 2 days/year. According to the text, this population is expected to access the site during visits to the State Fair. Based on the duration of the fair, and the EF utilized for rain attendees in the Wastebeds 1-8 HHRA, a value of 14 days/year should be used.*

To be consistent with the State Fairgrounds Attendee in the Wastebeds 1-8 HHRA, a value of 14 days/year will be used.

35. *Table 4.6a, RME. The exposure frequency for the adult trespasser is listed as 8 days/year with a reference of "NYSDEC, 2004". However, this value could not be found in the NYSDEC letter (nor Honeywell 2004 which is cited for this same value in Appendix B) and is lower than values agreed to for nearby sites. If this value is in the letter, the reference should also cite the comment number (this should be done with all values taken from the NYSDEC or Honeywell letters). This comment also applies to the adult exposure frequency of 2 days/year in Table 4.5a, RME.*

To be consistent with the Wastebed B/Harbor Brook HHRA, the exposure frequency for the adult trespasser will be changed to 42 and 32 days/year for the RME and CT scenarios. This exposure frequency will be used for the adult trespasser in the Lakeshore Area which is evaluated quantitatively. The adult trespasser in other exposure areas will be evaluated qualitatively (see response to Comment G.1).

36. *Table 4 CT series. The parameter codes for Averaging Time-Cancer and Averaging Time-Non-Cancer should be switched.*

The parameter codes will be corrected throughout the Table 4 series.

37. *Table 4.1, CT and others. The skin surface area for both CT and RME should be the same as it is an average rather than upper bound value. The value in the CT table (4,250) is different than the value in the RME table (5,098).*

Throughout the Table 4 series, the RME value will be changed to 4,250, consistent with Appendix B.

38. *Table 4 CT series, adolescent trespasser (4.1, 4.3a, 4.5a, 4.6a, 4.7b, 4.8). The ingestion rate of soil of 50 mg/day for adolescent was determined based on a value recommended for adults. Since the age range for adolescent is defined in this document as 7 through 16 years, the value of ingestion rate of soil recommended for children of 100 mg/day is more appropriate, as was done for the Wastebed B/Harbor Brook site.*

The ingestion rate will be changed to 100 mg/day.

39. *Tables 4.1, 4.2a, 4.4a, 4.11a, CT. The Averaging Time – Non-Cancer (AT-NC) for surveillance worker and industrial worker is the same as in the corresponding RME tables. Since the exposure duration is 25 years for the RME and 9 years for the CT, the AT-NC value for CT should be changed from 9,125 to 3,285 days.*

AT-NC will be changed to 3,285 days for these CT scenarios.

40. *Tables 4.2b, 4.4b, 4.9b, 4.11b, RME and CT. The inhalation rate of 1.6 m^3/hr for construction worker was used for both RME and CT based on Table 5-23 of USEPA, 1997 Exposure Factors Handbook for adult moderate activity. However,*

this table includes inhalation rate for outdoor worker, which is more appropriate to use for a construction worker. Therefore, similar to Wastebed B/Harbor Brook, the inhalation rate should be 3.2 m^3/hr for RME and 1.6 m^3/hr for CT.

An inhalation rate of 3.2 m^3/hr for RME and 1.6 m^3/hr for CT will be used for the construction worker.

41. *Table 4.6a, CT. It appears that there is a typo in the value for ingestion rate of soil; 15,000 mg/day should be changed to 100 mg/day.*

This is a typo and will be corrected to 100 mg/day.

42. *Table 4.6a, RME and CT. Since the exposure duration for the adult trespasser is listed as 24 years, the averaging time – non-cancer value should be changed from 3,285 days to 8,670 days.*

AT-NC will be changed to 10,950 days for the adult trespasser, which is the number of days in 30 years, which is now the exposure duration for the adult trespasser.

43. *Table 4.9a, CT. Since the exposure duration for the industrial worker is listed as 9 years, the averaging time – non-cancer value should be changed from 9,125 to 3,285 days.*

The averaging time will be changed to 3,285 days in the CT scenario.

44. *Table 4 series, CT. The soil-to-skin adherence factor of 0.07 mg/cm^2 is used for the adolescent trespasser even though a value of 0.15 mg/cm^2 was requested by NYSDEC in the comment letter dated July 19, 2004 and agreed to by Honeywell in the response letter (Comment 110, Appendix D of this submission). Please revise.*

The soil-to-skin adherence factor will be revised to 0.15 mg/cm^2.

45. *Table 4.12, CT. The averaging time – non-cancer value for adult resident is the same as in the corresponding RME table. Since the exposure duration is 30 years for RME and 9 years for CT, the AT-NC value for CT should be changed from 10,950 to 3,285 days.*

The AT-NC value will be changed to 3,285 days for CT.

FIGURES AND APPENDICES

46. *Figure L-2. In the legend, the Tributary 5A Exposure Area is shown as pink; however, on the figure, it is shown as blue. The figure should be revised so these are consistent.*

The figure will be revised so that the legend matches the figure.

47. *Appendix A. It does not appear that the list of samples corresponds to the data set which will be used for the HHRA, nor does it appear that the 'sample code' reflects the matrix (exposure medium) consistently.*
    - *Although the greatest depth to which receptors are exposed to subsurface soil is 10 ft or 20 ft, there are numerous soil samples (e.g., from the plant area) for which the start depth is greater than 20 ft.*
    - *There appears to be an inconsistency in terms of which sample are flagged as surface soil (SS) as opposed to soil boring (SB), assumed to be the deeper soil samples. For example, a number of samples from the Chlorobenzene Hot Spot Area from the 0 to 2 ft interval are flagged as "SB" in appendix A, although a number of samples with start depths greater than 0 (typically 0.5 to 0.7 ft) from the Former Chlorination Building are flagged as "SS".*
    - *Page 3 of 8, Location ID WA-WA-02D, sampled 2/7/92, is listed as sample matrix-soil but exposure medium-groundwater. Please revise.*

Appendix A summarizes all samples in the Site database, regardless of whether they are utilized in the HHRA. A field titled "Utilized in HHRA?" will be added to Appendix A. The SB label refers to the soil boring method of sampling, rather than to a specific depth. Samples shallower than 2 feet may be labeled SB if the sample was collected as part of a soil boring effort to collect soil from several depths. Otherwise, samples shallower than 2 feet are labeled SS. For the HHRA, surface soil will be defined based on depth, not the "SB" versus "SS" label. The WA-WA-02D will be revised so that the matrix and exposure medium are consistent.

48. *Appendix B. The age of the non-adult receptors should be indicated on the tables (e.g., Child resident, 0 to <6 years old).*

The tables will indicate the age range of the non-adult receptors.

49. *Appendix B. On page 1, please revise the drinking water ingestion rate for children <6 years to 1 L/day. This value is consistent with the value used for the Harbor Brook HHRA, and is also consistent with the value used for the Harbor Brook HHRA, and is also consistent with the 90th to 95th percentile values presented in Table 4-1 of USEPA (2006).*

The ingestion rate of water will be changed to 1 L/day for both the RME and CT scenarios, and the reference updated. The Table 4 series will also be revised accordingly.

50. *Appendix B. On Page 2, please revise the drinking water ingestion rate for adults > 18 years to 2 L/day. The reference for this is the RAGS Volume I: HHEM Supplement "Standard Default Exposure Factors" (Interim Final, OSWER Directive 9285.6-03, March 1991), and is also consistent with the value used in other Onondaga Lake site HHRAs for adult residents.*

The ingestion rate for adults will be changed to 2 L/day for both CT and RME scenarios, and the suggested reference will be cited. The Table 4 series will also be revised accordingly.

51. Appendix B. The tables should be updated based on comments provided above on the Table 4 series.

Agreed.

APPENDIX H

Honeywell 2004 Response to NYSDEC Comments

December 2, 2004

Mr. Richard A. Mustico
Project Manager
New York State Department of Environmental Conservation
Bureau of Central Remedial Action
625 Broadway, 12th Floor
Albany, NY 12233-7016

Re: Willis Avenue Chlorobenzene Site
Human Health Risk Assessment (HHRA)

File: 1163/34941 #2

Dear Mr. Mustico:

At the request of NYSDEC, this letter provides the responses to NYSDEC comments on the June 2002 Revised Human Health Risk Assessment (2002 HHRA) that were submitted to Honeywell in a letter dated July 19, 2004. The NYSDEC comments were incorporated into the Revised HHRA submitted for your review on October 19, 2004 (2004 HHRA).

The responses provided in the attachment to this letter are reflective of the changes made to the 2004 HHRA. We anticipate that the HHRA report will be finalized following your review. In the attachment, the comments are reprinted along with the responses that were incorporated into the HHRA report. The responses include the current page references of the 2004 HHRA report.

We hope that these responses to NYSDEC comments and the revised HHRA submitted to the agency on October 19, 2004 address the agency concerns regarding potential human health exposures at the site and in the vicinity of the site.

Should you have any additional questions or concerns regarding this matter, please feel free to contact me.

Sincerely,

John P. McAuliffe, P.E.
Program Director, Syracuse

Enc.: Attachment
I:\DIV71\Projects\1163\34941\2_corres\L_HHRA responses_Dec04.doc

cc: David L. Wickersham - Honeywell
Michael D. Daneker – Arnold & Porter
James Burke – NYSDEC Region 7
Geoffrey Lacetti – NYSDOH
Robert Nunes – USEPA Region 2
Henriette Hamel – NYSDOH
Michael Spera – TAMS
John Davis – NYSDOL
Carol Conyers, Esq. - NYSDEC
Chris Calkins – O'Brien & Gere

ATTACHMENT:
Responses to Comments on the June 2002 Human Health Risk Assessment for the Willis Avenue Chlorobenzene Site submitted to Honeywell in a letter from NYSDEC dated July 19, 2004.

General Comments
In addition to the General comments provided by NYSDEC the revised HHRA presents the following clarifications over the 2002 HHRA:

- The description of the General Plant Area was clarified to consist of the Plant Area, the former chlorination building and the on-site ditches.
- The area title *Northwest off-site/Outfall 004 area* was adopted as a general description of the area in the vicinity of the State Fair Boulevard, Niagara Mohawk utility line, and the Outfall 004 Area.

Comment 1.
The data that are incorporated into the risk calculations should be more clearly defined. A discussion of what is classified as surface soil needs to be clearly stated and remain consistent throughout the report. It appears as though the 0 to 2 feet interval is considered surface soil (stated on page 19) for the risk estimates, however, in many instances in the text, the 0 to 2 ft interval is also referred to as subsurface soils (e.g., page 9, third paragraph). The surface and subsurface soil classifications should be used consistently throughout the report.

It should be noted that USEPA guidance states that a depth interval of 0 to 6 inches below ground surface (bgs) be used for evaluation of exposure to surface soils; the 0 to 2 ft interval data may be used if there is no other "surface soil" data available. This should be explained in the text.

Additionally, all of the soil samples collected in 1999 and reported in the March 22, 2001 letter to NYSDEC from Honeywell regarding the Willis Ave Chlorobenzene Site Baseline Ecological Risk Assessment (BERA) Screening Tables are classified as surface soils, however, the depth intervals are not reported. A brief summary of these data, as well as other data incorporated in the risk estimates, should be included in the report. Also, the BERA samples referenced in the Human Health Risk Assessment (HHRA) were cross checked against those listed in the BERA, and it was noted that sample WB-9-SS was not included in the HHRA. If this sample was collected in a reference area not applicable to the HHRA then it should be stated.

Response 1.
The data utilized in support of the risk assessment represent a compilation of soil data generated over a seven-year period (1992-1999) consistent with approved sampling plans. To clarify the exposure evaluations of soil depths, three soil intervals were defined:

- Surface soils consist of samples collected from the 0 to 2 ft interval. It is noted in Section 4.1.1 on page 22 that USEPA prefers that surface soil samples be collected from the 0 to 6 inch bgs interval and that for this HHRA, samples were collected from the 0 to 2 ft interval.
- Upper soils consist of surface and subsurface samples of soil collected from the 0 to 10 ft interval.
- Deep soils consist of subsurface samples of soil collected from depths of 10 ft and greater.

Table L-2 presents a summary of the sampling activities including the 1999 sample collection for the BERA.

Comment 2.
The HHRA should include a summary of all the investigations performed which generated data used in this HHRA. The summary should identify the organization doing the investigation, the year, its purpose, its name (e.g., 'referred to hereafter as the Phase 2 RI'), and a summary of the types and

quantities of samples and analyses (e.g., "included about 50 surface and 25 subsurface soil samples from the CHSA and general plant area; all of which were analyzed for total mercury and 15 to 20 analyzed for full TCL/TAL"). Then, in the sections where the characterization of particular exposure areas is discussed (Sections 4.1.3 through 4.1.10) the figures showing the sample locations should be referenced; but more detail should be provided especially since for most if not all of the areas the number of sample locations on the figures does not match the number of samples referenced in the text.

Response 2.
Table L-2 presents a summary of the investigations performed, the year of the investigation and the data generated for the HHRA. O'Brien & Gere completed each of the investigations. Additional references to figures showing the sample locations were added to the report, as requested.

Comment 3.
There were some issues in the comment letter issued by NYSDEC to Honeywell dated January 25, 2002 that were not addressed in the revised version of this report. These include the calculation of CT risk scenarios in cases where RME estimates exceed the acceptable risk limits. These calculations should be performed where necessary and discussions of the results should be incorporated into the report. This, as well as other issues not addressed, are discussed in the Specific Comment section below.

Response 3.
In the revised report, CT risk scenarios are presented where RME estimates exceed the acceptable risk limits and the results are discussed in the report. Further discussion of the calculations and discussion of the results are presented in the report, as indicated in the responses to the specific comments presented below.

Comment 4.
The figures in the revised report are an improvement over those in the draft. The text should be updated to take advantage of these figures and reference them as appropriate. There are a few items that should be addressed or corrected, however; these are discussed in the Specific Comments section.

Response 4.
The report text has been updated to reference the figures, as requested.

Comment 5.
Although an attempt to verify each risk calculation was not made, TAMS was able to duplicate those included in a spot check using the raw data provided with the electronic version of the report. However, there seems to be a question of whether all of the available data were used. There are discrepancies between the number of samples reported in the text and summary tables with those shown on the figures, as discussed below in the Specific Comments section.

Response 5.
All available data were used as identified in Table L-2 of the revised HHRA report, except as noted in the response to Comment #38. The database was reviewed and discrepancies that were identified in the previous HHRA report have been addressed. A copy of the data base can be provided upon request.

Comment 6.
Toxicity data will need to be updated based on the most recent additions to IRIS and the most recent evaluation of provisional data available from EPA/ORD-NCEA.

Response 6.
The toxicity data (presented in RAGS D Tables 5.1, 5.2, 6.1, and 6.2, Attachment C) have been updated based on the most recent additions to IRIS and the most recent evaluation of provisional data available from EPA/ORD-NCEA, including RAIS from the Oak Ridge National Laboratory.

Specific Comments

Executive Summary

Comment 7.
Page xiii, fourth paragraph. It is stated that process-related constituents were detected in subsurface soils and groundwater at the site and related areas of study (AOS). This text should be modified to include surface soils. As discussed above, surface soil, as described on page 19, includes the 0 to 2 ft depth interval. Elevated levels of process-related compounds were detected within this interval (e.g., mercury detected at 4,780 mg/kg in a 0 to 2 ft interval sample as shown on Table L-2a). See also the comment on section 3.1.

Response 7.
Page xvi, first paragraph. The text has been modified to include surface soil. Table L-2a for the surface soils of the General Plant Area was replaced by RAGS Tables 2-1, 2-4, and 2-5 of Attachment C which present surface soil data for the Plant Area, On-site Ditches, and Former Chlorination Building Area, respectively. The mercury concentration of 4,780 mg/kg was detected in the on-site ditches and is reported in RAGS Table 2-4, Attachment C.

Comment 8.
Page xiv, fourth paragraph. The "and" in the fifth line should be changed to "at".

Response 8.
Page xvii, first paragraph, fourth sentence. The requested change has been made.

Comment 9.
Page xiv: The last paragraph should be revised to indicate that the groundwater has been evaluated as a potable water supply due to the State designation of the aquifer.

Response 9.
Page xvii, second paragraph: The requested change has been made.

Comment 10.
Page xv, last paragraph to top of page xvi. It is stated that there is no significant risk to current receptors (trespassers, fisherman, State Fair Boulevard transients, NiMo utility workers, or surveillance workers) because the calculated HIs and cancer risks are less than 1 and 10^{-4}, respectively. However, it should be noted that there were cancer risks that were greater than 10^{-6} (e.g., current trespasser 9.9×10^{-05}).

Also, suggested text which more accurately reflects the National Contingency Plan (NCP) and agency policy follows: "Although the determination of an acceptable risk level is ultimately a decision to be made by risk managers, the findings presented here are compared to levels cited in the National Contingency Plan (NCP) which states " . . . acceptable exposure levels are generally concentration levels that represent an excess upper bound cancer to an individual of between 10^{4} to 10^{6} . . . The 10^{-6} risk level shall be used as the point of departure for determining remediation goals . . ." (40 CFR §300.430(e)(2)(A)(2)). These target risk levels are also often applied by other agencies responsible for protecting human health (NYSDOH and ATSDR, 1995)".

Response 10.
Page xix and elsewhere in the report. Receptors with risks greater than 10^{-6} have been identified in the text of the report.
Page xvi, second paragraph presents the requested NCP text.
Page xix, paragraphs after table present the interpretation of risk for the receptors that were evaluated incorporating the requested changes.

Comment 11.
Page xvi, Future Conditions. The purpose of this section is to summarize the receptors and areas of study with risks that are greater than the acceptable limits. According to the table on page xv (Summary of RME Hazard Indexes and Cancer Risks), all receptors and areas that should be included here are not. For example, the HI for the future industrial worker is 20 for the general plant area and 7 for the ditches in the general plant area, which exceed the acceptable hazard index of 1. There are others that also need to be included. All risks that exceed the acceptable limits should be added to the discussion here.

Response 11.
Page xviii and xix, Future Conditions. The table has been revised to present all receptors and areas evaluated.

Section 2 - Description of Site areas

Comment 12.
Section 2.1, page 3, last paragraph. Comment 2.2 in the NYSDEC comment letter to Honeywell (January 25, 2002) was not addressed adequately. NYSDEC requested a complete description of the physical appearance of the facility. Is there evidence of dumping or trespassing on the site?

Response 12.
Section 2.1, page 3, second paragraph. The last sentence was added to address this comment: "Due to these security measures, there has been no evidence of dumping or trespassing on-site."

Comment 13.
Section 2.2, page 5, last paragraph, third and fourth sentences. A reference should be cited for the "50,000 mg/L" chloride reported in the bedrock aquifer. Also, this concentration is cited both as 50,000 mg/L and 50,000 g/L in different places in this report. Reference to the NYSDEC Class GA criterion for chloride (250,000 g/L) should be inserted in the fourth sentence.

Response 13.
Section 2.2, pages 5 and 6. The reference to the bedrock aquifer was moved from the discussion of the study area (Section 2.2, pages 5 and 6) to the discussion of the site conceptual model (Section 3,page 9, last paragraph). The concentration of chloride reported in the aquifer is approximately

3,000 mg/L chlorides. The revised text includes reference to the chlorides concentration. Previous references to chlorides concentrations were in error.

Comment 14.
This chapter would benefit by referring the reader to the relevant figures (L-3 through L-12) which show the limits of the various areas discussed.

Response 14.
The requested references to relevant figures has been added to the chapter.

Section 3 - Conceptual Site Model
In addition to addressing comments provided by NYSDEC, the subsections of this Section were rearranged to provide a greater level of consistency throughout the report. To avoid duplication of information, references to data that were previously presented in the discussion of the Conceptual Site Model were removed and the discussion of data is presented in Section 4.

Comment 15.
Section 3.1, page 7, fourth paragraph. The text states that process-related compounds were detected in subsurface soil and groundwater. As discussed above, there were elevated concentrations of these constituents detected in the surface soils (*e.g.*, up to 2,600 mg/kg 1,4-dichlorobenzene; 4,780 mg/kg mercury - see Table L-2a), which are defined as 0 to 2 ft. The text should be modified to reflect this.

Response 15.
Section 3.1, page 8, second paragraph. A reference to the detection of process related constituents in surface soil has been added, as requested.

Comment 16.
Section 3.1, page 8, bullet list. Comment 3.3 from the comment letter issued by NYSDEC to Honeywell dated January 25, 2002 was not adequately addressed. The "adolescent trespasser/recreator" should be further defined in order to give an idea of what type of exposure routes may be encountered (*e.g.*, exposure to surface soil via inhalation of dust generated by biking activities).

Response 16.
Section 3.1, pages 8 through 10. Further description of the receptors has been added. The adolescent trespasser/recreator receptor is assumed to be on-foot, as discussed on page 9, first paragraph after the table.

Comment 17.
Section 3.1, page 8, last paragraph. The chlorides units in g/L are not consistent with the units presented in Section 2.2 (mg/L). See comment on Section 2.2 above.

Response 17.
Section 3.1, page 9, last paragraph. The response to Comment #13 (Section 2.2.) addresses the units of chloride concentrations.

Comment 18.
Section 3.2, page 9, third paragraph. In this text, the only constituents reported as being detected in surface soil are dioxins/furans. As discussed above, the use of "surface soil" needs to be consistent throughout the report. As defined on page 19, surface soil is defined as within the 0 to 2 ft interval. Constituents other than PCDD/PCDFs were detected at elevated levels within this interval.

Response 18.
Section 3.2, page 10, second paragraph. The requested text has been added.

Comment 19.
Section 3.2, page 9, fourth paragraph. It is reported that surface soils were not sampled in most areas within the general plant area because it is mostly covered by concrete building foundations, however, later in the report (page 19), surface soil is defined as the 0 to 2 ft interval. There were samples collected within the 0 to 2 ft interval from within the general plant area in areas other than at the former chlorination building and the on-site ditches. The use of "surface soil" and "subsurface soil" needs to be clearly defined and used consistently throughout the entire report.

Response 19.
Section 3.2, page 10, paragraph 3, last sentence. The reference to surface soils has been clarified by the addition of the sentence: "It should be noted that soil samples collected from 0 to 2 bgs are considered surface soil, while samples collected from 0 to 2 ft below concrete building foundations are considered upper soils (0-10 ft).

Comment 20.
Section 3.2, page 9, fifth paragraph. It is reported that groundwater at the general plant area occurs at approximately 25 to 30 ft bls ("bls" was used by O'Brien & Gere in the draft HHRA; believed to be below land surface). On page 8, it is reported that on-site groundwater occurs at a depth of approximately 15 to 20 ft bls. Clarify whether these depths are incorrect / inconsistent, or if they are referring to different specific areas of the site. This paragraph also needs to be modified to reflect that as requested by NYSDEC, on-site groundwater must be evaluated as a potential source of drinking water and a drinking water pathway should be evaluated in the HHRA.

Response 20.
Section 3.2, page 10. The reference to ground water has been deleted from this paragraph as this information was previously presented in the discussion of the general conceptual site model (Section 3.1). As presented in Section 3.2, the depth to ground water was identified at approximately 15 to 20 ft bgs under the General Plant area and 4 to 5 ft bgs under the CHSA, PSA , and Lakeshore property area. The previous reference to ground water depths of 25 to 30 ft bls was in error.

Comment 21.
Section 3.4, page 11, fourth paragraph. The Department believes that the reference to Table L-7 which refers to Tributary 5A is incorrect; rather Table L-1 should be referenced.

Response 21.
Section 3.6, page 12. The reference to the table for Tributary 5A was removed from the discussion of the Conceptual Site Model. Data for Tributary 5A is presented in Section 4. 1.6. Samples collected for evaluation of Tributary 5A are summarized in Table L-4. The data for Tributary 5A is presented in RAGS D Tables 2.13 and 2.14, Attachment C. The previous version of the data summary table (Table L-1) was replaced.

Comment 22.
Section 3.6, page 12, fourth full paragraph. Comment 3.9 from the comment letter issued by NYSDEC to Honeywell dated January 25, 2002 was addressed to some extent; however, chlorobenzenes are not the only contaminants detected in the groundwater and surface and subsurface soils in the lakeshore area. Since groundwater is assessed as a separate exposure medium, and groundwater is assessed as a single medium (*i.e.*, overall 95th percentile UCL concentrations), rather than being tied to individual wells in specific soil exposure areas. The discussion should identify the contaminants in soil separately from those in the groundwater. This statement should also include naphthalene and benzene. Also, please be consistent in terminology (*i.e.*, use "subsurface soils" rather than "sub-soils").

Response 22.
Page 11, Section 3.5, first paragraph, Lakeshore property area. The constituents detected in ground water, and surface and subsurface soils in the lakeshore property area are presented separately, as requested.

Comment 23.
Section 3.7, pages 12 and 13, second paragraph. The TPH data are not usable for risk assessment as they provide no information on specific chemicals which can be quantitatively assessed. The discussion should focus on the specific chemicals analyzed for. The TPH data can be used qualitatively for consistency with the TCL data.

Response 23.
Section 3.7, page 12, first paragraph. The reference to TPH data has been deleted and the discussion was revised to focus on specific chemicals that were analyzed.

Comment 24.
Section 3.8, page 13, second paragraph. Monitoring well R-5P does not appear on any of the figures. This monitoring well should be shown on Figure L-11. Additionally, the data for the well could not be found in the database, and it appears that these data were not used in the risk calculations.

Response 24.
Section 3.8, page 13, second paragraph. Monitoring well R-5P was removed from the figure and text. The database does not include this well.

Comment 25.
Section 3.10.2, page 15. Please revise this section using the updated Johnson and Ettinger model. EPA can be contacted for the most recent version of this model.

Response 25.
Section 3.10.2, pages 14 through 16. The section was revised as requested.

Section 4 - Data Evaluation

Comment 26.
Section 4.1.1, page 19, first paragraph in "Data Sources". It is stated that data collected for the RI were used as the input data for the risk assessment. When these data were collected and where they are reported should be included here. Although the reader is referred to the RI report for discussion regarding the incorporated data, the discussion included in the risk assessment is insufficient and should provide more detail about the data. See general comments above.

Response 26.
Section 4.1.1, page 21, first paragraph in "Data Sources" and Table L-2. Table L-2 presents RI data collected by O'Brien & Gere that was utilized in the HHRA.

Comment 27.
Sections 4.1.3 through 4.1.10, pages 20 through 23, discussions of data for specific exposure areas. These data as discussed in this part of the HHRA do not appear to be consistent with the number of sample locations shown in the relevant figures. A better explanation of what data exist and were used, tied to specific samples, should be provided.

Response 27.
Sections 4.1.3 through 4.1.10, pages 22 through 26. Table L-3 was developed to identify (for each exposure area) the specific sample quantities collected and their identifications along with the analyses completed. Throughout Section 4, the text has been revised to identify the samples collected for each area. Revisions were also completed to address inconsistencies were identified between tables and figures.

Comment 28.
Section 4.1.3, pages 20 and 21 , General Plant Area (GPA). The number of sample locations cited in the text does not appear to be consistent with the locations shown on Figure L-5. For example, the text states there were 15 to 18 surface soil samples analyzed. However, there are many more than 18 sample locations shown on Figure L-5, and it seems that there would also be more subsurface soil samples than identified in the text. Sample locations shown include 12 "WA-B" series; 10 "SB" series; 2 "SS" series; 3 "xWMATP" series; 7 monitoring wells at three locations; 14 "MC-B" series (location MC-B-12 was not found); one manhole (PAS UP#), and one BERA (MP-SS). Samples from test pits should be indicated as such. The text also states that groundwater samples were collected from 11 wells, however there are only seven monitoring wells shown on Figure L-5. Please clarify.

Response 28.
Section 4.1.3, pages 22 and 23, General Plant Area (GPA). The text and figures have been updated to address inconsistencies that were identified. Sample locations and analyses are also summarized in Table L-3.

Comment 29.
Section 4.1.3, page 21, Former Chlorination Building (Figure L-4). A total of 14 surface samples and 15 subsurface sample locations are cited in the text, however, Figure L-4 only shows 11 sample points in the FCB area (4 FCB borings [5A, B, C, 08]; five surface soil (FCB-1 through 5); the BERA sample (FCB-SS); and one excavation sample [SS #1]).

Response 29.
Section 4.1.3, page 23, Former Chlorination Building (Figure L-4). The text and figures have been updated to address inconsistencies that were identified. Sample locations and analyses are also summarized in Table L-3.

Comment 30.
Section 4.1.3, page 21, third full paragraph, on-site ditches. Please clarify why the text cites four sample locations and Figure L-3 shows five sample locations.

Response 30.
Section 4.1.3, page 22, second bullet, on-site ditches. The text and figures have been updated to address inconsistencies that were identified. Sample locations and analyses are also summarized in Table L-3.

Comment 31.
Section 4.1.4, page 21, Southwest Off-Site/Outfall 006 area. Figure L-6 shows some test pits but how many is unclear - three are all labeled "006-MATP2"; plus one labeled "006MATP1". There are thee surface soil locations (006MA SS#1, 2, and 3); three samples in "Outfall 6" including the BERA sample; and a pair of monitoring wells. The text should identify which of these were sampled and analyzed.

Response 31.
Section 4.1.4, page 23, Southwest Off-Site/Outfall 006 area. The text and figures have been updated to address inconsistencies that were identified. Sample locations and analyses are also summarized in Table L-3.

Comment 32.
Section 4.1.5, pages 21 and 22, State Fair Blvd/ Outfall 004/ NiMo area. Based on Figure L-7, only two locations in the NiMo area (NiMo #1 and #2) and two in Outfall 004 (004A and 004B) were found. The NiMo samples discussed seem to match the figure, but the text discusses more Outfall 004 samples than could be found. It should also be stated that NAPL was discovered along State Fair Boulevard during excavations around the NiMo gas pipeline.

Response 32.
Section 4.1.5, pages 24, Northwest/Outfall 004 exposure area. The text and figures have been updated to address inconsistencies that were identified. Sample locations and analyses are also summarized in Table L-3. The last sentence in the section addresses the discovery of NAPL.

Comment 33.
Section 4.1.6, page 22, Tributary 5A area. The text does not cite a number of samples. It is unclear from the sample designations used how many samples of what type were collected; although it does seem that there are six locations shown on Figure L-8. In locations where two sample IDs are shown, it was assumed that one is surface water and one is sediment; but in three locations, there are three samples shown. Table L-7a indicates that at least 10 surface water samples were collected from Trib 5A, and seven sediments (Table L-7b). Clarification should be provided.

Response 33.
Section 4.1.6, page 24, Tributary 5A area. The text and figures have been updated to address inconsistencies that were identified. Sample locations and analyses are also summarized in Table L-4.

Comment 34.
Section 4.1.7, page 22, Lakeshore property area. The text cites six samples and this seems to correspond to samples LS-1 through LS-6 as shown on Figure L-9. The figure also includes seven monitoring wells at three locations, and one apparent manhole (L.S.W.I.) that are not discussed in the text and should be.

Response 34.
Section 4.1.7, page 24, Lakeshore property area. The text and figures have been updated to address inconsistencies that were identified. Sample locations and analyses are also summarized in Table L-3.

Comment 35.
Section 4.1.8, page 22, Petroleum storage area. The number of soil samples that are cited does not appear to match what is shown on Figure L-10 (seven borings [3 PSB, 4 PSA] plus one BERA surface soil [PSA-SS]); groundwater samples seem to match the wells shown (four wells at three locations).

Response 35.
Section 4.1.8, page 25, Petroleum storage area. The text and figures have been updated to address inconsistencies that were identified. Sample locations and analyses are also summarized in Table L-3.

Comment 36.
Section 4.1.9, page 22, Chlorobenzene Hot Spots area. Clarification is needed on the sample locations. Sample location CHSA#5 may be mislabeled as a surface soil location on Figure L-11, as all of the other CHSA series samples are shown as boring locations. If this is the case then six total surface and subsurface samples can be accounted for (assuming one per boring). The BERA surface soil sample (CHSA-SS) should be included. There are also eight monitoring wells in this area (5 C-series; MW-111; R-6-MW; and HR-1) and groundwater data are not mentioned. Soil samples collected when the wells were installed should be discussed.

Response 36.
Section 4.1.9, page 25, Chlorobenzene Hot Spots area. The text and figures have been updated to address inconsistencies that were identified. Sample locations and analyses are also summarized in Table L-3.

Comment 37.
Section 4.1.10, page 23, hypothetical drinking water area. There are a total 31 wells at 19 locations shown on Figure L-12; but the text states that 11 wells were used to characterize this area. Of the 31 wells on Figure L-12, there is one triplet (WA-4) that is outside the limits of any of the specific exposure areas discussed previously. The text needs to identify which wells were used and why; and also to discuss the comparability of the scope of the sampling events. If the recent event includes all or almost all the wells and parameters included in the 1991 event, it may be preferable to just use the recent data. (The correlation with the 10-year-old data can be discussed in the uncertainty assessment section). The data summary (Table L-11) shows varying numbers of analyses, typically ranging from 26 or 27 to 53 or 59. This should be explained.

Response 37.
Section 4.1.10, page 25 and 26, hypothetical drinking water area. 29 wells were used for the evaluation of a hypothetical drinking water area. The data are presented in RAGS D Table 2.25, Attachment C. The other 2 wells referenced in the previous HHRA report were historic wells that were identified on the figure. No data was identified for those 2 wells and references to the wells were removed from the current HHRA. Table L-2 identifies the analyses performed and year of sampling for each investigation included in the HHRA. Due to the varied analytical data collected during each sampling event, the HHRA utilized data for the entire monitoring period (1992, 1995, and 1997).

Comment 38.
Section 4.2.2, page 24. The text states that data qualified with "R" were not incorporated into the risk assessment "[i]n most cases." Please clarify the exceptions.

Response 38.
Section 4.2.2, pages 26 and 27. Arsenic "R" qualified data consisted of historic (1991) data for Trib 5A. Since more recent data was collected from Trib 5A for the RI, the historic "R" qualified data were not utilized in the revised HHRA. The text will be revised to reflect this change. This revision will be incorporated into the final HHRA report to be submitted subsequent to NYSDEC review of the October 2004 revised HHRA.

Comment 39.
Section 4.2.3, page 24. Groundwater should be added to the discussion of sensitivity goals.

Response 39.
Section 4.2.3, page 27. Ground water was added to the discussion of sensitivity goals and Table L-A2, which contains ground water sensitivity data, was cited.

Comment 40.
Section 4.2.3, page 25. EPA and NYSDEC agree that anomalously high PQLs can be excluded from the datasets when developing exposure point concentrations. However, these data should be provided, along with other PQLs, so that EPA and NYSDEC can evaluate all PQLs in context to determine if they can be excluded.

Response 40.
Section 4.2.3, page 27. As cited in the subject section of the revised report, tables provided in Attachment A provide a comparison of the reporting limit with the screening values used in the risk assessment.

Comment 41.
Section 4.3.1, page 25, fourth full paragraph. In the previous version of this HHRA report (June 1999), it was reported that the published USEPA Region 3 tap water concentration was applied but not adjusted to an HQ of 0.1. Comment 4.4 from the comment letter issued by NYSDEC to Honeywell dated January 25, 2002, indicates that the concentrations should be adjusted by a factor of 0.1. In the revised report, it was stated that the published groundwater RBCs were applied. It should be specified which published RBCs were used. Additionally, it appears that the Regional (Region 3 and Region 9) risk-based screening criteria ("PRGs" as used by Region 9) non-cancer hazard (which are based on a HQ of 1.0) were correctly multiplied by 0.1 to screen non-cancer hazards at HQ of 0.1. The tap water RBC /PRG is applied to all water pathways (surface water ingestion included), although the intake equation is not the same.

Response 41.
Page 27, Section 4.3.1, second paragraph. The RAGS Table 2 series identify the Region 3 and Region 9 screening values and the screening value applied for the assessment of risk. The tap water RBC/PRG screening values, multiplied by a factor of 0.1, were applied to all water pathways.

Comment 42.
Section 4.3.1, page 26. The section on the Vapor Infiltration Screening Values will need to be revised. The text should reference EPA's guidance, "Evaluating the Vapor Intrusion into Indoor Air" (EPA/530-F-02-053) (November 2002) for appropriate screening values.

Response 42.
Section 4.3.1, page 28 and 29. Vapor Intrusion Screening Values. The section was revised and references the EPA guidance, as requested.

Comment 43.
Section 4.3.1, page 26, evaluation of essential nutrients. We concur with the elimination of calcium, potassium, sodium, and magnesium from the list of contaminants evaluated and recommend that these substances be eliminated from all of the tables.

Response 43.
Section 4.3.1, page 29, evaluation of essential nutrients. No response required.

Comment 44.
Section 4.3.1, page 26. The section on Background will need to be revised based on EPA's background guidance, "Guidance for Characterization Background Chemicals in Soil at Superfund Sites" (EPA/540-R-01-003). This document states that background concentrations cannot be used to screen contaminants for the baseline human health risk assessment. The document also recommends that if background concentrations will be utilized in risk management decisions, then these concentrations should be determined based on a statistical evaluation.

Response 44.
Section 4.3.1, page 29. The section has been revised, as requested.

Section 5 - Exposure Assessment
With the current revision of the HRHA, Section 5.1.3 has been revised to include general procedures for the quantification of exposure that were previously presented in subsequent subsections of the report.

Comment 45.
Section 5.1.2, page 27. It is recommended that a table in the format of RAGS Table 1 be prepared and included to provide assurance that a thorough and systematic review of potentially complete exposure pathways has been made.

Response 45.
Section 5.1.2, page 31. The requested RAGS Table 1 has been prepared and included in Attachment C.

Comment 46.
Section 5.1.3, page 28 The list of EPA guidance documents is not complete. The following documents should be added:

USEPA, 2001. Risk Assessment Guidance for Superfund (RAGS); Volume I, Human Health Evaluation Manual, Part D., OERR, Interim Publication No. 9285.7-47, December 2001.

USEPA, 1992. Supplemental Guidance to RAGS: Calculating the Concentration Term. OSWER 9285.7-081. May 1992.

USEPA, 1991, RAGS Volume I: Human Health Evaluation Manual Supplemental Guidance. Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.

Response 46.
Section 5.1.3, page 32. The requested list of EPA guidance documents have been included.

Comment 47.
Section 5.1.3, page 28, second to last paragraph. "Highly unlikely to exceed" should be changed to "unlikely to exceed", as originally requested in comment 5.2 from the letter issued by NYSDEC to Honeywell dated January 25, 2002.

Response 47.
Section 5.1.3, page 32, second to last paragraph. The requested text change to "unlikely to exceed" has been addressed.

Comment 48.
Section 5.1.3, page 28, last paragraph. As a minimum, CT calculations should also be performed for incremental RME cancer risks greater than 10^{-4} (we would recommend using 10^{-6} as the threshold) and for RME hazard indices greater than one.

Response 48.
Section 5.1.3, page 33, first paragraph. CT calculations have been performed, as requested.

Comment 49.
Section 5.2.1, page 29, Current Land Uses, Surveillance Workers. The manner in which the exposure is calculated for this receptor appears to be incorrect; as well as being inconsistent with the description of site security earlier in the report. If the surveillance worker is on site for 250 days a year, the exposure frequency is 250 days/year, not five. The assumption that this worker is on site for less than a full work day can be accounted for in other ways; for example, by assuming a 'fraction ingested' of less than 1.0. Furthermore, the 10 minutes per day does not appear to be consistent with the claim made earlier in the report that the site is patrolled during business hours. A single 10 minute visit on weekdays during working hours is not likely to be a deterrent to trespassers who in general might be more likely to visit the site after business hours and on weekends. The document should be modified for the Surveillance Worker and/or Adolescent Trespasser scenarios in order to incorporate this comment.

Response 49.
Section 5.2.1, page 36, Current Land Uses, Surveillance Workers. The exposure frequency of 250 day/year is presented for the Surveillance Worker. An FI of 0.1 was applied to account for the assumption of the portion of a shift that the Surveillance Worker is expected to be outside of a vehicle during patrol of the site. A FI of 1 was applied for the adolescent trespasser.

Comment 50.
Section 5.2.1, page 30, *Industrial Workers*. The text in this section begins with "*Industrial Workers* respectively,". Please delete "respectively".

Response 50.
Section 5.2.1, page 36, *Industrial Workers.* The text has been revised, as requested.

Comment 51.
Section 5.2.2, page 30. The text states that the data distribution was determined if datasets contained greater than 8 samples with a frequency of detection of at least 40%. What is the reference for these

criteria? Also, EPA Region 2 recommends using the statistical software package PRO UCL Version 2.1, which uses several different statistical tests to determine data distribution. This software package also provides several nonparametric tests for data which are neither normally nor lognormally distributed. Please contact EPA for a copy of the software package.

Response 51.
Section 5.2.2, pages 36 and 37. The decision to perform a distribution analysis on a data set was based on professional judgement. For data sets with less than 8 samples and a frequency of detection less than 40%, the maximum concentration was conservatively used as the exposure point concentration. Otherwise, exposure point concentrations, based on evaluation of data distributions, were calculated using the current version of the statistical software package ProUCL (Version 3.0), as cited in Section 5.1.4, page 33.

Comment 52.
Page 32, Paragraph 1. The text states that the depth to VOC contamination was estimated to be between 4 and 7 feet. For contamination which is at this shallow depth, the Johnson and Ettinger model may not be appropriate. The model allows for an attenuation or dispersion of contamination from the source to the building, and when contamination is shallow, this attenuation/dispersion may not occur. The revised version of the model will provide more complete information on this phenomenon.

Response 52.
The subject paragraph, previously presented in Section 5.2.2, *Exposure Point Concentrations*, was moved to Section 5.1.5, *Modeling Exposure Point Concentrations in Air* (page 34, last paragraph). The text was changed to clarify that *fill* material was estimated to be at depths of 4 to 7 ft, and not ground water. The depth to ground water contamination varies for each specific area-of-concern and ranges from 5-15 ft. As such, these depths did not violate the assumptions of the Johnson & Ettinger model.

Comment 53.
Indoor Air, page 31. Please revise this section using the updated Johnson and Ettinger model. EPA can be contacted for the most recent version of this model.

Response 53.
Section 5.2.2. *Indoor Air*, page 37. The updated Johnson and Ettinger model has been cited, as requested.

Comment 54.
Section 5.2.2, page 31, bulleted list. Data collected in 1999 as part of the BERA should be included here, as data from this sampling event were included in the risk assessment.

Response 54.
Section 5.1.5, page 34, bulleted list. A reference to the 1999 BERA has been added, as requested.

Comment 55.
Section 5.2.2, page 32, paragraphs 4 and 5 with Table L-C2a. As stated in the text, the air exchange rate chosen is on the higher end, however Table L-C2 describes it as lower end, which appears to be incorrect.

Response 55.
Section 5.2.2, page 35 paragraphs 4 and 5 with Table L-B2a. Table L-B2a has been revised to indicate that the selected air exchange rate is on the higher end of the range. The text in the report incorrectly cites Table L-B2a as L-C2a. The revised table reference will be incorporated into the final HHRA report to be submitted subsequent to NYSDEC review of the October 2004 revised HHRA.

Comment 56.
Section 5.2.2, page 32, last paragraph. The soil module of the J&E spreadsheet does include an entry for mercury. However, in some areas of this site, the mercury is supersaturated and may need to be modeled with the NAPL model.

Response 56.
Section 5.2.2. The area containing soils supersaturated with mercury was not evaluated as a "hot spot." Since the area is small and will be slated for remediation, an area-specific "hot-spot" evaluation was not undertaken.

Comment 57.
Section 5.2.2, page 33, *Estimation of Saturated Mercury Air Concentrations*. The text is confusing. Why is this type of concentration necessary for evaluation exposure to mercury? Please provide additional explanation to support the information present. For example, please provide definitions for the "saturated vapor concentration" and the "saturated vapor pressure." Also, please provide the reason why this concept is referenced to an OSHA document, and not an EPA document.

Response 57.
Section 5.2.2. This approach was not utilized in the revised HHRA, and the referenced discussion related to mercury has been removed from Section 5.2.2.

Comment 58.
Section 5.3.1, page 34. The exposure frequency for the current adolescent receptor is listed as two times per month for the three summer months. This time is very limited. EPA recommends 3 times per week during the 13 summer weeks for an exposure frequency of 39 days per year. This comment also applies to Sections 5.5.1, 5.6.1, 5.7.1 and 5.8.1.

Response 58.
The exposure frequency for the current adolescent trespasser has been revised to 39 days per year, as requested by EPA. This change was incorporated into the subsections listed below:

- Section 5.3, page 37, Southwest off-site/Outfall 006 exposure area
- Section 5.4, page 38, Northwest off-site/Outfall 004 exposure area
- Section 5.5, page 39, Tributary 5A exposure area
- Section 5.6, page 41, Lakeshore property exposure area
- Section 5.7, page 42, Petroleum storage area exposure area
- Section 5.8, page 43, Chlorobenzene hot spot area

Comment 59.
Section 5.4.1, page 35. The current and future land use should consider trespassers.

Response 59.
Section 5.4, page 38, Northwest off-site/Outfall 004 exposure area has been revised to consider trespassers, as noted in the response to Comment #58, above.

Comment 60.
Section 5.4.2, page 35. The text states that the maximum detected concentration was used as the exposure point concentration in soils. Please provide the explanation for not developing a statistical estimate of the average concentration. This comment also applies to Sections 5.6.2, 5.7.2 and 5.8.2.

Response 60.
The maximum concentration was applied as a conservative value using the approach outlined in Section 5.14, which discusses the derivation of exposure point concentrations. RAGS D Tables 3.1 through 3.25 present mean concentrations. This response applies to the Sections cited in the Comment, as outlined below:

- Section 5.4.2, page 39, Northwest off-site/Outfall 004 exposure area
- Section 5.6.2, page 41, Lakeshore property exposure area
- Section 5.7.2, page 42, Petroleum storage area exposure area
- Section 5.8.2, page 43, Chlorobenzene hot spot area

Comment 61.
Section 5.9.1, page 40, first paragraph. As mentioned above in comment 3.6, it is reported that groundwater occurs at approximately 25 to 30 ft bls. Here it is reported to occur at approximately 15 to 20 ft bls. Is one of these incorrect, or is the text referring to different areas? This should be clarified.

Response 61.
Section 5.9.1, page 44. The ground water depths were correctly reported in this section. Section 3.2 (Page 20) was revised, as requested by Comment 10.

Comment 62.
Section 5.9.2, page 40. The text states that the maximum detected concentration was used as the exposure point concentration in groundwater. Please provide the explanation for not developing a statistical estimate of the average concentration.

Response 62.
Section 5.9.2, page 44 has been revised to cite the procedures for deriving exposure point concentrations presented in Section 5.1.4, *Derivation of exposure point concentrations* (page 33). Maximum concentrations were applied due to the limitations in quantities of samples/analyses, as discussed in the response to Comment #37.

Section 6 - Toxicity Assessment

Comment 63.
Section 6.2, page 43, 1st bullet. Please revise the superscript to "2", rather than "6".

Response 63.
Section 6.2, page 49, 1st bullet. The superscript has been revised to "2", as requested. However, the footnote associated with this reference was inadvertently deleted. As cited in the previous revision of

the HHRA, footnote #2 states: "The definition of the terms "sufficient", limited, and adequate are given in USEPA 1986, *Guidelines for Carcinogenic Risk Assessment* (51 FR 33992)."

Comment 64.
Section 6.3, page 45, Toxicity Summaries. The IRIS database is cited as 'USEPA, 1997'. Is this a typo, as it is the HEAST Tables which are 1997? The IRIS database is updated regularly and the HHRA should be revised to reflect the current toxicological data (RfDs, CSFs) in IRIS.

Response 64.
Section 6.3, page 50. Toxicity Summaries. The reference to the IRIS database has been revised to cite the current version (2004).

Comment 65.
Section 6.4, page 46, adjustment for GI absorption. While USEPA dermal guidance has been modified over time, agency guidance more recent than 1989 should be used. (The 1992 USEPA dermal guidance, which is more recent than 1989 but is also superseded, is listed in the 'References' section but not cited here.) As this HHRA was issued in June 2002, the Draft RAGS Part E Supplemental Guidance for Dermal Risk Assessment (USEPA, September 2001) should have been used.

Response 65.
Section 6.5, page 55. The RAGS Part E Supplemental Guidance for Dermal Risk Assessment (USEPA, July 2004) was used for the revised HHRA.

Comment 66.
General. USEPA (IRIS) has published CSFs only for total PCBs; and has a tiered set of CSFs. RfDs are only available for two individual Aroclors. This section should include a discussion of how the available toxicity data were applied to the site Aroclor data. Review of the tables suggest that Aroclors other than 1016 and 1254 were inappropriately deleted from the quantitative assessment of non-cancer hazards.

This section should also describe how the health effects of PAHs are evaluated for which specific toxicity data are not available in IRIS or HEAST. Was the USEPA 1993 guidance for assessing carcinogenic PAHs other than benzo(a)pyrene used? Were non-cancer effects of PAHs assessed (*e.g*, acenaphthylene is identified as a COPC in several media although there are no screening criteria) - if so how? See also comments on Table L-49.

This chapter should address all issues for which there is ambiguity - *i.e*., for which the IRIS values are not used 'out of the box'. The 'surrogate' compounds shown on Table L-49; the dioxin CSF; the determination of how the oral CSF for benzene was selected (IRIS provides a range of values), and similar issues should all be discussed in this section. This chapter should also discuss any assumptions about the data which affect the chosen toxicity values - for example, what valence state of chromium was assumed - all as hexavalent? Or trivalent? Or a 1:6 ratio of hexavalent to trivalent? What form of mercury was assumed to be present in the various media?

Response 66.
Section 6.4, *Evaluation of special constituent classes* (beginning on page 51) has been added to provide clarifications on the information requested in this comment.

- dioxins, Section 6.4.1, pages 51 and 52. The selection of IRIS values for dioxin is discussed in this subsection. Table L-5 presents TEFs that were applied.

- PCBs, Section 6.4.2, pages 52 and 53. Detected Aroclors were evaluated quantitatively for cancer and non-cancer health effects in the attached tables. Aroclors were grouped as low molecular weight PCBs, for which the RfD for Aroclor 1016 was used (Aroclors 1016, 1242, 1248) and high molecular weight PCBs (Aroclor 1254, 1260), for which the RfD for Aroclor1254 was used. This approach is consistent with the recommendation provided by NYSDEC in Comment 119. The attached Tables 1 and 2 provide revised RME and CT estimates to correct PCB risk calculations that were not completely addressed in the revised HHRA report. The HHRA will require revision of RAGS D Table 7 and 9 series, and report text to address this issue. These revisions will be incorporated into the final HHRA report to be submitted subsequent to NYSDEC review of the October 2004 revised HHRA.

- PAHs, Section 6.4.3, page 53. As suggested in Comment #123, the USEPA relative potency factors for carcinogenic PAHs (Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089, USEPA 1993) were used to derive appropriate CSFs for benzo(a)anthracene, benzo(b) and (k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. The values applied to the risk calculations are presented in Table L-5.

- chromium, Section 6.4.4, page 53. As noted in this subsection, chromium was assumed to be hexavalent chromium as a conservative screening measure.

- The selection of the cancer slope factor of 5.5×10^{-2} per mg/kg-day[1] for benzene was applied to the HHRA as the more conservative of the two values presented by IRIS. The other cancer slope factor presented in IRIS is 1.5×10^{-2} per mg/kg-day[1]

- Mercury is discussed in section 6.3.1. For inorganic mercury, the values for mercuric chloride were applied.

Section 7 - Risk Characterization

Comment 67.
General. It was requested in the letter issued by NYSDEC to Honeywell dated January 25, 2002 that the central tendency (CT) risk be calculated in cases where the hazard indices exceed 1 and the carcinogenic risks exceed 10^{-4} under the RME scenario, however this was done for risks greater than 10^{-6} in the HHRA (which is appropriate and more conservative). The results of these CT calculations should be included in this section (either in addition to, or in place of, their presentation in Section 8.6), as well as in the appropriate summary tables.

Response 67.
CT calculations were calculated, as requested, and results are presented in Section 7 and the appropriate RAGS D tables 7 series and 9 series, Attachment C. It should be noted that both RME and CT exposure estimates utilize one set of air model results. In addition to the addition of risk values associated with exposure to Aroclors (cited in the response to Comment #66 above), the attached Tables 1 and 2 include corrections (in **bold** type) to industrial worker scenarios for which air exposures were not included in the CT calculations of total risk in the revised HHRA report. Other revisions included in the attached Tables 1 and 2 (that are identified in **bold** type) are reporting errors

that were identified during review of the revised report. These revisions will be incorporated into the final HHRA report to be submitted subsequent to NYSDEC review of the October 2004 revised HHRA.

Comment 68.
Section 7, page 47, next-to-last paragraph, item number 2. There appears to be an error in the exponent of the cancer risk range, cited as 10^{-4}. This should be changed to 10^{-6}. Furthermore, the discussion does not accurately reflect the text of the NCP. We suggest the following text be used in the discussion of cancer risk:

". . . acceptable exposure levels are generally concentration levels that represent an excess upper bound cancer to an individual of between 10^{4} to 10^{6} . . . The 10^{6} risk level shall be used as the point of departure for determining remediation goals . . ." (40 CFR §300.430[e][2][i][A][2]). These target risk levels are also often applied by other agencies responsible for protecting human health (New York State Department of Health [NYSDOH] and Agency for Toxic Substances and Disease Registry [ATSDR]).

Response 68.
Section 7, page 55, next-to-last paragraph, item number 2. The exponent of the cancer risk range was revised, as requested. In addition, the requested text of the NCP was added to the Executive summary of the report (See response to Comment #9) and referenced in Section 7.

Comment 69.
Section 7.1, page 48. The text states that the maximum detected concentration was used to estimate exposure when a statistical estimate of the mean could not be calculated. However, EPA recommends first trying to develop an EPC using a nonparametric test as provided in the statistical software package PROUCL Version 2. If an EPC cannot be calculated with this program, EPA then recommends estimating risk using both the maximum detected concentration and the statistical estimate of the mean (without the outliers). This provides a more complete picture of potential risks from exposure to possible hot spots as well as exposure to the contamination that may be more representative of site-wide distribution.

Response 69.
Section 7.1, page 56. The development of the UCL is discussed. For specific discussion of the use of ProUCL, please refer to Section 5.1.4.

Comment 70.
Section 7.1, page 48, first paragraph . If there are concerns that the inclusion of certain hot spot areas (e.g. ditches) in the risk calculations may result in an overestimate of the risks associated with the general plant area, the consultant may also calculate risks for the general plant area but excluding data from hot spot areas which are also assessed as discrete exposure areas. This should, however, be done in addition to, not as a substitute for, the risk calculations done for the general plant area using the pooled data.

Response 70.
Section 7.1, page 56, first paragraph. The suggested approach has been incorporated into the HHRA.

Comment 71.
Section 7.1.1, pages 48 and 49, surveillance worker. It is stated that the cancer risk for the surveillance worker at the former chlorination building is related to the maximum TCDD TEQ concentration, however, the estimated risk value is not given. This should be provided here.

Response 71.
Section 7.1.1, pages 56 and 57. The cancer risk value for the surveillance worker is presented, as requested.

Comment 72.
Sections 7.2 through 7.7, pages 50 and 51, general. The characterization of risks less than 1×10^{-4} but greater than 1×10^{-6} as "not significant" is incorrect. As noted earlier, the NCP states risks exceeding 10^{-6} are the point of departure for determining remediation goals.

Response 72.
Sections 7.2 through 7.7, pages 57 through 61. The requested change has been included, as requested.

Comment 73.
Section 7.5, page 51, Lakeshore property area, recreational fisherman. As requested in comment 7.4 in the January 25, 2002 letter issued by NYSDEC to Honeywell, the text summarizing the current recreational fisherman's risk to consumption of fish in the lake should indicate that this risk was evaluated as part of the Onondaga Lake Bottom HHRA.

Response 73.
Section 7.5, page 59, Lakeshore property area, recreational fisherman. The recreational fisherman scenario (which evaluates the risk associated with the consumption of fish) was addressed in the Onondaga Lake Bottom HHRA. The Adult trespasser scenario considers the potential exposure of a recreational fisherman that accesses the lake for fishing via the Lakeshore property area. For that scenario, exposure to surface soil is evaluated.

Comment 74.
Section 7.9.1, page 54, Current Conditions. Please see the comment on Sections 7.2 through 7.7 above regarding description of risks as "not significant".

Response 74.
Section 7.9.1, page 62, Current Conditions. The section has been revised consistent with other sections, as discussed in response to Comment 72.

Section 8 - Uncertainty Assessment

Comment 75.
General. As mentioned in comment 8.4 of the January 25, 2002 letter issued by NYSDEC to Honeywell, there should be a discussion of the uncertainties associated with the dermal route in this section. The HHRA should indicate whether or not the dermal assessment was conducted in accordance with the recent (September 2001 Draft RAGS Part E) USEPA Dermal Guidance document (if not, what specific guidance was used); and include a qualitative assessment of how the older version of the USEPA dermal guidance used in this HHRA may differ from the current guidance.

Response 75.
Dermal assessment was conducted in accordance with the recent (July 2004 Final RAGS Part E) USEPA Dermal Guidance document, as cited in Section 6.5. Therefore, a discussion of uncertainty associated with the use of other guidance was not required.

Comment 76.
Section 8.1, page 57, last paragraph. It should be indicated that 100 percent of the PCDD/F data were determined to be useable, as was reported in Section 4 (Data Evaluation).

Response 76.
Section 8.1, page 67, first paragraph. The text was updated, as requested.

Comment 77.
Section 8.1.2, page 58, Rejected data. The compounds for which a high fraction of the data were rejected should be noted here.

Response 77.
Section 8.1.2, page 68, Rejected data. As noted in the response to Comment 38, the "R" qualified arsenic data was not utilized in the revised HHRA; however, the text was not revised to reflect this change. This revision will be incorporated into the final HHRA report to be submitted subsequent to NYSDEC review of the October 2004 revised HHRA.

Comment 78.
Section 8.2.1, page 59, first sentence. The necessary number of data points to conduct statistically valid calculations is dependent upon the amount of data, not the number of detections.

Response 78.
Section 8.2.1, page 68 and 69. The text was revised to cite the number of samples rather than the number of detections. In addition, the inclusion of data with concentrations below the detection limit is explained in this section.

Comment 79.
Section 8.2.3, general. The uncertainty discussion of the model should include model runs with a range of different assumptions, particularly the most sensitive parameters (such as soil type or soil vapor permeability).

Response 79.
Section 8.2.3, general. Model uncertainty is addressed according to the *User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings* Table 5 (USEPA 2003), which has been included in Section 8.2.3. Model-parameter values were selected at the conservative end of the range for Site-specific or default conditions. Therefore, the model derivations are conservative.

Comment 80.
Section 8.2.3, page 61, table. It appears that the table has not been imported correctly from the model guide. Many of the cells appear to have lost their references and superscripts.

Response 80.
Section 8.2.3, page 71, table. The table has been revised based on more recent guidance provided in the *User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings* (USEPA 2003).

Comment 81.
Section 8.2.3, page 61, table. Please revise the table of sensitivity/uncertainty in the Johnson and Ettinger model based on information provided in Appendix G, Table G-2 of EPA's draft vapor intrusion guidance. This guidance is available at: http://www.epa.gov/correctiveaction/eis/vapor.htm

Response 81.
Section 8.2.3, page 71, table. Same as response to Comment 80, above.

Comment 82.
Section 8.2.3, page 62, fourth full paragraph, fifth sentence. It is stated that "Benzene was detected in 22 of 62 samples at concentrations ranging from 0.035 - 16 mg/m^3." Data from the April 12, 2002 package from Honeywell and Appendix K from the June 1999 RI indicate that benzene was detected in 21 of 62 samples at concentrations ranging from 0.01-81.58 ppmv (0.034 to 274 mg/m^3). This should be clarified.

Response 82.
Section 8.2.3, page 72, last paragraph, fifth sentence. The benzene concentration detected in soil vapor samples needs to be revised to present the concentrations from the data in the April 12, 2002 package from Honeywell, and Appendix K from the June 1999 RI. This revision will be incorporated into the final HHRA report to be submitted subsequent to NYSDEC review of the October 2004 revised HHRA.

Comment 83.
Section 8.2.3, page 63, first paragraph. There appear to be some problems with the comparison of the soil gas vapor data (despite the data quality issues associated with them) and the soil/groundwater model results. For benzene, the 95% UCL of the soil gas vapor data is 0.24 ppm by volume (note that the EPC value stated here is based on the data from the April 12, 2002 package from Honeywell and the June 1999 RI Appendix K, since the number used is not indicated in the text) whereas the maximum is approximately 340 times greater at 81.58 ppmv. Honeywell states that the model is too conservative since it generates an indoor concentration using the soil or groundwater (Honeywell doesn't specify; instead, it is referred to as "the simplified conceptual model applied in this assessment") that is 500 times the indoor concentration generated using the 95% UCL from the gas vapor data. Since these data have quality issues, and the soil and groundwater data are more extensive, they do not seem directly comparable. The soil gas vapor data ranges (minimum and maximum which differ by a factor of 8,000) should have been used in the comparison.

Response 83.
Section 8.2.3, page 69, first paragraph. Based on more recent guidance for evaluation of vapor intrusion issues, ground water data was used to develop exposure estimates as opposed to estimating soil vapor concentrations using soil data. The discussion, which compares indoor air screening concentrations derived from measured soil vapor concentrations to those derived from measured ground water concentrations, has been removed.

Comment 84.
Section 8.3.1, page 63, third sentence. As previously noted above, the concentration of chloride reported in the bedrock aquifer is not documented; and is reported at concentrations varying by three orders of magnitude in different parts of this report (50,000 g/L here and on page 8; 50,000 mg/L on pages 5 and 13).

Response 84.
Section 8.3.1, page 73, third sentence. Consistent with other sections of the report (see responses to comments #12 and #17), the chloride concentration was revised as 3,000 mg/l.

Comment 85.
Section 8.3.2, page 63, last paragraph. Region 2 guidance is that the 330 mg/day value be used for the construction soil ingestion rate (for both RME and CT). While the USEPA EFH (1997) does note that there is uncertainty about the way in which the number (480 mg/day) was derived, the EFH does NOT state that 480 mg/day (or the lower value of 330 mg/day currently recommended by USEPA Region 2) significantly overestimates the ingestion rate for the construction worker. If Honeywell wants to suggest that there may be other values (e.g., 82 mg/day) then the place for that discussion is in the uncertainty section.

The following text is suggested:

While not explicitly making a recommendation for construction worker ingestion, the USEPA Exposure Factors Handbook (USEPA, 1997) does cite a study by Hawley (1985) which suggested a 480 mg/day rate. This rate (480 mg/day) has been used in other Onondaga Lake subsite risk assessment documents; however, USEPA Region 2 has re-evaluated the study on which this rate was based and currently recommends a construction worker ingestion rate of 330 mg/day. It is acknowledged that there is an extremely limited data set for these assumptions, especially for the construction worker scenario; however, the direction of the bias is unknown.

Response 85.
Section 8.3.2, page 74, third paragraph. The suggested text has been added as the subject paragraph.

Comment 86.
Section 8.3.2, page 64, 2nd paragraph. The text states that "...soil-skin dermal adherence factors presented in current USEPA guidance indicates that the assumed rates of Hawley exceed the calculated ingestion rates...." Please provide the name or document number for the current USEPA guidance that is referenced in this statement.

Response 86.
Section 8.3.2, page 74, 1st paragraph. The text references the *Exposure Factors Handbook* (USEPA 1997).

Comment 87.
Section 8.3.2, page 64, 3rd paragraph. The text states that "[o]ther assessments have indicated that default incidental ingestion rates in the range of 100 - 200 mg/day are appropriate for high soil contact activities." Please reference these specific assessments, indicate the high contact activities, the ingestion rates, and the number of people included in the studies. The central tendency estimate of 82 mg/day should not be used until this value is more thoroughly evaluated.

Response 87.
Section 8.3.2, page 74, 4th paragraph. The last paragraph in Section 8.3.2 on page 74 no longer applies and will be deleted. The ingestion rate of 82 mg/day was not used, RME values for the soil ingestion rates were also applied as the CT soil ingestion estimates. Differences between the RME and CT exposure calculations were established based on RAGS E values for the soil adherence factor, as summarized below. For RAGS E values, the RME represents the 95th percentile value and the CT generally represents the geometric mean value.

Comparison of adherence factors (mg/cm^2) applied for RME and CT estimates

Receptor	***RAGS E receptor***	***RME***	***CT***
Construction worker	Construction worker	0.3	0.1
Industrial worker	Construction worker (RME)/ commercial grounds keeper (CT)	0.3	0.02
PA Sewer worker	Pipe layer	0.2	0.15
State Fair Blvd transient	Residential grounds keepers	0.06	0.01
Surveillance worker	Construction worker (RME)/ commercial grounds keeper (CT)	0.3	0.03
Trespasser	Residential gardener	0.3	0.15
Utility worker	Utility worker	0.9	0.15

The text in the HHRA report will be expanded to reflect this change in approach. These revisions will be incorporated into the final HHRA report to be submitted subsequent to NYSDEC review of the October 2004 revised HHRA.

Comment 88.
Section 8.4.1, page 64. The text uses magnesium as an example of a chemical for which an RfD is developed "directly from data on human exposures....relating to occupational exposures that are known to have no adverse effects [or] norm0.al dietary levels of certain chemicals...." However, EPA does not recommend an RfD for magnesium, and in fact recommends that it should not be retained for quantitative evaluation in the HHRA. Please revise the text to use a more appropriate example.

Response 88.
Section 8.4.1, page 75. We propose to revise the HHRA to remove the parenthetical references to magnesium, selenium, and silver. These revisions will be incorporated into the final HHRA report to be submitted subsequent to NYSDEC review of the October 2004 revised HHRA.

Comment 89.
Section 8.4.2, pages 66 and 67 general. The discussion of dioxin carcinogenicity should also note that the TEF approach is not a creation of USEPA but is in fact a consensus of international experts; and also that the USEPA draft dioxin reassessment currently available as a peer-review document (EPA/600/P-00/001Bg, September 2000) suggests that the cancer risks from dioxin may in fact be higher than those based on the CSF published in HEAST and used in this HHRA.

Response 89.
Section 8.4.2, pages 76 through 78, general. Based on the *draft – for peer review only* status of the dioxin reassessment, we did not include the preliminary information appearing in it.

Comment 90.
Section 8.5.1, page 67, non-cancer effects. Non-cancer health effects from dioxins should be discussed here or elsewhere in this chapter. ATSDR (1999), USEPA (2000), and the WHO (2000) all have intake numbers for dioxins against which the intakes calculated for site receptors can be compared, at least on a qualitative basis. As no quantitative assessment of non-cancer hazards from dioxins is presented, the HHRA should note that non-cancer hazards may be greater than those calculated for media in which dioxin has been detected.

Response 90.
Section 8.4.2, page 77, last two paragraphs, non-cancer effects. Information on non-cancer effects of dioxins obtained from ATSDR is provided.

Comment 91.
Section 8.6, embedded table on page 68. This table as formatted is difficult to follow. It would be more useful if the RME and CT risks / hazards were in separate columns, not underneath one another and not separated from risks to other receptors at the same exposure area. If necessary, present this information as a free-standing table. Also, this section states that CT risks were calculated where RME risks exceeded 10^{-6}; this appears to be the case and is in fact the approach recommended in previous comments. However, text earlier in this document suggests CT risks were only calculated where the RME risk was greater than 10^{-4}. Please review and make the document consistent and correct.

Response 91.
Section 7.9, pages 62 through 64. The format of the table was revised, as requested.
The table presenting a summary of RME and CT risk/hazards was presented in the executive summary and in Section 7.9.

Section 9 - Conclusions

Comment 92.
The first paragraph needs to be modified in accordance with previous comments (e.g., 7.2). This chapter should be reviewed and re-written as necessary to reflect any other changes necessary to address the comments on this version of the HHRA.

Response 92.
Section 9, page 81. The conclusions section was revised to address changes incorporated into the revised HHRA.

References

Comment 93.
Please proofread (see, for example, apparent typos / internal comments in reference entries for IRIS [also a more recent version should be used] and "Zeisse, ???"). The references section lists the 2002 versions of Region 3 and Region 9 screening criteria; but the 2000 version of the Region 9 screening criteria is cited in Section 4.3.1. This section also lists the 1992 USEPA dermal guidance but the brief discussion of dermal in the text only mentions 1989 USEPA guidance.

Response 93.
References, pages 83 to 87. The references have been proofread and revised, as requested.

Tables

Tables L-2 through L-11, Analytical Data Summary Tables
These tables have been replaced by RAGS D Tables 2.1 through 2.25, Attachment C.

Comment 94.
General. Based on the raw data that were provided with the electronic version of the report, it appears that there may be errors in the reported units for some of the incorporated data. For example, there are mercury data (water) from the chlorobenzene hot spot area that appear to either be reported in the incorrect units, or they are filtered samples and not reported as such. Because the maximum concentrations (rather than 95% UCLs) were used as exposure point concentrations for many of the compounds, errors in the units of detection limits may not have an effect on the risk calculations; however, this should be verified. The units for all detections should also be verified before submitting the revised report.

The notes to Tables L-2 through L-11 state that the column 'site concentration' is the maximum detected for that AOS. Clarify the difference between the concentrations reported in the maximum column under the summary statistics heading and the "Site Concentration".

The arithmetic mean has no significance for human health risk assessment and should not be included.

Response 94
The data base was extensively reviewed to correct errors in the previous report. Table L-2 through L-11 tables have been replaced by RAGS D Tables 2.1 through 2.25, Attachment C.

Comment 95.
Tables L-2e, L-5c, L-9d, and L-10d. These tables are titled "Summary of Detected Analytes (Modeled Indoor Air)", but the analytes are modeled, not detected. Only the parameters that were detected in the soil gas survey in these tables were used, rather than those detected in the soil and groundwater. The groundwater and soil contributions were added, which may not be applicable, since the groundwater models the movement through the soil and assumes equilibrium. If, however, the soil and groundwater contributions are supposed to be added, then the sum of these two effects would need to be considered in the screening tables in the next set of tables.

Response 95.
The subject tables were replaced by RAGS D Tables 3.8, 3.20, and 3.24 for the General Plant Area, Petroleum Storage Area, and Chlorobenzene hot-spot area, respectively. These tables present modeled indoor air concentrations which are based on ground water data.

Comment 96.
Tables L-3 and L-4. A summary appears to be missing for the indoor air for Tables L-3 (FCB) and L-4 (Ditch).

Response 96.
Site data for the overall General Plant area conservatively represents the FCB and Trench areas. Therefore, the indoor air exposure pathway was not evaluated for these areas using location specific data.

Comment 97.
Table L-3b, Former Chlorination Building (0 to 10 ft Soils). The "Frequency of Detection" column should be corrected. Currently, it lists that all COCs were detected in all samples.

Response 97.
The subject table has been replaced by RAGS D Table 2.6, Attachment C. The requested change has been made.

Comment 98.
Table L-7a. There appears to be no entry for mercury (only methylmercury) in this table. Was analysis for mercury performed, but was not detected? If so, what was the detection (reporting) limit? If the standard SW-846 method and reporting limits were used, non-cancer risks from exposure to mercury in Trib 5A may be underestimated. Please address this issue either in a detailed footnote to this table or in the text.

Response 98.
The subject table has been replaced by RAGS D Table 2.13. Mercury concentrations are reported in the table.

Tables L-12 through L-21, COPC Selection Summary Tables
The subject tables have been replaced by RAGS D Tables 3.1 through 3.25, Attachment C.

Comment 99.
These tables compare the soil and groundwater concentrations to the modeled RBCs, when the soil/groundwater concentrations could have been entered into the model and compared to Region 3 and 9 RBC/PRG values for ambient air (this should be appropriate if the model assumptions (slope factors, RfDs, exposure durations and frequencies, *etc.*) are acceptable to the USEPA or mirror those used by USEPA Regions 3 and 9.

Response 99.
After the HHRA report (June 2002) was issued, USEPA published guidance entitled *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Soil Vapor Intrusion Guidance* (November 2002). The USEPA draft guidance provides screening-value tables for ground water that are protective of indoor air. Therefore, Site-specific model-derived RBCs were removed from the HHRA screening evaluation. In the initial screening for evaluation of indoor air, Site ground water data were now compared to the USEPA (2002) provided screening values as opposed to modeling of indoor air using soil data. Therefore, subsequent comments (#100 through #106) pertaining to the soil modeling approach do not apply as this approach was not utilized.

Comment 100.
Tables L-12 through L-21, COPC Selection Summary Tables. There does not appear to be a logical progression from these tables to the next set. In the next tables, the model is used to back-calculate the RBC concentrations in the soil or groundwater based on the model assumptions (slope factors, RfDs, exposure frequencies, exposure duration, target cancer risk and target hazard quotient etc.) which are then compared to the soil or groundwater concentrations.

Response 100.
The subject tables have been replaced by RAGS D Tables 2.1 through 2.25, Attachment C.

Comment 101.
It does not appear that the correct units were used for the modeled soil screening RBCs. The model output is g/kg. They compare these values to mg/kg. Therefore it appears that more chemicals should have been retained (*e.g.*, Benzene in L-12e). This is evident in the attachments which have the printouts of the model runs, and are confounded by the fact that the values given for the screening levels do not appear to be shown with units anywhere else (particularly Table L-C1).

Response 101.
This approach was not utilized in the revised HHRA. See response to Comment 99.

Comment 102.
Tables L-12 through L-21 resemble RAGS 2, but they do not have the correct format. The RAGS format does not include a column for 95% UCL, but does include one with the concentration used for screening. As such, with these tables we could not determine which concentrations were used in the screening (max, mean, 95% UCL).

Response 102.
The subject tables have been replaced by RAGS D Tables 3.1 through 3.25, Attachment C. The concentrations used for screening are presented.

Comment 103.
The model was run for soils at 0 to10 ft with a depth to contamination of 13 ft (L_T=400 cm). L_T is directly proportional to the screening value and therefore additional analytes may have been retained if the L_T were reduced.

Response 103.
This approach was not utilized in the revised HHRA. See response to Comment 99.

Comment 104.
The groundwater and the soil screening were not consistent. The L_f (Depth below grade to bottom of enclosed floor) for groundwater was set at 15 cm but for soil it was set at 200 cm. (In both the screening models [groundwater and soil] these are the only two choices, 200 cm always yields a lower screening value.) Although the value will depend on the type of building foundation (15 cm - 6 inches - might be appropriate for slab-on-grade construction; whereas 200 cm [6+ ft] would be more consistent with a building with a basement), the same L_f should be used for both soil and groundwater.

Response 104.
This approach was not utilized in the revised HHRA. See response to Comment 99.

Comment 105.
When using the model to back-calculate a screening value, if the calculated screening value in the soil/groundwater is greater than the saturation/solubility concentration the model labels the value 'NOC' or not of concern. However, this is not always correct since the calculated screening value depends on the model parameters (particularly the temperature, depths, and the target HQ). These screening models were run with a target HQ of 1 and then the concentrations obtained were divided by 10 in the screening tables. The model should have been run with the target HQ at 0.1 due to this saturation issue (the value with target HQ set at 1 is ten times greater than at 0.1 and therefore could be greater than saturation/solubility when the value at HQ=0.1 is not).

Response 105.
This approach was not utilized in the revised HHRA. See response to Comment 99.

Comment 106.
The tables appear misleading to the reader since many of the analytes have "NV" in the "Modeled Toxicity Screening Value" column. There is no note to explain what this means. In many cases (as with the PAHs) the model can be used to provide a screening level; however, it does not appear that the model was used. In addition, there are some analytes that the model is not set up to run. These tables need more than one note to indicate the analytes that were run and resulted in a "NOC" value, those that were not run and those that could not be run. Also an explanation should be given for those that were not run which could have been. As they are, the tables appear misleading since they imply all the analytes listed were screened.

Response 106.
This approach was not utilized in the revised HHRA. See response to Comment 99.

Comment 107.
Table L-15b, page 3 of 5, Offsite Southwest Area/Outfall 006. For endrin aldehyde, the qualifier for the maximum concentration is reported as "0". If this is an error, it should be corrected. If this is not an error, the definition of the qualifier should be reported in the notes for the table.

Response 107.
The subject table was replaced by RAGS D Table 2.10, Offsite Southwest Area/Outfall 006. The error has been corrected.

Tables L-22 through L-33, COPC Exposure Summary Tables
The subject tables have been replaced by RAGS D Tables 3.1 through 3.25, Attachment C.

Comment 108.
Table L-22, List of COPCs by Area of Study and Media. The COPCs listed in this table does not appear to be consistent with those flagged as such in Tables L-12 through L-21. For example, for the surface soils (0 to 2 ft) from the former chlorination building area, there were 17 compounds flagged as COPCs and 23 listed in Table 22. It appears as if the nutrients are included in the listing in Table 22, as well as 2-methylnaphthalene and methylmercury. Clarification is needed.

Response 108.
The subject tables have been replaced by RAGS D Tables 3.1 through 3.25, Attachment C which have addressed the concern that was noted.

Tables L-34 through L-43, Chronic Exposure Parameter Tables
The subject tables have been replaced by RAGS D Tables 4.1 through 4.38, Attachment C.

Comment 109.
Table L-34, Chronic Daily Intake Equations. There appear to be no equations for incidental ingestion or dermal contact with surface water. Because these pathways were evaluated, the equations used in the calculations should be included here. The intake equations for incidental ingestion of surface water and ingestion of drinking water (*e.g.*, groundwater used as a drinking / tap water source) are not the same. The tap water pathway assumes daily (or 350 d/yr) ingestion at a fixed daily rate (2 L/day) to calculate the intake. The surface water pathway first needs to have an assumption about the means

of exposure; then assumptions about the ingestion rate; the duration of the event; and the number of days on which the exposure event occurs.

The equations in this table should be presented in text form, not the form the equation needs to be for spreadsheet or database calculations.

Response 109.
The subject table has been replaced by RAGS D Tables 4.1 through 4.38, Attachment C which present the exposure equations. As shown in RAGS D Table 4.21 (Attachment C), the assumptions for the rate of ingestion, duration of the event, and number of days on which the exposure event occurs are 0.01 L/day, 9 years, 39 days per year, respectively. The surface water pathway assumes that incidental exposures occur for a trespasser that accesses the area for 2 hours each event.

Comment 110.
Table L-35. (a) The soil skin adherence factor (SSAF) appears to be low. Based on values used on other subsites, the adolescent trespasser SSAFs should be at least 0.3 for RME and 0.15 for CT. Table C-3 in RAGS Part E should be reviewed. The value used for the SSAF (0.03) is half the value of the lowest RME value for any receptor shown on the table (0.06 mg/cm^2 for INDOOR children). The RME for children (age 8 to 12) playing in dry soil - also the median RME of the five studies of children - is 0.4 mg/cm^2. The median RME of the three residential adult scenarios is 0.2 mg/cm^2. The median RME for 'miscellaneous activities' is about 0.45 mg/cm^2.
Table L-35. (b)The adolescent is more appropriately defined as 9 to < 18 years old. USEPA considers persons 18 and older in the 'adult' category.

Table L-35. (c) There appears to be a typo in table heading , "ME" should be "RME".

Table L-35. (d) Some of the skin surface area values differ slightly from those in the current RAGS Part E but the differences are minor.

Table L-35. (e) An exposure frequency of 6 d/yr is not necessarily a "conservative" estimate. A lot could be going on at the site on the 23 hours and 50 minutes a day (24 hrs/day on weekends) that the Honeywell surveillance staff is not on site.

Response 110.
The subject table has been replaced by RAGS D Tables 4.1 through 4.38.
a. Adolescent trespasser SSAF for RME and CT are 0.3 and 0.15, as requested.
b. Adolescent is defined as a 9 yr. period spanning 9 to <18 years old.
c. Typo is no longer applicable, the subject table was replaced.
d. Skin surface area values were revised according to the current RAGS E.
e. Comment did not require that a change be made.

Comment 111.
Table L-37, Ingestion of soil. The adult ingestion rate (50 mg/d) is consistent with the mean adult ingestion rate in the EFH (Table 4-23; no 95th percentile value is suggested). The fraction ingested (FI) is then given as 1.0, with a statement that this value assumes 1/4 of daily ingestion occurs at site. If 1/4 of the ingestion is assumed to occur at the site, then the FI is 0.25, not 1.0. As the ingestion rate is a mean, we suggest using a FI of 1.0 as the RME value and 0.25 as the FI for the CT (both using a 'base' ingestion rate of 50 mg/d). The SSAF is also low; RAGS E suggests an RME for industrial workers of 0.2 mg/cm^2, and a CT value of 0.02 mg/cm^2. (The midpoint of the studies cited for commercial/industrial adults has a value of 0.3 for the RME.)

Response 111.

- For adult ingestion rates, the FI is provided as 1.0 and 0.25 for the RME and CT, respectively.
- For dermal contact of industrial workers, the SSAF is provided as 0.3 and 0.02 mg/cm^2 for the RME and CT, respectively, according to more recent RAGS E guidance.

Comment 112.
Table L-38. The numerical fraction ingested is inconsistent with the comment on the FI. Also, the SSAF appears to be too low. Please see the discussions above on Tables L-35 and L-37.

Response 112.
Comment is addressed consistent with the response to Comment 111 above.

Comment 113.
Table L-40. The Soil/Skin Adherence Factor (SSAF) appears to be too low. Please see the discussions above on Tables L-35 and L-37.

Response 113.
Comment is addressed consistent with the response to Comment 111 above.

Comment 114.
Table L-41. The numerical fraction ingested appears to be inconsistent with the comment on the FI. Also, the SSAF appears to be too low. Please see the discussions above on Tables L-35 and L-37. The exposure frequency appears to have been calculated incorrectly; it is 250 d/yr. Account for amount of time on site by using an FI of lower than 1.0.

Response 114.
Comment is addressed consistent with the response to Comment 111 above. Adolescent trespasser and industrial worker exposure frequencies are presented as 250 d/yr, as requested.

Comment 115.
Table L-42.General Exposure Factors, Exposure Frequency. It is unclear what this scenario is addressing and clarification is needed for the comment "1 year of every 25 years". If this is truly a residential scenario [but is that possible in an industrial area?], then the EF of 350 d/yr, 30 yr ingestion would be appropriate.

Response 115.
RAGS D Table 4.38, Attachment C, presents a hypothetical drinking water scenario, as requested by NYSDEC. The EF and ED are presented as 350 d/yr and 30 yr in the revised HHRA.

Comment 116.
Table L-43. Body weight in USEPA 1991 is 15 kg, not 16.

Response 116.
RAGS D Table 4.38, Attachment C, the body weight of a child is presented as 15 kg.

Tables L-44 through L-50, Toxicity Tables
The subject tables have been replaced by RAGS D Tables 5.1, 5.2, 6.1, and 6.2 (Attachment C).

Comment 117.
General note on toxicity data tables (L-45 - L50). Many of the tables contain specific (numerical) values without what appears to be any indication as to the source (*e.g.*, many of the RfDo values in Table L-55a); or do not clarify where an IRIS value for one substance has been applied, either directly or with a factor, to other substances (*e.g.*, carcinogenic PAHs). (Table L-49 addresses this but only in part.)

Response 117.
The subject tables have been replaced by RAGS D Tables 5.1, 5.2, 6.1, and 6.2 (Attachment B) and include references to data sources.

Comment 118.
Table L-45a, Toxicity Values: Potential Non-Carcinogenic Oral Effects for COPCs. The oral reference dose used for mercury in the risk calculations does not appear in the table and should. It was determined that $3x10^{-4}$ mg/kg-day was used ($3x10^{-4}$ mg/m^3 is the reference concentration for chronic inhalation exposure reported by IRIS). This should be verified and included here. For inhalation, please assume elemental mercury (also because there is no RfC for methylmercury or mercuric chloride), which has a RfC of 3×10^{-4} mg/m^3.

Response 118.
- The oral reference dose for mercury, $3x10^{-4}$ mg/kg-day, is presented in RAGS D Table 5.1 (Attachment C).
- The non-cancer RfC of 3×10^{-4} mg/m^3 for mercury inhalation needs to be added the RAGS D Table 5.2. The value was presented as the Extrapolated RfD for mercury.

Comment 119.
Table L-45a only lists an oral RfD for Aroclor 1254. All detected Aroclors should be evaluated quantitatively for non-cancer health effects. Aroclors can be grouped as either low molecular weight PCBs, for which the RfD for Aroclor 1016 should be used; or high molecular weight PCBs, for which the RfD for Aroclor1254 should be used.

Response 119.
As presented in the response to Comment #66 above: Detected Aroclors were evaluated quantitatively for cancer and non-cancer health effects in the attached tables. Aroclors were grouped as low molecular weight PCBs, for which the RfD for Aroclor 1016 was used (Aroclors 1016, 1242, 1248) and high molecular weight PCBs (Aroclor 1254, 1260), for which the RfD for Aroclor1254 was used. This approach is consistent with the recommendation provided by NYSDEC in Comment 119. The RAGS D Table 7 and 9 series correct PCB risk calculations that were not completely addressed in the revised HHRA. As indicated in the response to Comment #66, these data will be presented in a revised HHRA report. Tables 1 and 2, attached, provide a comparison of the risk values presented in the HHRA report and the revised values based on the inclusion of additional Aroclors. In general, the revised risk values do not change the interpretation of risk at the site. These revisions will be incorporated into the final HHRA report to be submitted subsequent to NYSDEC review of the October 2004 revised HHRA.

Comment 120.
Table L-46a. The CSF for 2,3,7,8-TCDD (listed as "TEQ" on the table) is published in HEAST (*i.e.*, source is not "NA").

Response 120.
For the CSF of 2,3,7,8-TCDD (listed as "TEQ" on the table), ASTDR is referenced in the revised HHRA.

Comment 121.
Table L-47 has GI efficiency, dermal absorption factors, and permeability coefficients for about 110 chemicals. Are there really that many dermal COPCs at Willis Ave? Also, there appears to be no explanation of footnote 1 (permeability coefficient table) nor any indication as to what reference "RAIS 2001" is.

Response 121.
In the revised HHRA, Table L-1 presents the GI efficiency, dermal absorption factors and permeability coefficients. A footnote has been added to identify the reference for RAIS 2004 as Oak Ridge National Laboratory.

Comment 122.
Table L-48. This table appears to contain extraneous or irrelevant information. However, non-cancer effects of Aroclors should be quantitated as noted in comments on L-45a. An RfD should be listed for mercury. For chronic exposure (excluding exposure to elemental or free mercury or its vapors) the toxicity of inorganic mercury can be assessed using the RfD for mercuric chloride.

Response 122.
RAGS D Table 5 and 6 series tables, Attachment C, present toxicity data. Non-cancer effects of Aroclors were addressed as discussed in the response to Comment #66, above. Inorganic mercury was addressed using the RfD for mercuric chloride, as requested.

Comment 123.
Table L-49. The USEPA relative potency factors for carcinogenic PAHs (Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089, USEPA 1993) should be used to derive appropriate CSFs for benzo(a)anthracene, benzo(b) and (k)fluoranthene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene. Appropriate surrogates for Aroclor 1268 would be 'total PCBs' for cancer effects, and 'high molecular weight PCBs' (*i.e.*, RfD for Aroclor 1254) for non-cancer effects (see comment on L-45a).

Response 123.
Table L-5 presents relative potency factors for carcinogenic PAHs, as requested. PCBs were addressed as discussed in the responses to Comments 66 and 119.

Tables L-50a through L-59b, Cancer Risk and Hazard Index Calculation Tables
The subject tables have been replaced by RAGS D Tables 7.1 through 7.10, Attachment C.

Comment 124.
Quantitative risk calculations have been developed at other Onondaga subsites for some compounds that were dropped in this report, even though they had been flagged as COPCs. For example, in Table L-51a, some PAH compounds were dropped, when compared to L-13a, where they were flagged as COPCs.

Response 124.
The requested change has been addressed.

Comment 125.
The RAGS format should be followed to allow for a more logical progression of listing to screening to COPCs for which EPCs are calculated for quantitative assessment. 'Nutrients' may be screened out although there are only a few inorganics for which this is an option. However, it appears that this HHRA omits some other COPCs for which quantitative risks should have been calculated.

Response 125.
The requested change has been addressed.

Tables L-60 through L-69, Cancer Risk and Hazard Index Summary Tables
The subject tables have been replaced by RAGS D Tables 9.1 through 9.10, Attachment C.

Comment 126.
These tables should be modified/updated as needed to reflect changes made elsewhere to the document and calculations.

Response 126.
The requested change has been addressed.

Figures

Comment 127.
General. The figures in general help clarify the exposure areas addressed in this HHRA. However, there a few items that still should be addressed as follows:

- There is no differentiation between former structures and current structures (for example, in the general plant area the extant guardhouse is not differentiated from all the structures which have been demolished).

- For a few structures, there seem to be conflicting outlines and locations, based on partially overlapping outlines. Specifically, the plant area guardhouse and the two General Chemical buildings seem to be affected.

- There is a symbol associated with a number of samples that is typical of a test pit designation, but there is no 'test pit' designation in the sample key. Also, on Figure L-6, there are three of these possible test pits with the same ID (006 MA. TP2); please explain or correct.

- The extent of paved surfaces is discussed in the text but not shown on the figures.

- Figure L-11 - Is the sample type designation for CHSA #5 correct? (It is shown as a 'surface soil' but all the other CHSA samples are shown as 'soil boring'.)

- Manholes are listed in the sample location key (and shown on the figures) but no data from manholes is discussed or presented. Please clarify.

- There are several clarifications required to support the text in Section 4. These clarifications should be provided and the figures should be revised, if necessary.

Response 127.
The requested changes to the figures have been addressed.

Attachment L-C, Subsurface Migration to Indoor Air; Conceptual Scenario and Concentrations

Comment 128.
The model was not used for mercury, even though the model is capable of predicting indoor concentrations for elemental mercury. The model was not used to model many of the other volatile and semivolatile organic contaminants known to be present at the site (e.g., some of the PAHs).

Response 128.
The Tables in L-B2 (formerly Tables L-C) have been amended to evaluate indoor air concentrations for applicable COCs.

Comment 129.
Use of Soil Vapor Advanced Models. The soil model run (for the CHSA) contained a concentration error.

Response 129.
The current version of the USEPA spreadsheets for the Johnson & Ettinger Model do not support the bulk soil concentration module for deriving indoor air concentrations. Therefore, model runs based on bulk-soil concentrations have been removed, as discussed in the response to Comment 99.

Advanced Groundwater Model for Benzene at Chlorobenzene Hot Spot Area

Comment 130.
According to the front sheet, the groundwater concentration was 5,500 g/L; however, in the subsequent sheets the concentration used was 25,000 g/L.

Response 130.
The maximum detected ground water concentration of benzene in the General Plant Area was 3,900 g/L. Areas that were evaluated outside of the General Plant Area consisted of the Chlorobenzene Hot-Spot Area and the Petroleum Storage Area. In those areas, the maximum detected concentrations of benzene were 5,500 g/L and 4,400 g/L, respectively. The revised HHRA incorporated those values.

Advanced Groundwater Model for Chlorobenzene at Chlorobenzene Hot Spot Area

Comment 131.
Using all of Honeywell's assumptions, the indoor concentration was modeled to be 2.8 g/m^3. The following default values were changed, and not mentioned any where in the text based on benzene.

Parameter	Relation to Indoor Concentration	Default	Value used	Effect on Indoor Concentration (if default were used)
Depth Below Grade to Bottom of Enclosed Floor	Direct Relationship	15 or 200 cm	10 cm	15 cm yields 2.8 g/m^3 200 yields 5.1 g/m^3
Soil Total Porosity	Direct Relationship	0.43	Layer A - 0.375 Layer B - 0.439*	0.43 yields 5.3 g/m^3

*Layer A is sand and layer B is silt loam

Response 131.
The USEPA spreadsheet Johnson & Ettinger models have been updated since the 2002 HHRA was submitted. The current report reflects the updated J&E model and incorporates site-specific values, where appropriate.

Advanced Soil Model for Benzene at General Plant Area

Comment 132.
Unlike the soil screening tables, these have the correct units for the soil concentrations (g/kg) for the model.

The same two parameters (depth below grade of building, and soil porosity) were also changed from the defaults in this model run, although neither change drastically changes the final concentration. The fraction organic content (f_{oc}) was left at the default model values (the values are set at defaults of 6% and 3%); however, site-specific TOC data (*e.g.*, obtained for the BERA or for groundwater modeling and fate-and-transport assessments) should be used in place of generic defaults where possible.

Response 132.
The current version of the USEPA spreadsheets for the Johnson & Ettinger Model do not support the bulk soil concentration module for deriving indoor air concentrations. Therefore, model runs based on bulk-soil concentrations have been removed, as discussed in the response to Comment 99.

APPENDIX I

USEPA Toxicity Value Requests Correspondence

NCEA-S-2764
www.epa.gov/iris

TOXICOLOGICAL REVIEW

OF

2-HEXANONE

(CAS No. 591-78-6)

In Support of Summary Information on the Integrated Risk Information System (IRIS)

February 2008

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LIST OF ACRONYMS AND ABBREVIATIONS

AIC	Akaike Information Criterion
AVEP	average visual evoked potential
BMC	benchmark dose concentration
BMCL	benchmark concentration, lower 95% confidence limit
BMD	benchmark dose
BMDL	benchmark dose, lower 95% confidence limit
BMDS	benchmark dose software
BMR	benchmark response
CASRN	Chemical Abstracts Service Registry Number
CNS	central nervous system
CYP	cytochrome
CYP450	cytochrome P450
EEG	electroencephalogram
EPA	Environmental Protection Agency
EPN	O-ethyl O-4-nitrophenyl phenylphosphonothioate
EROD	ethoxyresorufin O-deethylase
GD	gestational day
HEC	human equivalent concentration
HSDB	Hazardous Substances Data Bank
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
LD_{50}	median lethal dose
LOAEL	lowest-observed-adverse-effect level
MAP	muscle action potential
MCV	motor (nerve) conduction velocity
MEK	methyl ethyl ketone
MiBK	methyl isobutyl ketone
NLM	National Library of Medicine
NOAEL	no-observed-adverse-effect level
NRC	National Research Council
PBTK	physiologically based toxicokinetic
PNS	peripheral nervous system
POD	point of departure
PROD	pentoxyresorufin O-depentylase
RfC	reference concentration
RfD	reference dose
s.c.	subcutaneous
TLV	threshold limit value
TSO	toluene side-chain oxidase
UF	uncertainty factor
w/w	weight/weight

FOREWORD

The purpose of this Toxicological Review is to provide scientific support and rationale for the hazard and dose-response assessment in IRIS pertaining to chronic exposure to 2-hexanone. It is not intended to be a comprehensive treatise on the chemical or toxicological nature of 2-hexanone.

The intent of Section 6, *Major Conclusions in the Characterization of Hazard and Dose Response,* is to present the major conclusions reached in the derivation of the reference dose, reference concentration, and cancer assessment, where applicable, and to characterize the overall confidence in the quantitative and qualitative aspects of hazard and dose response by addressing the quality of data and related uncertainties. The discussion is intended to convey the limitations of the assessment and to aid and guide the risk assessor in the ensuing steps of the risk assessment process.

For other general information about this assessment or other questions relating to IRIS, the reader is referred to EPA's IRIS Hotline at (202) 566-1676 (phone), (202) 566-1749 (fax), or hotline.iris@epa.gov (email address).

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1. INTRODUCTION

This document presents background information and justification for the Integrated Risk Information System (IRIS) Summary of the hazard and dose-response assessment of 2-hexanone. IRIS Summaries may include oral reference dose (RfD) and inhalation reference concentration (RfC) values for chronic and less-than-lifetime exposure durations, and a carcinogenicity assessment.

The RfD and RfC, if derived, provide quantitative information for use in risk assessments for health effects known or assumed to be produced through a nonlinear (presumed threshold) mode of action. The RfD (expressed in units of mg/kg-day) is defined as an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. The inhalation RfC (expressed in units of mg/m^3) is analogous to the oral RfD, but provides a continuous inhalation exposure estimate. The inhalation RfC considers toxic effects for both the respiratory system (portal-of-entry) and for effects peripheral to the respiratory system (extrarespiratory or systemic effects). Reference values are generally derived for chronic exposures (up to a lifetime), but may also be derived for acute (#24 hours), short-term (greater than 24 hours to 30 days), and subchronic (greater than 30 days to 10% of average lifetime) exposure durations, all of which are derived based on an assumption of continuous exposure throughout the duration specified. Unless specified otherwise, the RfD and RfC are derived for chronic exposure duration.

The carcinogenicity assessment provides information on the carcinogenic hazard potential of the substance in question and quantitative estimates of risk from oral and inhalation exposure may be derived. The information includes a weight-of-evidence judgment of the likelihood that the agent is a human carcinogen and the conditions under which the carcinogenic effects may be expressed. Quantitative risk estimates may be derived from the application of a low-dose extrapolation procedure. If derived, the oral slope factor is an upper bound on the estimate of risk per mg/kg-day of oral exposure. Similarly, a unit risk is an upper bound on the estimate of risk per $\mu g/m^3$ air breathed.

Development of these hazard identification and dose-response assessments for 2-hexanone has followed the general guidelines for risk assessment as set forth by the National Research Council (1983). EPA guidelines and technical reports that may have been used in the development of this assessment include the following: *Guidelines for Mutagenicity Risk Assessment* (U.S. EPA, 1986), *Guidelines for Developmental Toxicity Risk Assessment* (U.S. EPA, 1991), *Guidelines for Reproductive Toxicity Risk Assessment* (U.S. EPA, 1996), *Guidelines for Neurotoxicity Risk Assessment* (U.S. EPA, 1998a), *Guidelines for Carcinogen Risk Assessment* (U.S. EPA, 2005a), *Supplemental Guidance for Assessing Susceptibility from Early-*

Life Exposure to Carcinogens (U.S. EPA, 2005b), *Recommendations for and Documentation of Biological Values for Use in Risk Assessment* (U.S. EPA, 1988), *Methods for Derivation of Inhalation Reference Concentrations and Application of Inhalation Dosimetry* (U.S. EPA, 1994), *Use of the Benchmark Dose Approach in Health Risk Assessment* (U.S. EPA, 1995a), *Science Policy Council Handbook: Peer Review* (U.S. EPA, 2006, 2000a, 1998b), *Science Policy Council Handbook*: *Risk Characterization* (U.S. EPA, 2000b), and *Benchmark Dose Technical Guidance Document* (U.S. EPA, 2000c).

The literature search strategy employed for this compound was based on the Chemical Abstracts Registry Service Number (CASRN) and at least one common name. Any pertinent scientific information submitted by the public to the IRIS Submission Desk was also considered in the development of this document. The relevant literature was reviewed through March 2007.

2. CHEMICAL AND PHYSICAL INFORMATION

Structurally, 2-hexanone consists of a keto group flanked by a methyl group and an n-butyl group (Figure 2-1). The compound is a colorless liquid with a characteristic acetone-like odor but more pungent (NLM, 2005). Synonyms for 2-hexanone include the following: methyl butyl ketone, methyl n-butyl ketone, butyl methyl ketone, MnBK, and propylacetone.

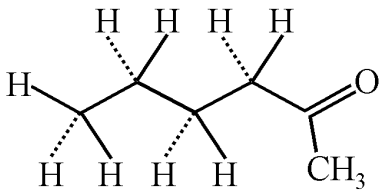


Figure 2-1. Chemical structure of 2-hexanone.

Pertinent physical and chemical properties of 2-hexanone are listed below (NLM, 2005).

Chemical formula	$C_6H_{12}O$
Molecular weight	100.16
Melting point	–55.5°C
Boiling point	127.6°C
Flash point	23°C
Density	0.8113 at 20°C
Water solubility	1.64×10^4 mg/L at 20°C
Log K_{ow}	1.38
Vapor pressure	11.6 mm Hg at 25°C
Conversion factor	1 ppm = 4.1 mg/m^3; 1 mg/m^3 = 0.244 ppm

2-Hexanone is produced commercially by the catalyzed reaction of acetic acid and ethylene under pressure followed by distillation to purify the material (NLM, 2005). The compound has been used as a solvent for lacquers, ink thinners, nitrocellulose, resins, oils, fats, and waxes. It is a medium evaporating solvent for nitrocellulose acrylates, vinyl, and alkyd coatings (polyester coating derived from an alcohol and an acid or acid anhydride).

In 1977, the combined production and import of 2-hexanone in the U.S. was between 453 and 4500 metric tons (NLM, 2005); no breakdown of these figures was provided. The only U.S. producer of 2-hexanone, the Tennessee Eastman Company division of Eastman Kodak, discontinued production of 2-hexanone in 1979 and sold its remaining reserves by 1981 (NLM,

2005). 2-Hexanone is not produced or used in the U.S., and no information on importation is available (ATSDR, 1992).

3. TOXICOKINETICS

3.1. ABSORPTION

3.1.1. Pulmonary Absorption Studies

The available data indicate that 2-hexanone is well absorbed after administration via the inhalation route. DiVincenzo et al. (1978) exposed three healthy male volunteers (ages 22 to 53 years) to 2-hexanone (>97% pure, containing methyl isobutyl ketone [MiBK] and traces of 2-hexanol) at 10 or 50 ppm for 7.5 hours or 100 ppm for 4 hours. The 7.5-hour exposures were interrupted after 4 hours for a 0.5-hour lunch period. The volunteers were sedentary during the exposure. Expired air and venous blood samples were collected before, during, and after exposure. Exposures to 10 and 50 ppm for 7.5 hours produced mean 2-hexanone breath concentrations of 1.4 and 9.3 ppm, respectively. Fifteen minutes after exposure to 10 or 50 ppm, the expired air concentrations of 2-hexanone were 0.1 and 0.5 ppm, respectively. Exposure to 100 ppm for 4 hours produced an average 2-hexanone breath concentration of 22 ppm. These results indicated that between 75 and 92% of the inhaled 2-hexanone vapor was absorbed by the lungs and respiratory tract (DiVincenzo et al., 1978). 2-Hexanone was not detected in the expired air 3 hours after cessation of exposure to 50 or 100 ppm 2-hexanone.

DiVincenzo et al. (1978) exposed four young male beagles to 2-hexanone (>97% pure, containing MiBK and traces of 2-hexanol) for 6 hours at concentrations of 50 or 100 ppm. Over the first 4 hours of the exposure period, the hexanone in exhaled air had time-weighted average concentrations of 16 and 35 ppm for the low and high exposure groups, respectively. Thirty minutes after cessation of exposure to 50 ppm 2-hexanone, the breath concentration of 2-hexanone decreased to 0.7 ppm. 2-Hexanone was below the limit of detection by 3 to 5 hours after the exposure. It was determined that about 65–68% of the inhaled vapor was absorbed by the lungs.

3.1.2. Gastrointestinal Tract Absorption Studies

2-Hexanone appears to be well absorbed after oral administration. DiVincenzo et al. (1978) administered 2 µCi of 1-[^{14}C]-hexanone dissolved in corn oil via a gelatin capsule to human volunteers; the total dose was 0.1 mg/kg. Most of the 2-hexanone-derived radioactivity was exhaled as $^{14}CO_2$, reaching a peak within 4 hours of dosing and then decreasing slowly over the next 3 to 5 days. The major portion of radioactivity excretion in urine occurred during the first 48 hours but continued at measurable levels until 8 days after dosing. The cumulative 8-day elimination of radioactivity in breath and urine averaged 39.5 and 26.3%, respectively. The overall recovery of ^{14}C was 65.8%. The authors presumed that the remainder of the radioactivity was retained in tissue or fat deposits.

Administration of 1-[^{14}C]-2-hexanone at 20 or 200 mg/kg by gavage to rats resulted in excretion of about 1.1% of the administered radioactivity in the feces, about 44% in the breath, and 38% in urine, with about 15% remaining in the carcass after 48 hours and 8% remaining after 6 days (DiVincenzo et al., 1977). The results were similar at either dose level. These findings suggest that about 98% of the administered dose was absorbed via the gastrointestinal tract.

3.1.3. Dermal Absorption Studies

2-Hexanone is also absorbed after dermal application. DiVincenzo et al. (1978) exposed six human volunteers (ages 30–53 years) to radiolabeled 1-[^{14}C]-2-hexanone (>97% purity, contaminants not stated). The labeled compound was applied to the ventral surface of the forearm that had been shaved 24 hours prior to testing. 1-[^{14}C]-2-hexanone was held in contact with the skin for 60 minutes, and precautions were taken to ensure that inhalation exposure did not occur. The surface area of the skin subjected to solvent was 55.6 cm^2. Calculated skin absorption rates were 4.8 and 8.0 µg/cm^2-minute. The quantities of 2-hexanone absorbed by two volunteers were 15.96 and 26.81 mg, respectively. The major respiratory excretion metabolite of 1-[^{14}C]-hexanone was $^{14}CO_2$. A substantial portion of the dose was also excreted in urine; however, the chemical nature of urinary radioactivity was not characterized further.

In a similar set of experiments, DiVincenzo et al. (1978) applied 1-[^{14}C]-2-hexanone (>97% purity, impurities not stated) to the clipped thorax (55.6 cm^2) of beagles. Exposures were carried out for 5 minutes to 1 hour. By 5 minutes, 11 mg of 2-hexanone had penetrated the skin, and there was no apparent change in the absorption of 2-hexanone during the next 15 minutes. However, after 20 minutes the absorption increased markedly so that, by 60 minutes, 77 mg of 2-hexanone had penetrated the skin. The 8-hour cumulative excretion of radioactivity in two dogs dosed with 1-[^{14}C]-2-hexanone was 0.5% of the dose as unchanged 2-hexanone and 9.7% as $^{14}CO_2$ in the breath; urinary radioactivity amounted to 6.5% of the dose. The 8-hour excretion of radioactivity averaged 16.8% of the dose. The fraction of the applied 2-hexanone dose that was absorbed was not calculated.

O'Donoghue and Krasavage (1981) exposed two male beagles (one of which was pretreated with 2-hexanone) to 2-hexanone by tail dipping. Both dogs were exposed to 2-hexanone on an area of 22 cm^2 on the first day of exposure, and then the exposure area was doubled on the second day (44.1 cm^2). It was found that by 8–12 minutes, both dogs had comparable serum levels of 2-hexanone. Doubling the exposed area increased serum levels of 2-hexanone 6 to 20 times. None of the blood samples contained detectable levels of the 2-hexanone metabolites 5-hydroxy-2-hexanone, 2,5-hexanedione, or 2,5-hexanediol. Similar exposures were repeated with three different dogs for 16 minutes followed by two post exposure samples 9 and 19 minutes later (25 and 35 minute samples, respectively). One animal had detectable levels of 2-hexanone in blood within 4 minutes, but the time to detectable levels was

highly variable among the animals. The highest level observed was 3.2 µg/mL. Nineteen minutes post exposure serum levels of 2-hexanone were still detectable. Twenty-four hours later, no 2-hexanone was detected (O'Donoghue and Krasavage, 1981).

To examine the effects of multiple exposures, O'Donoghue and Krasavage (1981) exposed three male dogs as above to 2-hexanone on two occasions 4 hours apart. Samples obtained after the second treatment were not significantly different from the morning samples, indicating the absence of accumulation of detectable 2-hexanone and 2,5-hexanedione levels in the serum.

O'Donoghue and Krasavage (1981) performed comparison studies on percutaneous absorption of 2-hexanone between dog and rabbit skin. Significantly more 2-hexanone was absorbed through rabbit skin compared with dog skin and probably, as a consequence, the metabolite 5-hydroxy-2-hexanone was detected in the serum of rabbits. Overall, the skin studies indicated that 2-hexanone was readily absorbed through the skin; detectable serum levels were present after approximately 10 minutes of exposure to less than 1% of body skin surface; detectable serum levels persisted for approximately 20 minutes post exposure; and, in rabbits, a metabolite (5-hydroxy-2-hexanone) was rapidly formed and detectable in the serum.

3.2. DISTRIBUTION

Duguay and Plaa (1995) treated male Sprague-Dawley rats by gavage with 2-hexanone (>99%, spectrophotometric grade) at 0.5, 1, or 2 mmol/kg (50, 100, or 200 mg/kg) in corn oil (dose volume 10 mL/kg), once daily for 3 days. The animals were sacrificed 1 hour after the last gavage. Dose-dependent increases in plasma and lung 2-hexanone levels were observed, whereas the concentration in the liver increased only with the highest dose (Table 3-1). Calculations for statistically significant differences among dose groups were not performed (Duguay and Plaa 1995).

Table 3-1. Concentrations of 2-hexanone in plasma, liver, and lung of male rats following oral exposure for 3 days

Tissue concentration	Dose		
	0.5 mmol/kg	1 mmol/kg	2 mmol/kg
Plasma (µg/mL)	2.4 ± 1.2	4.7 ± 1.1	8.5 ± 2.0
Liver (µg/g)	1.7 ± 0.5	1.6 ± 0.3	3.8 ± 1.2
Lung (µg/g)	1.1 ± 0.7	4.9 ± 1.1	13.9 ± 4.9

Source: Duguay and Plaa (1995).

In a parallel series of experiments from the same study, Duguay and Plaa (1995) exposed male Sprague-Dawley rats to a total body exposure of 2-hexanone at concentrations of 75, 150, or 300 ppm (307.5, 615, or 1230 mg/m^3). Animals were exposed on 3 consecutive days for 4 hours per day. Animals were sacrificed immediately after the last exposure on the third day.

The concentration of 2-hexanone in plasma, liver, and lung increased in a dose-dependent manner (Table 3-2). It should be noted, however, that because whole body exposures were performed, some oral and dermal absorption may have taken place.

Table 3-2. Concentrations of 2-hexanone in plasma, liver, and lung of male rats following inhalation exposure for 3 days

Tissue concentration	Dose		
	75 ppm	150 ppm	300 ppm
Plasma (µg/mL)	1.2 ± 0.3	2.6 ± 0.7	9.7 ± 0.7
Liver (µg/g)	0.7 ± 0.5	1.2 ± 0.8	2.2 ± 0.4
Lung (µg/g)	0.7 ± 0.2	2.8 ± 0.5	9.3 ± 1.2

Source: Duguay and Plaa (1995).

In male CD/COBS rats administered a single gavage dose of [^{14}C]-2-hexanone at 200 mg/kg, the serum elimination for 2-hexanone was 6 hours; the 2-hexanone metabolites 5-hydroxy-2-hexanone and 2,5-hexanedione were eliminated from serum within 12 and 16 hours, respectively (DiVincenzo et al., 1977). Peak concentrations of 2-hexanone and 5-hydroxy-2-hexanone were reached at 2 hours, whereas the peak concentration of 2,5-hexanone was reached at 6 hours. Radioactivity was detected in most tissues with highest counts in liver > kidney > whole brain. The peak concentration of radiolabel in each of these tissues was observed at 4 hours and was reduced to less than 50% by 24 hours. No quantitative data were given on tissue distribution. An analysis of the subcellular distribution of the ^{14}C-label in liver, brain, and kidney tissue homogenates indicated the highest counts were associated with the protein fraction, with some recovery from DNA and little or none from RNA.

Eben et al. (1979) treated male SPF-Wistar rats with 400 mg/kg 2-hexanone (98% pure, impurities not stated) daily by stomach tube for 40 weeks. The concentrations of 2-hexanone and metabolites in the blood were determined at intervals of 4 or 5 weeks. In the case of 2-hexanone, the maximum concentration was reached 1 hour after administration throughout the study; thereafter, the concentration decreased rapidly. After 7 hours, only trace amounts could be detected. During the first few weeks of the study, 2-hexanone could not be found in the urine. Only during the third week were very small concentrations of the free compound detected in urine, suggesting that the metabolic pathways for 2-hexanone were becoming saturated. A maximum (approximately 20 µg) was reached in the 17th week (Eben et al., 1979).

Granvil et al. (1994) studied the distribution and disappearance of 2-hexanone (purity not stated) from the blood and brain. Male CD-1 mice were treated with 5 mmol/kg (500 mg/kg) 2-hexanone dissolved in corn oil by intraperitoneal (i.p.) injection at a volume of 10 mL/kg. Animals were killed by decapitation, and blood and brain samples were collected at 15, 30, 60, and 90 minutes after treatment. Blood and brain concentrations at 15 minutes were ~182 µg/mL

and ~126 µg/g, respectively. By 90 minutes, the values had dropped in a uniform manner to a blood concentration of ~28 µg/mL and a brain concentration of ~25 µg/mg. The authors noted that the rapid decrease in the concentration of 2-hexanone was due to its active metabolism in these tissues (Granvil et al., 1994).

3.3. METABOLISM

2-Hexanone is hydroxylated to 5-hydroxy-2-hexanone, which is then either oxidized to 2,5-hexanedione or reduced to 2,5-hexanediol and, to a small extent, may be converted to 2,5-dimethyl-2,3-dihydrofuran. The predominant metabolite of 2-hexanone found in blood is 2,5-hexanedione. This can be reduced to 5-hydroxy-2-hexanone and further, but to a lesser extent, to 2,5-hexanediol. The formation of 2,5-hexanedione is favored over that of 5-hydroxy-2-hexanone. 5-Hydroxy-2-hexanone can be metabolized into 4,5-dihydroxy-2-hexanone (not shown in Figure 3-1) before being further converted to 2,5-dimethyl-2,3-dihydrofuran. Additionally, 4,5-dihydroxy-2-hexanone formation may be a result from 2,5-hexanedione metabolism (U.S. EPA, 2005c). Other mechanisms, such as shunting into intermediary metabolism, may accelerate metabolic clearance of 2,5-hexanedione. Reductive metabolism of 2-hexanone results in the formation of 2-hexanol, establishing an equilibrium between the two compounds. 2-Hexanol can be further metabolized to 2,5-hexanediol, 5-hydroxy-2-hexanone, and 2,5-hexanedione. The findings of Abdel-Rahman et al. (1976) that rats, guinea pigs, and rabbits exposed to 2-hexanone vapor excreted glucuronides of 2-hexanol and 2,5-hexanediol in the urine are consistent with the results by DiVincenzo et al. (1976), discussed later in this section (Abdel-Rahman et al., 1976). Although the proportions of metabolites may differ among species, ω-1-oxidation and carbonyl reduction appear to be the initial steps in the metabolism of 2-hexanone in all species tested so far (e.g., rat, cat, dog, guinea pig, and human). The metabolic pathway for 2-hexanone, as proposed by DiVincenzo et al. (1977, 1976), based on 2-hexanone metabolites identified in blood of guinea pigs, mice, and rats, is presented in Figure 3-1.

As discussed in Section 3.2, Duguay and Plaa (1995) conducted studies using male Sprague-Dawley rats exposed to 2-hexanone by gavage (0.5, 1, or 2 mmol/kg) or by inhalation (75, 150, or 300 ppm) and quantified the metabolites in the plasma, liver, and lung. The authors reported that the concentrations of metabolites, such as 2-hexanol, 5-hydroxy-2-hexanone, and 2,5-hexanedione, were readily detectable in serum. After 2-hexanone gavage or inhalation, 2-hexanol was found in low concentrations in plasma and liver (0.5–1.3 µg/mL and 0.3–1.6 µg/g, respectively). In lung, however, concentrations ranged from 2.1 to 5.1 µg/g. However, with both routes of administration, 2-hexanol concentrations did not appear to be dose dependent.

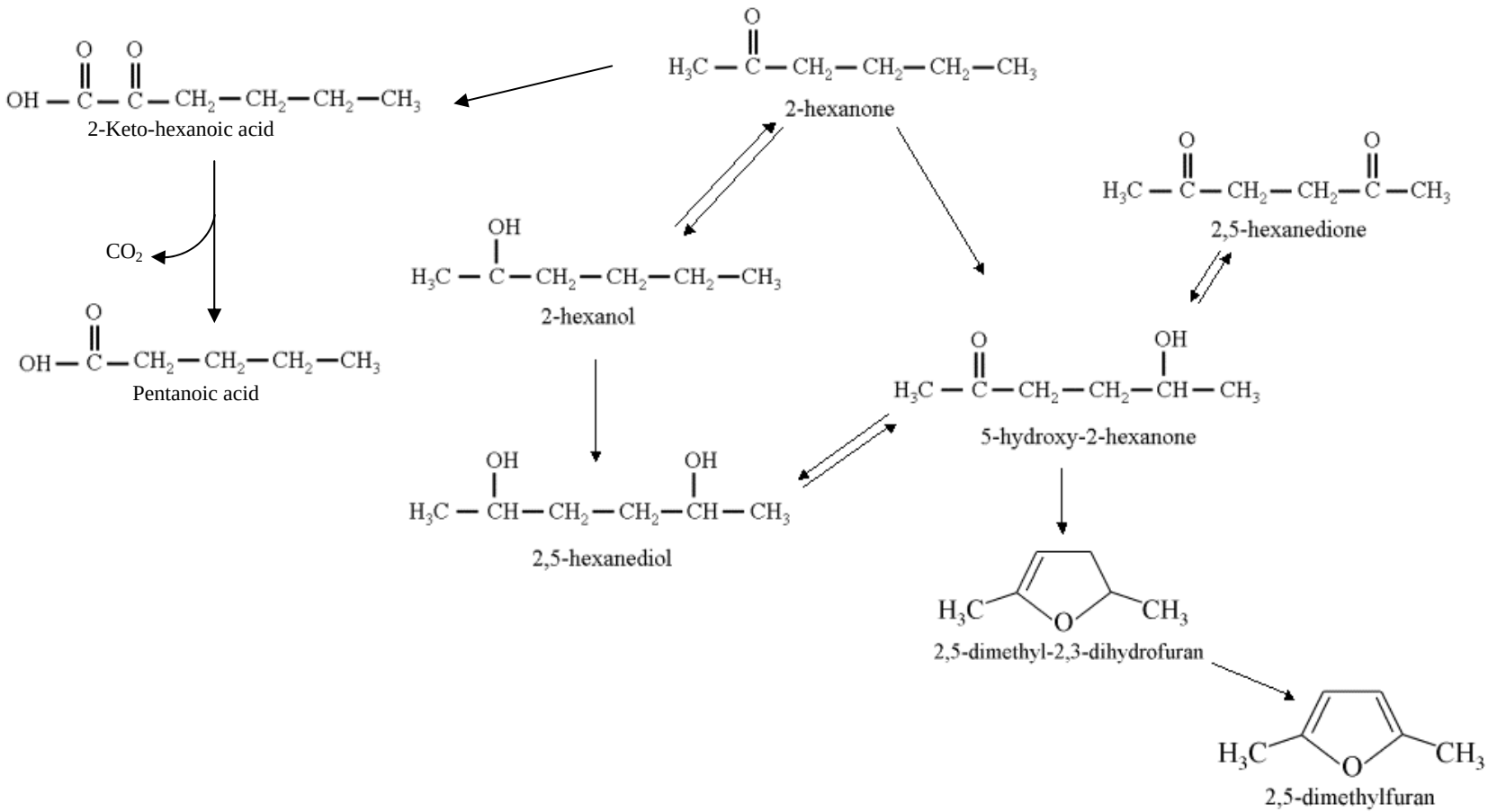


Figure 3-1. Proposed metabolic pathway for 2-hexanone.

Adapted from DiVincenzo et al. (1977, 1976).

The appearance of the 2-hexanone metabolite 2,5-hexanedione in plasma or lung, but not in liver, depended on the route of administration. The highest dose and concentration of 2-hexanone, 2 mmol/kg and 300 ppm, respectively, produced similar plasma 2-hexanone concentrations, 8.5 and 9.7 µg/mL, respectively, but the corresponding plasma 2,5-hexanedione concentrations were 7.7 µg/mL after oral and 25 µg/mL after inhalation administration. 2,5-Hexanedione was not detectable in lungs when 2-hexanone was administered orally, but significant dose-dependent amounts were found following inhalation exposure. The authors concluded that pulmonary 2-hexanone metabolism might contribute to plasma metabolite levels. 2,5-Hexanedione concentrations in liver were dose dependent but independent of the route of administration. A summary of the metabolite levels found in the plasma, liver, and lung following oral and inhalation exposures is presented in Table 3-3.

Table 3-3. 2-Hexanol and 2,5-hexanedione in the plasma, liver, and lung of male rats after oral or inhalation exposure to 2-hexanone

	Dose					
	0.5 mmol/kg (gavage)[a]	**75 ppm (inhalation)[a]**	**1 mmol/kg (gavage)[a]**	**150 ppm (inhalation)[a]**	**2 mmol/kg (gavage)[a]**	**300 ppm (inhalation)[a]**
Plasma[b]						
2-HOL[c]	0.6 ± 0.2	0.5 ± 0.1	1.2 ± 0.3	0.5 ± 0.2	1.3 ± 0.4	0.8 ± 0.3
2,5-HD[d]	5.7 ± 0.5	6.7 ± 0.8	5.8 ± 0.5	13.5 ± 2.1	7.7 ± 0.4	25 ± 3.1
Liver[e]						
2-HOL	0.4 ± 0.1	0.4 ± 0.2	1.6 ± 0.5	0.3 ± 0.1	1.2 ± 0.5	0.3 ± 0.3
2,5-HD	3.1 ± 0.2	3.1 ± 0.1	4.6 ± 0.5	4.3 ± 0.6	5.3 ± 0.5	7.3 ± 0.3
Lung[e]						
2-HOL	2.4 ± 0.5	2.1 ± 0.6	3.0 ± 1.0	2.9 ± 0.5	5.1 ± 1.5	3.7 ± 1.1
2,5-HD	ND[f]	0.9 ± 0.2	ND	4.0 ± 0.1	ND	4.8 ± 0.7

[a]Rats were sacrificed 1 hour after the last oral treatment but immediately after the last inhalation exposure. Values are mean ± SE from six animals.
[b]Plasma concentrations in µg/mL.
[c]2-HOL = 2-hexanol.
[d]2,5-HD = 2,5-hexanedione.
[e]Tissue concentrations in µg/g.
[f]ND = not detectable (<0.25 µg/mL).

Source: Duguay and Plaa (1995).

Eben et al. (1979) administered daily oral doses of 2-hexanone (400 mg/kg) over a 40-week period to male SPF-Wistar rats. The concentrations of 2-hexanone, 2-hexanol, and 2,5-hexanedione were determined in the blood at several intervals every 4 or 5 weeks. 2-Hexanone concentrations in blood peaked at 1 hour after administration then decreased rapidly, and after 7 hours only traces could be detected. The metabolite 2-hexanol was measurable in very small quantities up to 3 hours after administration (<2 µg/mL blood). In contrast, 2,5-hexanedione concentrations were relatively high as early as 1 hour after

administration, and maximum values were recorded after 5 or 7 hours. 2,5-Hexanediol was not detectable in the blood at any time. A summary of the blood concentrations of 2-hexanone, 2-hexanol, and 2,5-hexanedione is presented in Table 3-4.

Table 3-4. 2-Hexanone, 2-hexanol, and 2,5-hexanedione in the blood of male rats after repeated administration of 400 mg/kg-day

	2-Hexanone (µg/mL)[a]				2-Hexanol (µg/mL)[a]				2,5-Hexanedione (µg/mL)[a]			
Week	**1 hour**	**3 hours**	**5 hours**	**7 hours**	**1 hour**	**3 hours**	**5 hours**	**7 hours**	**1 hour**	**3 hours**	**5 hours**	**7 hours**
2	26.5	15.2	5.8	–[b]	–	–	–	–	19.8	53.3	65.7	53.8
6	30.4	21.4	7.3	1.4	0.6	0.8	–	–	10.9	46.5	59.7	59.8
10	20.2	7.5	4.7	3.8	0.7	–	–	–	16.7	39.2	60.7	64
14	31.8	25.7	6.3	2.2	1.7	1.2	traces	–	10	35.1	55.2	59.1
19	32.2	22.5	3.4	0.1	–	–	–	–	16.7	50.3	62.1	55
23	35.1	19.8	6.6	0.3	–	–	–	–	10.4	46.7	68.9	63.7
27	37.8	21.3	2.9	0.7	1.3	traces	–	–	8	38.8	49.9	49.2
32	24.8	12.2	2.9	0.3	0.6	0.1	–	–	8.4	31.8	41.1	34.8
36	50.1	13.4	7.1	1	1.5	0.1	–	–	14.6	47.4	55.6	56.1
40	33.4	18.9	3.6	0.4	1.2	0.9	–	–	12.5	36.8	51.9	66.2

[a]Values represent the averages of three animals.
[b]A dash (–) indicates that the compound was below the limit of detection.

Source: Eben et al. (1979).

Granvil et al. (1994) demonstrated the rapid removal of 2-hexanone from blood and brain of male CD-1 mice following a single i.p. injection of the compound at a concentration of 5 mmol/kg. The authors observed that 2-hexanol concentrations found in whole brain at several time intervals (15, 30, and 60 minutes after dosing) were about twice as high as those found in the blood at the same time intervals and interpreted this finding as suggesting that 2-hexanol might be formed in the brain. Furthermore, the authors reported that the appearance of the reduced metabolite 2-hexanol seemed to be considerably faster than the appearance of the oxidized metabolite 2,5-hexanedione.

DiVincenzo et al. (1976) administered a single dose of 2-hexanone (450 mg/kg i.p. in corn oil) to male guinea pigs (strain not stated). Blood was collected by heart puncture from four animals at 1, 2, 4, 6, 8, 12, and 16 hours after dosing. In addition to 2-hexanone, three major metabolites were identified by gas chromatography: 5-hydroxy-2-hexanone, 2,5-hexanedione, and 2-hexanol. 2,5-Dimethyl-2,3-dihydrofuran was also detected, but additional experiments revealed that this was an artifact because 5-hydroxy-2-hexanone underwent dehydration and cyclization in the gas chromatograph. The authors noted that 5-hydroxy-2-hexanone may be

transformed also in vivo to 2,5-dimethyl-2,3-dihydrofuran, but the equilibrium favors the formation of 5-hydroxy-2-hexanone.

DiVincenzo et al. (1976) also conducted follow-up studies to determine the metabolic fate of 2-hexanone metabolites in guinea pigs. Each of the principal metabolites identified in the above study (5-hydroxy-2-hexanone, 2,5-hexanedione, 2,5-hexanediol, and 2-hexanol) was administered individually (450 mg/kg i.p.). 5-Hydroxy-2-hexanone was further metabolized to 2,5-hexanedione and 2,5-hexanediol. The half-life of 5-hydroxy-2-hexanone in serum was 156 minutes. The major metabolite 2,5-hexanedione was formed rapidly, and its concentration in serum was equivalent to or greater than that of the parent compound (5-hydroxy-2-hexanone) in all samples measured. Serum concentrations of 2,5-hexanediol were markedly lower than those of 2,5-hexanedione. 5-Hydroxy-2-hexanone was the only metabolite detected in serum of guinea pigs after an i.p. injection of 2,5-hexanedione. The half-life of 2,5-hexanedione was 100 minutes. Both 5-hydroxy-2-hexanone and 2,5-hexanedione were no longer detectable in serum by 16 hours. The principal metabolites in serum after i.p. injection with 2,5-hexanediol were 5-hydroxy-2-hexanone and 2,5-hexanedione. 2,5-Hexanediol was cleared within 8 hours and had a half-life of 84 minutes in serum. The following metabolites were identified after the administration of 2-hexanol: 2-hexanone, 5-hydroxy-2-hexanone, 2,5-hexanedione, and 2,5-hexanediol. The half-life and clearance time of 2-hexanol were 72 minutes and 6 hours, respectively.

The authors noted that the 2-hexanol was rapidly metabolized to 2-hexanone, which, in turn, was converted to the same metabolites identified above for animals treated with 2-hexanone. They determined that the conversion of 2-hexanol to 2,5-hexanediol seemed to be a minor pathway. The metabolites, 2,5-hexanediol and 2,5-hexanedione, were cleared in 8 and 16 hours, respectively. A summary of the half-life and clearance time of 2-hexanone and metabolites is presented in Table 3-5.

Table 3-5. Serum half-lives and clearance times of 2-hexanone and its metabolites in guinea pigs

Compound administered	Half-life (minutes)[a]	Clearance time (hours)
2-Hexanone	78	6
2-Hexanol	72	6
5-Hydroxy-2-hexanone	156	8[b]
2,5-Hexanedione	100	16
2,5-Hexanediol	84	8

[a]Half-lives were determined from the linear portion of the plasma concentration curve and extrapolated to zero time.
[b]Estimated value.

Source: DiVincenzo et al. (1976).

Bus et al. (1981) presented metabolism data for n-hexane that provide some insight on the metabolism of 2-hexanone. In the study, the authors exposed male F344 rats for 1 or 5 days, 6 hours/day, to 1000 ppm n-hexane. Animals were sacrificed immediately after exposure or at increasing time intervals for up to 24 hours after the end of exposure, and concentrations of the parent compound and two of its metabolites, 2-hexanone and 2,5-hexanedione, were measured in blood, liver, kidney, brain, and sciatic nerve. Kinetics of all three compounds were similar after 1 and 5 days of exposure, with tissue levels of the metabolites frequently exceeding those of the parent compound even immediately after the end of exposure. Tissue levels of n-hexane and 2-hexanone were always lower after 5 days of repeated exposures, compared with levels after a single exposure, consistent with self-induction of some metabolizing enzymes. On the other hand, tissue levels of 2,5-hexanedione were always slightly higher after 5 days of exposure, compared with single exposure. A compilation of the data for 2-hexanone and 2,5-hexanedione after 5 days of exposure to n-hexane is given in Table 3-6 (sciatic nerve data not included).

Table 3-6. Tissue levels of 2-hexanone and 2,5-hexanedione in male F344 rats following inhalation exposure to n-hexane for 5 days

Time (hours)	Blood[a,b]		Liver[a,c]		Brain[a,c]		Kidney[a,c]	
	2-Hx[d]	2,5-HxD[e]	2-Hx	2,5-HxD	2-Hx	2,5-HxD	2-Hx	2,5-HxD
0	0.46 ± 0.07	1.97 ± 0.38	0.12 ± 0.01	0.56 ± 0.10	0.78 ± 0.04	5.66 ± 0.17	22.9 ± 3.81	11.8 ± 1.03
1	0.23 ± 0.02	6.02 ± 0.56	0.20 ± 0.04	0.64 ± 0.13	0.18 ± 0.01	7.41 ± 0.31	9.73 ± 1.14	23.5 ± 1.85
2	0.06 ± 0.03	3.99 ± 0.37	–	0.69 ± 0.01	0.08 ± 0.01	7.17 ± 0.74	4.80 ± 0.39	26.4 ± 1.61
4	–[f]	2.12 ± 0.26	–	0.15 ± 0.02	–	2.75 ± 0.34	0.63 ± 0.23	16.8 ± 3.67
8	–	0.54 ± 0.19	–	0.03 ± 0.03	–	–	0.67 ± 0.15	9.08 ± 2.45
12	–	–	–	–	–	–	0.78 ± 0.21	0.86 ± 0.27
24	–	–	–	–	–	–	0.28 ± 0.00	0.01 ± 0.01

[a]Mean ± SE, n = 3.
[b]Values in µg/mL plasma.
[c]Values in µg/g wet weight.
[d]2-hexanone
[e]2,5-hexanedione
[f]Dash (–) = below detection limit.

Source: Bus et al. (1981).

This experiment, although conducted with n-hexane as the parent compound, provides some insight into the metabolism of 2-hexanone. The data shown in Table 3-6 indicate that the metabolism of 2-hexanone to 2,5-hexanedione (intermediates not considered) proceeds rapidly, while the further metabolism of 2,5-hexanedione and its elimination appear to proceed much more slowly. Both the resurgence of 2-hexanone levels in kidney between 8 and 12 hours and the precipitous drop of 2,5-hexanedione levels in kidney between 8 and 12 hours occurred in the same fashion with single exposure, suggesting rather complex compartmentalization and

toxicokinetics that, to some extent, may be governed by the lipophilic characteristics of the compounds. The authors (Bus et al., 1981) suggested that the high levels observed in kidney for both metabolites, but not the parent compound, reflect the fact that the metabolites of n-hexane, and thus 2-hexanone, are mostly eliminated via urine.

Cytochrome P450 (CYP450) enzymes catalyze the initial steps (either detoxification or bioactivation) of 2-hexanone, but their identities have not been investigated to any great detail. Oral administration of 1-[^{14}C]-2-hexanone to humans or rats resulted in the appearance of $^{14}CO_2$ in the exhaled breath, indicating removal of the α-carbon (DiVincenzo et al., 1978, 1977). Administration of SKF525A (a mixed function oxidase inhibitor) to rats before oral administration of 2-hexanone resulted in marked decrease in the respiratory excretion of $^{14}CO_2$ for the first 4 hours after administration, followed by a marked increase at 4–8 and 12–24 hours. This suggests that this oxidative step is mediated by a microsomal mixed-function oxidase system (DiVincenzo et al., 1977).

Because inhalation exposure of humans to 1-[^{14}C]-2-hexanone resulted in the appearance of labeled carbon dioxide in expired air and 2,5-hexanedione in serum, DiVincenzo et al. (1978) hypothesized that the metabolic pathway for 2-hexanone is similar in humans and experimental animals. Metabolically, aliphatic ketones generally are in equilibrium with the corresponding secondary alcohols, which explains the presence of 2-hexanol. An alternate pathway is oxidation of the 5-methylene group to the corresponding alcohol, 5-hydroxy-2-hexanone. Another possibility in the metabolism of 2-hexanone is the cyclization of 5-hydroxy-2-hexanone to the corresponding dihydrofuran and oxidation to 2,5-dimethylfuran (DiVincenzo et al., 1977). However, the formation of these furan moieties may be an artifact resulting from thermal dehydration and cyclization during gas chromatography (DiVincenzo et al., 1977). In addition, the γ-valerolactone found in the urine was hypothesized to result from α-oxidation of 5-hydroxy-2-hexanone to 2-keto-5-hydroxyhexanoic acid, decarboxylation and oxidation to 4-hydroxypentanoic acid, and lactonization to γ-valerolactone (not shown in Figure 3-1) (DiVincenzo et al., 1977).

Although the specific isoforms of CYP450 that catalyze the metabolism of 2-hexanone have not been fully characterized, Nakajima et al. (1991) provided some insight into the effects of 2-hexanone on CYP450 induction. The authors treated male Wistar rats with 2-hexanone at 5 mmol/kg (500 mg/kg) i.p. for 4 days and demonstrated that various CYP450 isozyme activities were induced. 2-Hexanone was effective in inducing several CYP450 isoforms as indicated by the increase in activities of benzene aromatic hydroxylase (CYP2E1) and toluene side chain oxidation (CYP2C6/11) two- to threefold and pentoxyresorufin O-dependentylase (PROD; CYP2B1/2) about 30-fold but barely induced ethoxyresorufin O-deethylase activity (EROD; CYP1A1/2) (Nakajima et al., 1991). Imaoka and Funae (1991) also showed that 2-hexanone induced the immunologically measured levels of several CYP450 isozymes, foremost CYPs 2B1, 2B2, 2C6, and 2E1. Minimal or equivocal induction was observed for CYPs 1A1, 1A2,

2C7, and 4A3. The levels of CYPs 2C11 and 2C13 were slightly reduced (Imaoka and Funae, 1991). However, it is not evident to what extent 2-hexanone might affect its own metabolism via enzyme induction. Similarly, the enzymes that synthesize the glucuronides of 2-hexanone metabolites, which were identified by Abdel-Rahman et al. (1976) in the urine of 2-hexanone-exposed rats, guinea pigs, and rabbits, have not been characterized further.

3.4. ELIMINATION

In humans exposed to 2-hexanone via inhalation at 10 or 50 ppm for 7.5 hours or to 100 ppm for 4 hours, unchanged 2-hexanone (but none of its metabolites) was found in expired air, and neither 2-hexanone nor any of its metabolites was found in urine during or after exposure (DiVincenzo et al., 1978). 2-Hexanone was no longer detected in expired air 3 hours after exposure to 50 or 100 ppm. In two humans who received a single oral dose of 1-[^{14}C]-2-hexanone, breath excretion of $^{14}CO_2$ reached a peak within 4 hours then decreased slowly over the next 3 to 5 days. Average overall recovery of the ^{14}C-label in 8 days was 40% in breath and 26% in urine. Feces were not analyzed (DiVincenzo et al., 1978). These results suggest slow clearance and possibly retention of 2-hexanone in humans exposed by this route.

In beagles exposed to 2-hexanone via inhalation at 50 or 100 ppm for 6 hours, 32 and 35%, respectively, of the inhaled vapor was excreted in the expired breath (DiVincenzo et al., 1978). By 3 to 5 hours after exposure, 2-hexanone was no longer detected in expired air. Excretion via other routes was not addressed.

In rats administered a single oral dose of 1-^{14}C-2-hexanone, DiVincenzo et al. (1977) observed similar results as the above findings in humans. Radioactivity in breath accounted for about 45% of the administered dose (5% was in unchanged 2-hexanone; 40% was in $^{14}CO_2$); 38% was found in urine; 1.1% was recovered in the feces; and about 15% remained in the carcass. In male rats that received daily gavage doses of 2-hexanone at 400 mg/kg-day for 40 weeks, very low concentrations of free 2-hexanone were detected in the urine from the third week on. A maximum concentration of approximately 20 µg was reached in the 17th week (Eben et al., 1979). Similarly, free 2,5-hexanediol was found in the urine after 3 weeks and peaked in the 17th week. Free and conjugated 2,5-hexanedione were present in the 7th week, whereas excretion levels of the free form were consistent throughout the study. A strong correlation was observed in this study between the onset of neuropathy and the urinary concentration of 2,5-hexanedione when 2-hexanone, 2,5-hexanedione, or 2,5-hexanediol was administered orally to rats at 400 mg/kg-day.

Radiolabeled ^{14}C from 1-^{14}C-2-hexanone applied to the forearms of two human volunteers was found in the breath and urine (DiVincenzo et al., 1978). In one subject, eliminated amounts in urine and breath were similar, while, in the other subject, the levels in breath were about three times higher than in urine. Fecal elimination was not measured.

3.5. PHYSIOLOGICALLY BASED TOXICOKINETIC MODELS

2-Hexanone was considered as a metabolite in two physiologically based toxicokinetic (PBTK) models for n-hexane that focus on its neurotoxic metabolite, 2,5-hexanedione (Hamelin et al., 2005; Perbellini et al., 1990). PBTK models that deal specifically with 2-hexanone were not identified. A blood/air partition coefficient of 127 for 2-hexanone measured using preserved human blood has been reported (Sato and Nakajima, 1979).

4. HAZARD IDENTIFICATION

4.1. STUDIES IN HUMANS—CASE REPORTS, EPIDEMIOLOGICAL STUDIES, AND OBSERVATIONAL STUDIES

In humans, 2-hexanone vapor caused irritation of the eyes and respiratory tract during acute exposure to relatively high concentrations. Men exposed to 0.23, 0.65, or 2% 2-hexanone in air (9422, 26,600, or 81,900 mg/m^3) for 1 minute or less reported strong eye and nasal irritation (Schrenk et al., 1936). Moderate eye and nasal irritation was reported after a brief exposure to 0.1% (4100 mg/m^3). Peripheral neuropathy was reported in printers, furniture finishers, and spray painters occupationally exposed to 2-hexanone (Davenport et al., 1976; Mallov 1976; Allen et al., 1974; Billmaier et al., 1974). Several studies have described the occurrence of neurological effects after the introduction of 2-hexanone into products used in the occupational setting.

Davenport et al. (1976) reported the occurrence of symmetrical polyneuropathy in a 35-year-old male who was occupationally exposed to 2-hexanone among other compounds. The patient had worked as a furniture finisher for several years, most recently spraying lacquer compounds, sometimes without using a face mask. Initially, according to the manufacturer, MiBK was present at a concentration of 20% in the finish, 12% in the thinner, and 7% in the sealer. Toluene, xylene, n-butyl alcohol, and acetone were also present in various proportions. After repeated inquiries, the manufacturer disclosed that, for the 6-month period before the onset of the man's illness, 2-hexanone had been substituted for MiBK on a volume-for-volume basis in the formulations of lacquers and solvents because of MiBK supply limitations. The patient first noticed tingling in the soles of his feet and mild clumsiness of gait. Weakness progressed rapidly to the upper extremities, resulting in a wheelchair-bound condition. Three months after the onset of the first symptoms, routine hematology, blood chemistry, urinalysis, spinal fluid, and analysis for heavy metals and porphyrins were normal. A biopsy of the sural nerve[1] at the level of the lateral malleolus revealed diffuse fibrosis and loss of nerve fibers. Several enlarged axons, with and without myelin sheaths, with neurofibrillary tangles were evident. A clinical evaluation 3 months later indicated improved strength and ability to walk unassisted, though with some residual unsteadiness of gait. Tendon reflexes distal to the elbows and knees were still absent. The case report noted that a similar progressive distal extremity weakness developed in a 19-year-old coworker of the patient. This condition also improved following removal from contact with lacquer products.

One probable and two definite cases of 2-hexanone-induced peripheral neuropathy were found during an investigation of 26 painters who worked at Cannelton or nearby Newburgh dams

[1] A sensory nerve that innervates the skin of the back of the leg, and skin and joints on the lateral side of the heel and foot.

on the Ohio River (Mallov, 1976). Two formulations of paint were used. The older formulation contained 22% (weight/weight [w/w]) MiBK and 22% (w/w) methyl isoamyl ketone. In the newer otherwise identical formulation, these solvents were replaced by 44% (w/w) 2-hexanone. While both paint formulations were reported to contain 3.1% (w/w) of the known neurotoxicant triorthocresyl phosphate, this substance was not found in two bulk samples of the 2-hexanone paint formulation. One definite case of peripheral neuropathy was that of a 42-year-old man, a painter for 10 years, who had been painting Cannelton Dam from September 1972 until August 1973. His initial signs, including weight loss, numbness and tingling of feet, and progressive weakness in both lower extremities that progressed to his upper extremities as well, began in July 1973. Weakness progressed until he could no longer stand without assistance. Lower extremity reflexes became absent and an electromyogram was abnormal. Blood and urine lead analysis indicated slightly elevated levels but not sufficient to cause effects. The second case was that of a 35-year-old man who had been painting since he was 14 years old. He painted at Cannelton Dam from April to October 1973. He felt well until about 4 weeks prior to the termination of painting at Cannelton but eventually became unable to rise from a sitting position without help. Urine lead levels were in the lower normal range. The third painter had worked at either Cannelton or Newburgh dam from September 1970 until November 1973. He also felt well until about 4 weeks prior to termination of painting. While he experienced weakness in his extremities, he remained able to walk but reported above-normal episodes of falling and dropping things. He was not examined by a physician until 3.5 months after the onset of symptoms, at which time absent ankle reflex, foot weakness, and diminished sensation were noted. None of the three patients had a history of alcoholism or family history of neurological disease or took medications.

A cross-sectional study of peripheral neuropathy among employees at a coated fabrics plant in Ohio was started when it was noted that six workers from the print department had developed severe peripheral neuropathy (five hospitalized, one seen as outpatient) between April and August 1973 (Allen et al., 1974; Billmaier et al., 1974). The plant produced plastic-coated printed fabrics that were used mainly for wall coverings and automobile interiors. Processing steps included mixing, calendering, laminating, coating, printing, embossing, inspecting, and shipping. Starting in September 1973, all 1157 employees of the plant (including the original six cases) were screened using electromyography and nerve conduction testing. A total of 192 employees were referred for detailed neurological evaluation. On the basis of these examinations, it was concluded that 68 employees had definite signs, symptoms, and electrodiagnostic findings of peripheral neuropathy. Severity ranged from mild (electrodiagnostic findings but no physical symptoms) to moderate (distal sensory loss) to severe (distal muscle weakness and sensory loss). There were a total of nine severe cases, including the original six cases. Cases with possible causes other than a toxic chemical (e.g., diabetes) were

not included in the analysis but were identified in the presentation of results. The distribution of cases within the plant is shown in Table 4-1.

Table 4-1. Prevalence of peripheral neuropathy among employees of a coated fabrics plant

Workplace	Number of cases	Number of employees examined	Prevalence (%)
Non-print departments	30[a]	984	3
Print department (total)	38[b]	173	22[c]
Operators	27	69	39[c]
Helpers	10	59	17[c]
Foreman	0	21	0
Service helper	1	16	6
Not known	0	8	0
Total	68	1157	6

[a]Includes 18 persons with diabetes or other conditions that can cause or contribute to neuropathy.
[b]Includes one person with diabetes and one person on isoniazid therapy.
[c]Significantly elevated compared with non-print departments ($p < 0.001$) using the chi-square test.

Source: Billmaier et al. (1974).

The prevalence of peripheral neuropathy was significantly higher among print department employees than among employees from other departments (22 vs. 3%, $p < 0.001$). All nine severe cases were print department workers. Within this department, prevalence was highest among printer operators (39%, $p < 0.001$ compared with non-print department employees), who spent almost 100% of their time near the printing machines. Prevalence among helpers (17%) who spent roughly 50% of their time near the printing machines was also significantly elevated compared with non-print department employees ($p < 0.001$). There was a 6% prevalence among service helpers who were in and out of the premises (one case among service helpers was a pan washer who used the solvent for cleaning). Among manufacturing departments other than the print department, the prevalence of neuropathy ranged from 0 to 6.7%. No cases of peripheral neuropathy were observed in supervisory personnel who remained at a distance from the machines or in office personnel.

In addition to job category, incidence of neuropathy was also associated with working overtime (print operators with definite neuropathy averaged 47.2 hours/week versus 42.0 hours/week for those without neuropathy [$p < 0.01$]) and with eating on the job (data not shown). Each employee generally worked on the same machine all the time. No differences in neuropathy incidence were found based on the type of printing machine or the area in which the machine was located; data were insufficient to correlate illness with individual machines. Among print department employees, there were no significant differences in neuropathy incidence related to age or tenure in the department; 90% of cases had presented within the previous year, and only 5% of the cases were known to have medical conditions that could cause

or contribute to neuropathy. Among non-print department employees, cases were clustered in older (40+) employees ($p < 0.001$); only 53% had onset within the previous year, and 60% of these cases were known to have diabetes or other medical conditions that could cause or contribute to neuropathy unrelated to compound exposure.

In the search for the etiologic agent, other chemicals known to cause peripheral neuropathy were ruled out, either by clinical tests on workers or because they were not used in the plant. Based on an investigation into the relationship between the cases of peripheral neuropathy and the distribution of the roughly 275 chemicals used in the plant, the most likely agent appeared to be contained in the solvents used as ink thinners and cleaners. These had previously consisted of methyl ethyl ketone (MEK) and MiBK, but, starting in August 1972, the latter was phased out and gradually replaced by 2-hexanone, which reached maximal usage in December 1972. Substitution of 2-hexanone for MiBK was the only major change in the production process in the previous 7 years. In September 1973, the print department was closed for a month and 2-hexanone was removed from production materials. Thus, there was a 13-month window of exposure to 2-hexanone.

In addition to exposure to 2-hexanone, affected workers were also exposed to high concentrations of MEK that sometimes vastly exceeded threshold limit values (TLVs). MEK by itself does not produce this type of neuropathy in animal studies but can potentiate the effects produced by 2-hexanone (Saida et al., 1976). Thus, the presence of MEK in the coated fabrics plant study could contribute to an overestimation of the risk associated with exposure to 2-hexanone itself. Workplace levels for 2-hexanone and MEK from this study are presented in Table 4-2.

Table 4-2. Results of area atmospheric sampling for MEK and 2-hexanone in a coated fabrics plant

	Front of print machine[a]		Back of print machine[a]		Wind-up area[a]	
	MEK[b]	2-Hexanone[c]	MEK	MEK[b]	2-Hexanone[c]	MEK
	104	2.3	85	104.0	2.3	85.0
	109	2.6	265	3.0	44	2.0
	124	4.1	401	9.0	47	2.0
	162	5.1	440	9.8	49	2.6
Median	220	5.8	603	21.7	127	5.9
	453	9.7	608	23.9	143	6.0
	565	11.5	725	48.6	250	7.9
	570	19.8	750	49.9	289	9.8
	670	21.7	763	156.0	338	17.5

[a]Values are in ppm, listed from lowest to highest result obtained for each solvent at each work location.
[b]TLV = 200 ppm.
[c]TLV = 100 ppm.

Source: Billmaier et al. (1974).

Another confounding factor for this study is that exposure may not have been limited to the inhalation route. Poor work practices documented at the plant included washing hands in solvent, using solvent-soaked rags to clean equipment, and eating in work areas. Dermal and even oral exposure is likely to have occurred. The significance of exposure by these routes is suggested by the observations that eating on the job was associated with the development of neuropathy and that a worker whose job involved washing pans with the solvent was the only afflicted print department worker other than the print operators and their helpers. As discussed in Sections 3.1.2 and 3.1.3, 2-hexanone is absorbed readily through the skin and gut and can produce neuropathy by both routes in animals.

The researchers reported that patients removed from 2-hexanone exposure showed significant and consistent improvements. They also performed a study of workers at a comparable coated fabrics plant in California that produced the same products as the one in Ohio but without the use of 2-hexanone. Electrodiagnostic studies were conducted on 21 solvent-exposed workers at the California plant, but no peripheral neuropathy was found.

4.2. ACUTE, SUBCHRONIC, AND CHRONIC STUDIES IN ANIMALS

4.2.1. Oral Exposure

4.2.1.1. *Acute and Short-Term Oral Exposure*

Range-finding toxicity data by Smyth et al. (1954) list an oral median lethal dose (LD_{50}) of 2.59 g/kg of 2-hexanone for rats, while Tanii et al. (1986) provide an oral LD_{50} of 2.43 g/kg for mice. Details for either study are limited (Tanii et al., 1986; Smyth et al., 1954).

4.2.1.2. *Subchronic Toxicity Studies*

16-Week study: female Wistar rats

Homan et al. (1977) conducted a 120-day drinking water study with female Wistar rats. 2-Hexanone (purity not stated) was administered in drinking water at 0, 0.65, or 1.3% (0, 480, or 1010 mg/kg-day). A dose-dependent decrease in food consumption was observed in exposed animals versus controls. Water consumption in exposed animals was reduced to about half that of controls. Animals exposed to 0.65 or 1.3% 2-hexanone experienced a 45.5 and 68.8% reduction in body weight gain, respectively. A dose-dependent decrease in absolute liver weight was observed in exposed animals. Absolute kidney weights were increased, and there was a dose-dependent increase in relative kidney weights. A summary of the data for diet and water consumption, body weight gain, and organ weights is provided in Table 4-3. Neurotoxicity outcomes among the treated animals are outlined in Section 4.4.1.

Table 4-3. Gross observations in rats exposed to 2-hexanone in drinking water for 120 days

Dose (mg/kg-day)	Food intake (g/day)	Water intake (mL/day)	Body weight gain (g)	Liver weight		Kidney weight	
				Absolute (g)	Relative	Absolute (g)	Relative
0	17.99	32.29	110.2	10.30	3.10	1.97	0.60
480	16.90	17.98	60.0[a]	9.01	3.35	2.21	0.82[a]
1010	12.90	17.33	34.3[a]	7.80[a]	3.38	2.10	0.92[a]

[a]Significantly different from controls, $p < 0.01$.

Source: Homan et al. (1977).

40-Week study: male Wistar rats

Eben et al. (1979) gavaged male SPF-Wistar rats daily with 400 mg/kg 2-hexanone (98% pure) for 40 weeks. Body weight gain in treated animals was less than in controls; a decrease in body weights was observed from the 17th to the 25th weeks, followed by a slight increase until study completion. There were also symptoms of neurotoxicity in the treated animals (see Section 4.4.1).

4.2.1.3. *Chronic Toxicity Study*

13-Month study: CD/COBS(SD) rats

O'Donoghue et al. (1978)[2] conducted a 13-month study in male CD/COBS(SD) rats. The animals' drinking water contained 0, 0.25, 0.5, or 1.0% (0, 143, 266, or 560 mg/kg-day) 2-hexanone (96% pure, containing 3.2% MiBK and 0.7% unknown contaminants). 2-Hexanone produced a dose-dependent reduction in body weight at all doses tested. The effect was present by the second week in the two highest dose levels and by the third week in the low-dose group. A statistically significant increase in liver weight was found in the highest dose group compared with all groups except the 0.5% group. The 0.5% and 0.25% groups showed dose-dependent increases in relative liver weights compared with controls. A statistically significant increase in relative kidney weights was present between the 1.0% 2-hexanone group and all other groups and between the 0.5% group and all other groups. Similarly, a statistically significant increase in relative testes weight was found between the 1.0% group and all other groups. A summary of the body weight and organ weight data is present in Table 4-4 (O'Donoghue et al., 1978).

Clinical neurological deficits were noted in animals exposed to either 0.5 or 1.0% 2-hexanone. Severe deficits including decreased extension of the hind limb, hind-limb weakness, and muscular atrophy of the hind-limb musculature were noted among animals treated with 1% 2-hexanone. Deficits among animals exposed to 0.5% 2-hexanone were slight and did not result in clinical progression. Evidence of axonal swelling was noted at all dosing levels of

[2]This study is an unpublished study; accordingly, it was externally peer reviewed by EPA in December 2007.

2-hexanone. Neurological effects are discussed in further detail in Section 4.4.1.1. Other than neural effects and changes in body weight, no nonneural clinical signs related to 2-hexanone exposure were found.

Table 4-4. Pathological changes in rats exposed for 13 months to 2-hexanone

	Body weight[a]	Liver[b]		Kidney[b]		Testes[b]	
		Absolute	Relative	Absolute	Relative	Absolute	Relative
Control	710	26.71 ± 2.02	3.64 ± 0.41	4.66 ± 0.53	0.63 ± 0.87	2.99 ± 0.81	0.40 ± 0.11
2-Hexanone (0.25% or 143 mg/kg-day)	685	24.99 ± 4.33	3.97 ± 0.43	4.58 ± 0.69	0.73 ± 0.05	3.24 ± 0.38	0.52 ± 0.08
2-Hexanone (0.5% or 266 mg/kg-day)	612	25.06 ± 2.04	4.22 ± 0.43	5.33 ± 0.31	0.90 ± 0.12[c]	3.16 ± 1.04	0.54 ± 0.19
2-Hexanone (1.0% or 560 mg/kg-day)	448	20.73 ± 2.95	4.62 ± 0.32[c]	4.86 ± 0.38	1.10 ± 0.23[c]	3.29 ± 0.26	0.75 ± 0.17[c]

[a]Values are means of 10 animals.
[b]Values are mean ± SE based on four or five animals per group.
[c]Statistically different from controls, $p < 0.05$

Source: O'Donoghue et al. (1978).

To determine whether the concentration of MiBK, a CYP450 inducer, a contaminant in the 2-hexanone formulation used by O'Donoghue et al. (1978) may have altered the observed toxicity of 2-hexanone, other studies were evaluated that used MiBK as a test article. In a 13-week gavage study, 30 male and female Sprague-Dawley rats were treated daily with 0, 50, 250, or 1,000 mg MiBK/kg-bw (MAI, 1986). At the middle and high doses, adverse effects were observed in the liver and kidney, which progressed in severity in the high dose animals. No treatment-related effects of any kind were observed at 50 mg/kg-day. The Carnegie-Mellon Institute of Research (1977) conducted a 120-day drinking water study with 1.3% MiBK using female HLA Wistar rats. The authors estimated the dosage to be 1040 mg/kg-day. The only statistically significant finding was increased mean absolute and relative kidney weights in treated rats compared with controls. Histopathological examination revealed renal tubular cell hyperplasia in only one of five of the treated rats. No exposure-related histopathological changes were found in other organs. Based on the foregoing, it can be concluded that the dosage of MiBK received as an impurity in the study by O'Donoghue et al. (1978) did not contribute to the observed 2-hexanone related effects. O'Donoghue et al. (1978) did not observe adverse effects in the kidney or liver of treated animals, despite these organs being the target organs of toxicity in experimental studies with MiBK from both the oral and inhalation routes (U.S. EPA, 2003a).

4.2.2. Inhalation Exposures

4.2.2.1. *Acute and Short-Term Toxicity Studies*

No acute inhalation toxicity studies of 2-hexanone were identified. The National Library of Medicine's Hazardous Substances Data Bank states that a 4-hour exposure of rats to 4000 ppm 2-hexanone did not kill all animals, while exposure to 8000 ppm for 4 hours was an LD_{100} (NLM, 2005). Abdo et al. (1982) reported the death of one out of five hens exposed continuously to 200 ppm 2-hexanone (70% purity). No deaths were reported in hens exposed to 100 ppm or lower (Abdo et al., 1982).

4.2.2.2. *Subchronic Toxicity Study*

11-Week study: male rats

Groups of five male rats (Crl:COBS/CD[SD]BR) were exposed to 0 or 700 ppm (0 or 2870 mg/m^3) 2-hexanone (purity 96.1%) 72 hours/week for 11 weeks (Katz et al., 1980). The exposure schedule was as follows: two 20-hour periods and two 16-hour periods, Monday through Friday, separated by 8-hour nonexposure periods. Total white blood cell counts of treated animals were significantly ($p < 0.05$) lower than those of controls; no other differences were noted in clinical chemistry or hematological values. Gross examination of treated animals revealed marked atrophy of the hind-limb musculature, depletion of adipose tissue, and significantly decreased absolute and relative testicular weight ($p < 0.05$). Histopathological examination was performed on selected tissues, including lung and trachea (but not nasal cavities), eye, digestive tract, pancreas, thyroid, parathyroid, testes, epididymides, spleen, bone marrow, mesenteric lymph nodes, thymus, and nervous system. Atrophy of testicular germinal epithelium and grossly enlarged axons in the brain stem and cerebellum were observed in treated animals. No damage to bone marrow was evident despite the low white blood cell count. Although no discussion of findings in the lung or trachea was presented, the implication is that there were no treatment-related changes in these tissues. The treatment group developed signs of neurotoxicity (weakened hind- and forelimb grasp) by the second week of exposure, progressing to severe hind-limb weakness by 71 days, and showed decreased weight gain. Neurological effects are discussed in further detail in Section 4.4.1.2.

4.2.2.3. *Chronic Toxicity Study*

72-Week study: male Sprague-Dawley rats

Krasavage and O'Donoghue (1977) exposed groups of male Sprague-Dawley rats (18/group) to 0, 100, or 330 ppm (0, 410, or 1353 mg/m^3) 2-hexanone (purity not specified) 6 hours/day, 5 days/week for 72 weeks. Clinical signs (observed daily and examined weekly), body weight (recorded weekly), and water consumption (at 15, 22, 32, and 44 weeks of exposure) were monitored. Beginning at 4 weeks and continuing at approximately 6-week intervals for the first 52 weeks, unspecified numbers of animals were killed for microscopic

examination of an extensive list of tissues, including the trachea and lung. Body weights and weight gain were comparable among groups until the 20th week. Thereafter, body weights of the high-concentration animals fell behind those of controls (data presented graphically without statistical analysis); a visual estimate of the graphic presentation suggested that the body weights of high-concentration animals were at least 10% less than those of controls. After 36 weeks of exposure, body weight gain in the low-concentration group also began to lag behind controls. Water intake was comparable among groups.

Gross postmortem findings revealed no compound-related changes. Low-concentration animals did not develop clinical signs attributed to 2-hexanone exposure or morphologic lesions of neuropathy. Histopathologic evidence for neuropathy in high-concentration rats was equivocal. Neurological effects are discussed in further detail in Section 4.4.1.2. Spontaneous lesions were present in the urogenital, cardiovascular, and endocrine systems of both treated and control animals and were therefore not attributed to 2-hexanone exposure by the study authors (Krasavage and O'Donoghue 1977).

2-Year study: cats

Groups of four domestic shorthair cats were exposed by inhalation to 0, 100, or 330 ppm (0, 410, or 1353 mg/m^3) 2-hexanone (purity not specified) for 6 hours/day, 5 days/week for 2 years (O'Donoghue and Krasavage 1979). Clinical signs and body weights were monitored. Serum was sampled after 30, 90, and 128 exposures to determine the levels of 2-hexanone and two of its metabolites, 5-hydroxy-2-hexanone and 2,5-hexanedione. Each sample set involved collection serum on a Monday prior to daily exposure, the following Tuesday prior to daily exposure, the following Friday prior to daily exposure, immediately after daily exposure and one and three quarter hours after daily exposure. Sera from high-dose and control animals were also analyzed for sodium, potassium, chloride, and calcium levels. Cats were sacrificed at the end of the treatment and were subjected to necropsy and histopathologic examinations.

No clinical neurological effects attributed to exposure to 2-hexanone were identified except that cats anesthetized with sodium pentobarbital following a 6-hour exposure had prolonged sleeping times (O'Donoghue and Krasavage, 1979). No compound-related changes of body weight or serum electrolyte values were found. Serum levels of 2-hexanone and the two metabolites, 5-hydroxy-2-hexanone and 2,5-hexanedione, were below the detection limit on Monday morning following a two-day non-exposure period. With the exception of 2,5-hexanedione in the 330 ppm group (1353 mg/m^3), serum levels on Tuesday morning following a 6-hour exposure after 30 days of exposure remained below the detection level. Of the three substances measured, 2-hexanone cleared the serum more quickly than 5-hydroxy-2-hexanone, which cleared more quickly than 2,5-hexanedione. Biopsy examinations through the first 9 months of exposure were unremarkable and did not serve as an early detection method for neuropathy. Gross postmortem findings revealed no compound-related changes. General

histopathologic examinations showed no compound-related changes other than in the nervous system and musculature. Neurological effects are discussed in further detail in Section 4.4.1.2.

4.2.3. Dermal Exposure

90-Day study: hens

Abou-Donia et al. (1985b) treated leghorn laying hens (n = 5) with 2-hexanone (99% pure; topical application, 1 mmol/kg-bw). The chemical was applied daily with a micropipette over an area of 10 cm^2 on the unprotected back of the neck for 90 days. All hens developed gross ataxia. At sacrifice, no changes were observed in treated versus control animals when compared for size, shape, weight, or color. Equivocal histopathologic changes were present in the spinal cord of two hens. These histopathologic changes were characterized by swollen axons without obvious fragmentation of the axon or myelin sheath. No precautions against licking were mentioned in the study, so ingestion of 2-hexanone may have taken place.

4.3. REPRODUCTIVE/DEVELOPMENTAL STUDIES—ORAL AND INHALATION

4.3.1. Oral Exposure

No standard two-generation studies or other studies of reproductive and developmental effects following oral administration of 2-hexanone were identified.

4.3.2. Inhalation Exposure

In a developmental study, Peters et al. (1981) exposed groups of 25 pregnant F344 rats to 0, 500, 1000, or 2000 ppm (0, 2048, 4096, or 8193 mg/m^3) 2-hexanone (purity not stated), 6 hours/day on gestational days (GDs) 1–21. A separate control group was maintained for each exposure group and the high-concentration controls were pair fed. Respective controls were exposed to ambient air in similar chambers to those of their exposed counterparts. Sexually mature female rats were impregnated and placed in exposure chambers 6 hours/day throughout gestation. Four weeks postdelivery, the dam was separated from the pups. The maternal 500 ppm group along with its control was terminated before 3 weeks because of an apparent lapse in care during which offspring were "unable to reach food and water," resulting in reduced weight gain in this group. The pups in the control, 1000, and 2000 ppm groups were observed over a lifetime. At 4 (weaning), 8 (puberty), and 14 weeks (adult) and at 18–20 months of age (geriatric), five males and five females were taken, one per litter, for gross and histopathology studies and for measurement of organ/body weight ratios. At different periods of development (weaning, puberty, and adult), offspring underwent behavioral testing. Pentobarbital sleeping time was also measured in pubescent and geriatric animals in the high-dose and control groups.

Survival in the 2000 ppm and 1000 ppm dams was not affected by treatment. High-dose dams appeared sluggish after exposure but seemed to have recovered by the next exposure. Hair loss, lack of muscular coordination, and weakness were observed in "several" dams at the

highest concentration after 20 days of exposure. Abnormal sniffing in the air was reported for dams in the 1000 ppm group. Maternal gestational body weight gain was decreased by 14 and 10% in the dams exposed to 2000 and 1000 ppm, respectively. Rats in the 2000 ppm exposure group were observed to eat less than the controls. No unusual behavior or change in maternal gestational growth was reported for the 500 ppm dams. Histopathology and neurotoxicity evaluations were not performed in the dams.

2-Hexanone exposure was found to result in statistically significant decreases (*p* value not reported) in litter size and pup weight observed at the highest exposure level (Peters et al., 1981). However, maternal toxicity, manifested as decreased maternal body weight during gestation, was also evident in high-dose dams, suggesting that maternal toxicity might have affected fetal growth. There was a significant decrease in the number and weight of live offspring of dams in the 2000 ppm exposure group. A lifelong, statistically significant, concentration-related reduction in growth was observed in male offspring. Only a slight treatment-related effect on body weight was seen in female offspring. Organ weights in weanling, pubescent, and geriatric offspring were unaffected by treatment, but brain weight in adult 1000 ppm offspring was significantly increased compared to that of control. Organ weights were not measured in high-dose adult offspring. The authors did not report any gross skeletal alterations. Beginning at 40 weeks of age, offspring of dams treated with 1000 or 2000 ppm showed a 3–5% decrease in survival relative to controls. The incidence of pathological lesions and the types of lesions contributory to death were not significantly different in treated and control groups (Table 4-5).

Table 4-5. Summary of pathological lesions in offspring of rats exposed to 2-hexanone during gestation

	Control				1000 ppm				2000 ppm			
	Male	**Female**	**Total**	**%**	**Male**	**Female**	**Total**	**%**	**Male**	**Female**	**Total**	**%**
Number of animals dead or sacrificed[a]	57	57	114	--	37	34	71	--	24	22	46	--
Pituitary tumor	1	3	4	3.5	1	1	2	3	1	0	1	2
Pituitary hemorrhage	2	0	2	2	0	0	0	0	1	2	3	6.5
Diaphragmatic hernia	1	1	1	2	0	1	1	1.4	1	2	3	6.5
Ovarian cysts	0	2	2	2	0	7	7	10	0	8	8	18
Mottled testes	26	0	26	23	16	0	16	23	1	0	1	2

[a]Animals include those dying subsequent to weaning in addition to those sacrificed at 78 ± 2 weeks of age.

Source: Peters et al. (1981)

Standard hematological tests (hemoglobin, red blood cell count, white blood cell count, lymphocytes, mean corpuscular hemoglobin, packed cell volume) showed no significant

treatment effect on the processes involved in blood cell formation and function (Peters et al., 1981). Clinical chemistry findings were limited to a concentration-related decrease in creatinine phosphokinase activity in pubescent offspring, with values in the 1000 ppm and 2000 ppm groups significantly lower ($p < 0.05$) than controls. In geriatric offspring, there were significant increases ($p < 0.05$) in serum alanine aminotransferase activity in the 1000 ppm and 2000 ppm groups and sodium in the 2000 ppm group. The only lesions showing a significant concentration-response relationship ($p < 0.05$, Fisher's exact test conducted for this assessment) at the time of geriatric sacrifice were ovarian cysts that had 4% (2/57), 21% (7/34), and 36% (8/22) incidences in the control, 1000 ppm, and 2000 ppm females, respectively.

In pubescent high-dose male offspring, pentobarbital sleep time was significantly increased ($p < 0.05$) compared with controls. No significant changes in pentobarbital sleep time were noted in pubescent females or geriatric offspring of either sex. Behavioral alterations were reported in the offspring of pregnant rats exposed to 1000 ppm or 2000 ppm 2-hexanone. These effects consisted of reduced activity in the open field, increased activity in the running wheel, and deficits in avoidance conditioning. Offspring of treated dams (both dose levels) clung to an inclined screen longer than offspring of controls at all ages (newborn, weanling, puberty, and adult) except geriatric in which results were similar to those of controls. For offspring in the puberty and adult categories, pronounced sex differences were noted; females in all exposure categories (including controls) were clinging from 24–100% longer than males. However, the biological significance of this observation is unknown. There was a decreased rate of avoidance learning in puberty-aged females of treated dams and increased random movement in both puberty-aged and adult offspring of treated dams. Behavioral tests in most cases indicated that maternal exposure to 2-hexanone was associated with hyperactivity in the young and decreased activity in the geriatric stage, which the authors (Peters et al., 1981) speculated to be due to premature aging resulting from the earlier hyperactivity. It is not clear whether these effects are the result of transplacental exposure to 2-hexanone or of postnatal exposure to 2-hexanone and/or its metabolites via the milk of the exposed dams.

4.4. OTHER ENDPOINT-SPECIFIC STUDIES

4.4.1. Neurotoxicity Studies

4.4.1.1. *Oral Exposures*

90-Day study: hens

In hens that received a single gavage dose of 2-hexanone (technical grade 2-hexanone, 70% pure, containing 30% methyl isobutyl ketone) at 2000 mg/kg, mild weakness was observed on the day of administration, followed by apparent recovery in 4–5 days. Hens that received 100 mg/kg showed no signs of neurotoxicity (Abou-Donia et al., 1982). In a subchronic (90-day) phase of the same study, hens (n = 3) administered 2-hexanone at 100 mg/kg-day or higher developed

severe ataxia or near paralysis. There was also evidence of histopathological changes, including swelling or degeneration of thoracic and lumbar regions of the spinal cord.

90-Day study: rats

Krasavage et al. (1980) administered 660 mg/kg 2-hexanone (96% pure) by gavage to male CD/COBS(SD) rats for up to 90 days. The authors considered severe hind-limb weakness or paralysis, as exhibited by "dragging" of at least one hind foot, to be clear indication of neuropathy. When this endpoint was reached, the treatment was terminated and the animal was processed for histological examination. There was a time- and dose-dependent depression in body weight gain and feed consumption. Treated animals consumed an average of 21 grams/day versus 28 grams/day for controls. The body weights of experimental and control animals at study completion were approximately 400 and 600 grams, respectively. Histologic examination of nerve tissue collected at termination revealed morphologic changes indicative of giant axonal neuropathy, which included multifocal axonal swellings, myelin infoldings, and paranodal myelin retraction. In this study, atrophy of the germinal epithelium of the testes was also observed, but the statistical significance of this observation was not addressed (Krasavage et al., 1980).

120-Day study: female Wistar rats

Homan et al. (1977) conducted a 120-day drinking water study with female Wistar rats (five/group). 2-Hexanone (purity not stated) was administered in drinking water at 0, 0.65, or 1.3% (0, 480, or 1010 mg/kg-day) (for further experimental details see Section 4.2.1.2). Neurological evaluations were conducted to assess balance, strength, coordination, and behavior. Performance was scored for each of the following 10 criteria: posture, gait, palpebral reflex, startle reflex, flexor reflex, extensor reflex, placing reflex, hopping reaction, righting reflex, and clinging reaction. Score ranged from 0 to 2 with 0 indicating normal and 2 being clearly deficient. The net score for each rat was calculated as the sum of the individual test scores. Scores were tabulated, ranked, and analyzed using the Kruskal-Wallis ranks sum test. The rank values (statistics generated from the Kruskal-Wallis test) for each treatment group for a given day of analysis were then averaged to generate a mean rank and standard deviation. A summary of the mean rank (mean of the values generated from the Kruskal-Wallis test) and standard deviation is provided in Table 4-6. Gross pathological evaluation revealed mild atrophy affecting skeletal muscles of the hind limbs in two of five animals in the 0.65% group and slight to severe atrophy of skeletal muscles (most pronounced in muscles of the hind limbs) affecting four of five animals in the 1.3% group (Homan et al., 1977).

Table 4-6. Time course of neuropathy scores following exposure of rats to 2-hexanone in drinking water

Treatment	Analysis after number of treatment days			
	46	57	80	110
	Mean rank value			
Control	26.1 ± 9.1	15.0 ± 0.0	22.1 ± 12.8	17.5 ± 0.0
0.65% 2-hexanone	32.0 ± 14.9	30.6 ± 12.7	30.9 ± 9.2	21.5 ± 8.0
1.3% 2-hexanone	37.5 ± 12.6	41.0 ± 5.7	40.0 ± 13.7	47.2 ± 2.8a

[a]Statistically significant versus controls, $p < 0.05$.

Source: Homan et al. (1977).

24-Week study: guinea pigs

Abdel-Rahman et al. (1978) administered 2-hexanone (purity not stated) in drinking water to guinea pigs (five/group, sex not stated) at 0, 0.1, or 0.25% (approximately 0, 97, or 243 mg/kg-day) for 24 weeks. Bibs were used to prevent dermal absorption by inadvertent contact of the animals' bodies with the solvent. The body weight of the guinea pigs was monitored each week up to the eighth week of the study. At the end of the seventh week, animals exposed to 0.25% 2-hexanone weighed an average of 600 grams versus 440 grams in controls. Similarly, animals exposed to 0.1% 2-hexanone weighed 618 grams by the eighth week compared with 490 grams in controls. Decreased locomotor activity may have contributed to increased body weights. The average motor activity counts in animals exposed to 0.25% 2-hexanone were 714 ± 130 compared to 1173 ± 201 in controls. Pupillary response to light (measured by change in pupillary diameter in response to an intense 2-second light stimulus) was abnormal in high-dose animals for the first 5 weeks of treatment as shown in Table 4-7 (data not provided for 0.1% 2-hexanone). The authors reported that by the 24th week of the study, a greatly impaired pupillary response was observed for all treatment groups (data not provided in the report) (Abdel-Rahman et al., 1978).

Table 4-7. Effect of 2-hexanone on guinea pig pupillary response of both eyes

Treatment	Week							
	1		2		3		5	
	Right[a]	Left[a]	Right	Left	Right	Left	Right	Left
Control	1.83 ± 0.00	1.66 ± 0.17	1.6 ± 0.1	1.67 ± 0.19	1.6 ± 0.06	1.7 ± 0.05	1.5 ± 0.05	1.5 ± 0.1
0.25% 2-hexanone	1.33 ± 0.19	1.33 ± 0.01[b]	1.05 ± 0.15	1.17 ± 0.01[b]	0.67 ± 0.17	0.92 ± 0.08[b]	0.59 ± 0.14[b]	0.71 ± 0.04[b]

[a]Values represent the mean ± SE of the change in pupillary diameter.
[b]Statistically significant from controls ($p < 0.001$) as calculated by study authors.

Source: Abdel-Rahman et al. (1978).

40-Week study: rats

Eben et al. (1979) gavaged male SPF-Wistar rats daily with 400 mg/kg 2-hexanone (98% pure) for 40 weeks. The authors stated that this treatment did not cause neuropathic symptoms; however, from the 17th week the authors noted that the animals exhibited weakness of the hind limbs, which continued until the 28th week. Thereafter, an improvement was observed. No further details were provided.

13-Month study: rats

As previously mentioned in Section 4.2.1.3, O'Donoghue et al. (1978) conducted a 13-month study in male CD/COBS(SD) rats. Each group of 10 rats was exposed to drinking water containing 0, 0.25, 0.5, or 1.0% (0, 143, 266, or 560 mg/kg-day) 2-hexanone (96% pure, containing 3.2% MiBK and 0.7% unknown contaminants). Body weight and neurological examinations were performed weekly. At the end of the study, a dose-dependent reduction in body weight was noted among all dose groups. All but one animal was found to have some evidence of neurotoxicity. Other than neural effects and body weight changes, no compound-related clinical signs were found.

Clinical neurological deficits were found only in animals receiving 0.5 or 1.0% 2-hexanone. Deficits were recorded as slight if there was incomplete extension of the hind limb and just detectable widening of the hind limb stance; moderate if there was obvious weakness, incomplete extension of the hind limbs, and waddling; and severe if there was dragging of at least one hind paw. In the 1.0% group, all the animals exhibited severe deficits. Gross pathological examination revealed observable muscle atrophy of hind-limb and lumbar muscles at this high-dose level. Progression of the clinical findings to a more severe state did not occur with time in the 0.5% group. In addition to the aforementioned changes, animals receiving 1% hexanone in their drinking water displayed loss of tone with grossly observable atrophy of the hind-limb musculature and axial muscles of the lumbar area. Weakness of the forelimbs with some muscle atrophy was observable in three of nine rats at the end of the study. Pain sensation, as judged by toe pinch, remained intact, but motor response such as flexor response was easily overcome. It was noted that tactile placing in the hind limbs could be elicited even in rats with severe weakness. Bowel and bladder functions remained normal. The clinical course was highly variable with improvements in the clinical symptoms being very common; thus, while all animals showed slight deficits on at least two of the weekly examinations, they showed improvements during other weeks.

Evidence of neuropathy was most common in the giant axons of animals of each dose level. In peripheral nerves from the 1.0% group, swelling of giant and other axons was common. Myelin infoldings into the axoplasm were more common than in controls. Myelin ovoids were

frequently found along with degenerating axons. The second most common site of neural degeneration was in the spinal cord, particularly in the ventral and ventromedial funiculi of the thoracolumbar segments. The changes were similar to those found in peripheral nerves. In plastic embedded sections, an additional early change was noted, which consisted of clumping of axonal organelles in otherwise normal peripheral or central axons. Examination of the dorsal root ganglia did not reveal any effect on cell bodies, but in three animals single swollen axons were found in adjacent roots, indicating a very minimal effect. Axonal swelling was also very rare in the brain. No neuropathologic effects were found rostral to the pons. Small numbers of swollen axons were located in the ventromedial medulla. Rare single swollen axons were located in the ventral spino-cerebellar tracts, cerebellar peduncles, and deep cerebellar white matter.

Neurogenic skeletal muscle atrophy occurred in both proximal and distal hind-limb musculature. Myofibrillar atrophy was multifocal with foci overlapping in severe cases to produce large diffuse areas of atrophy with fatty replacement. Intramuscular nerves frequently showed an obvious loss of axons and rarely a swollen axon. No difference in the severity or frequency of atrophic foci was seen between proximal and distal muscles.

In the 0.5% group, peripheral nerve changes were identical in morphology and in the number of animals affected compared with the higher-dose animals but were reduced in severity. Swollen axons were generally few in number but were found in all animals. Myelin ovoids and frankly degenerating axons were also reduced in number. In some nerve bundles, there was obvious loss of axons. Spinal effects were reduced to a few swollen axons and rare degenerating axons in the ventromedial fasciculi of the thoracolumbar cord. Effects on the brainstem and cerebellum were minimal, consisting of only single or small numbers of swollen axons and single degenerating axons in half of the animals examined. Neurogenic skeletal muscle atrophy consisted of infrequent multifocal areas of myofibrillar atrophy that were generally regarded as minor. Two animals without myofibrillar atrophy were considered normal. Three samples from the quadriceps and two from the calf muscles, while not demonstrating myofibrillar atrophy, did have early myopathic effects consisting of foci of increased numbers of angular myofibers and increased numbers of myofibers with central or internal nuclei. In one of these animals, intramuscular axonal swelling was found.

At the 0.25% level, peripheral nerve changes were less severe than at higher doses and axonal swelling was found in 8 of 10 animals examined. In these eight rats, the number of swollen axons was very low, but additional changes, such as myelin infoldings into axons, myelin ovoids, and degenerating axons, were more common. In one animal, while no axonal swelling was observed, numerous degenerating axons were found. Another rat was indistinguishable from controls. Spinal lesions were minimal, consisting of a single or very few swollen axons. A few instances of axonal swelling were found in the medullae of two rats. Neurogenic myofibrillar atrophy was also minimal, occurring as a single or very few foci in two

animals. Foci of angular myofibers were found in four additional animals but were of minimal severity. In control animals, the peripheral and central nervous system (CNS) contained a few degenerating axons and myelin ovoids, but these were minimal. A summary of animals found to have axonal swelling and the areas in which these axons or myopathic changes were found is presented in Table 4-8.

Table 4-8. Summary of neuropathologic findings in male rats administered 2-hexanone in drinking water for 13 months

	Incidence of axonal swelling				Incidence of myofibrillar atrophy	
Treatment	**Brain**	**Spinal cord**	**Dorsal root ganglia**	**Peripheral nerve**	**Quadriceps muscle**	**Calf muscle**
Control	0/10	0/5	0/5	0/10	0/10	0/10
0.25% 2-hexanone	2/10	7/10	0/7	8/10	1/10	2/10
0.5% 2-hexanone	4/10	5/5	0/5	10/10	5/10	6/10
1.0% 2-hexanone	8/10	5/5	3/5	10/10	10/10	10/10

Source: O'Donoghue et al. (1978).

4.4.1.2. *Inhalation Exposures*

6-Week study: rats

In a short communication, Duckett et al. (1974) reported the results of a study in which groups of nine rats (strain and sex not reported) were exposed to 200 ppm (819 mg/m^3) 2-hexanone (purity unspecified) 8 hours/day, 5 days/week for 6 weeks. Four rats served as controls. Animals presented with muscular weakness of all limbs that persisted for a few hours after exposure termination each day. Only the sciatic nerve was examined histologically. Axonal hypertrophy, beading, and degeneration associated with perinodal and segmental breakdown of myelin were observed in the sciatic nerve of all treated rats.

13-Week study: rats

In the same short communication discussed above, Duckett et al. (1974) discussed results of an unpublished subchronic experiment with 2-hexanone. In this experiment, groups of 20 Wistar rats of unspecified sex were exposed to 2-hexanone for 8 hours/day, 5 days/week at 40 ppm (164 mg/m^3) for 22–88 days or at 50 ppm (205 mg/m^3) for 13 weeks. Similar numbers of control rats were sham exposed. No overt signs or "pathological manifestations" of peripheral or central neuropathy were seen in exposed rats, except for demyelination of the sciatic nerve in 3 of the 20 rats exposed to 50 ppm for 13 weeks. Additional details were not provided. The results at 50 ppm for 13 weeks, when compared with the results at 50 ppm for 6 months, indicate that the incidence of neuropathy increases with increasing duration of exposure.

12-Week study: cats, rats, chickens

Mendell et al. (1974) continuously exposed groups of animals of unspecified sex (four Sprague-Dawley rats, four domestic shorthair cats, and five domestic chickens) to 2-hexanone (purity not stated) for 24 hours per day, 7 days per week for up to 12 weeks. Concentrations of 2-hexanone were initially 200 ppm (820 mg/m^3) for chickens and 600 ppm (2,460 mg/m^3) for cats and rats but were adjusted at an unspecified time to 100 and 400 ppm (410 and 1640 mg/m^3), respectively, to minimize complications from inanition and weight loss. Pair-fed controls were sacrificed when the exposed animals were sacrificed. After 5–8 weeks of exposure, the cats developed hind-limb and forelimb weakness. Focal swelling of the axon along the sciatic nerve, often associated with loss of neurotubules and denudation of myelin beginning at the nodes of Ranvier, and areas of demyelination were observed. Abnormal electromyograms were also observed in the cats exposed for 9–10 weeks; electromyograms were not measured in chickens or rats (Mendell et al., 1974).

90-Day study: hens

Abdo et al. (1982) exposed adult leghorn laying hens (*Gallus gallus domesticus*), 5 per group, to varying concentrations of 2-hexanone (10, 50, 100, 200, and 400 ppm; technical grade 2-hexanone containing 70% 2-hexanone and 30% methyl isobutyl ketone) for 90 days. Body weights were monitored weekly, and hens were examined every other day for neurological signs of 2-hexanone neurotoxicity. A 30-day observation period followed the final exposure. Clinical assessment of neurotoxicity was graded by classifying the degree of ataxia before paralysis as follows: T_1, mild ataxia, characterized by diminished leg movement and reluctance to walk, with hens tending to slide on the floor or fly; T_2, gross ataxia, characterized by a change in gait and disturbance of leg movement; T_3, severe ataxia, with severe leg weakness manifested by unsteadiness and occasional falling on the floor; T_4, ataxia, with near paralysis, marked by inability to walk (Abdo et al., 1982).

The spinal cord and the sciatic, peroneal, and tibial nerves were excised from hens that died during the experiment or were killed by heart puncture and exsanguinations. Severity of lesions was defined by the following criteria: (1) rare swollen axons without fragmentation, phagocytosis, or loss of myelin staining were designated as equivocal histological changes; (2) occasional degenerative changes of axons and myelin in peripheral nerve or within the spinal cord, which may contain nests of phagocytic cells, were termed mild to moderate degeneration; and (3) lesions were considered severe when there was almost complete destruction of axons and myelin in a given tract such as the anterior columns or within extensive areas of peripheral nerve.

Only hens exposed to one of the highest two concentrations of 2-hexanone, 400 or 200 ppm, lost significant weight at the onset of ataxia; weight loss for these two groups continued, and the hens exposed to 400 and 200 ppm 2-hexanone weighed 48.0 $\pm$ 7.4 and 63.1 $\pm$ 5.5% (mean $\pm$ SE) of the initial weights, respectively, at the onset of paralysis. Although the group

exposed to 100 ppm 2-hexanone gained some weight at the onset of ataxia, they lost 24.4% of their initial weight after 69 days of exposure. This weight loss coincided with the development of severe ataxia. This treatment group, however, regained all lost weight by the end of the 30-day observation period. No appreciable change in weight was observed in hens exposed to 50 or 10 ppm 2-hexanone.

None of the hens continually exposed to 2-hexanone vapor showed any signs of acute toxicity that are attributed to the narcotizing effects of 2-hexanone on the CNS. All hens continually exposed to 50–400 ppm 2-hexanone developed ataxia after a latent period of 6–30 days, depending on 2-hexanone concentrations. Those exposed to 400 ppm progressed to paralysis, and two died 27 days after the beginning of exposure. The remaining three chickens were in a distressed condition and were sacrificed at 31 days. The number of days of exposure to 2-hexanone vapors before the onset of ataxia was dependent on and inversely proportional to the concentration of 2-hexanone.

All hens exposed to 200 ppm 2-hexanone developed paralysis 64–72 days after the beginning of the exposure; one of these hens died at day 72 and the other four were sacrificed on day 73. Four of the hens inhaling 100 ppm 2-hexanone developed severe ataxia (T_3), while the fifth bird progressed to ataxia with near paralysis (T_4). Three hens of the group exposed to 50 ppm 2-hexanone showed severe ataxia (T_3), while the other two developed only gross ataxia (T_2). The clinical condition of all hens in this group was gross ataxia (T_2) at termination. All hens exposed to 10 ppm 2-hexanone remained normal.

Histopathological lesions in the spinal cord were dependent on concentration, duration of exposure, and duration of intoxication. Two of the hens exposed to 400 ppm did not exhibit any histopathological alterations, while another two showed equivocal changes. Hens exposed to 100 ppm 2-hexanone exhibited clinical signs of neurotoxicity for 99 $\pm$ 2 days, and all hens showed unequivocal changes in the spinal cord. Although hens exposed to 50 ppm 2-hexanone were exposed for a mean of 97 days, only four of these hens had unequivocal changes in the spinal cord. Similarly, the presence of histopathological lesions in peripheral nerves was a function of both the level of 2-hexanone inhaled and, particularly, the total dose inhaled. Although all five hens exposed to 100 ppm for 90 days survived until termination on day 120, they showed gross to severe ataxia and each had unequivocal lesions in peripheral nerves. Hens given high doses became paralyzed and thus could not be kept alive as long as those given 100 ppm 2-hexanone.

4-Month study: rats

Groups of six young adult rats (strain and sex not specified) were exposed to 1300 ppm (5325 mg/m^3) of 2-hexanone 6 hours/day, 5 days/week for up to 4 months (Spencer et al., 1975). Three rats were exposed to air only. Animals were observed for neurological signs, and histopathological examinations of several peripheral nerves, regions of the spinal cord, medulla,

and cerebellum were completed. In the exposed rats, narcosis, loss of coordination, weight loss (data not presented), foot drop, and proximal hind-limb and forelimb weakness were observed. Pathological alterations included nerve fiber degeneration in the peripheral nerves, spinal cord, medulla, and cerebellum; axonal dilatation with localized fiber swelling; and secondary paranodal myelin retraction.

6-Month study: male rats

Duckett et al. (1979) exposed groups of Wistar rats (sex not specified) to 0 (n = 20) or 50 ppm (n = 40) 2-hexanone (0 or 205 mg/m^3) 8 hours/day, 5 days/week for 6 months. No overt signs of toxicity were observed during the study. Electrophysiological evaluations were performed on 5 treated and 10 control rats at the end of the experiment. The mean sciatic motor conduction velocity (MCV) in the exposed group was significantly lower (p = 0.005) than in the controls. No effect on the amplitude of the evoked muscle action potential (MAP) was observed. Widespread demyelination of the sciatic nerve was reported in 32 rats from the exposed group; two of the rats also had axonal hypertrophy and beading. No abnormalities were seen in the sciatic nerves of control rats. The study authors reported that the histopathology of the CNS, liver, and kidney of all rats was normal (details were not provided) (Duckett et al., 1979).

72-Week study: male rats

Krasavage and O'Donoghue (1977) exposed male Sprague-Dawley rats (18/group) to 0, 100, or 330 ppm (0, 410, or 1353 mg/m^3) 2-hexanone (purity not specified) 6 hours/day, 5 days/week for 72 weeks (for further experimental detail, see Section 4.2.2.2). Exposure to 100 ppm did not cause clinical or pathologic evidence of neurological damage. One rat exposed to the high concentration developed progressive hind-limb weakness; another three high concentration animals showed slight weakness that was not progressive. One animal in the high concentration group developed a severe polyradiculoneuritis of the nerve roots in the lumbar and sacral spinal nerves and in the sciatic and tibial nerves. The authors concluded that chronic exposure to 100 ppm 2-hexanone was not neurotoxic, while findings at 330 ppm were equivocal (Krasavage and O'Donoghue 1977).

6-Month study: male rats

Male Sprague-Dawley rats (six/group) were exposed to 0 or 100 ppm (0 or 410 mg/m^3) 2-hexanone (purity 96.66%, 2.9% MiBK) 22 hours/day, 7 days/week for 6 months (Egan et al., 1980). Two animals from each group underwent microscopic examination for neuropathologic changes following 2, 4, and 6 months of exposure. No treated or control animals displayed clinical signs of neurotoxicity during the exposure period. After four months of exposure, a typical pattern of 2-hexanone-induced neuropathology began to appear in the CNS and peripheral nervous system (PNS). At this time, PNS specimens revealed giant axonal swellings

and secondary demyelination in a few large diameter fibers in the tibial nerve branches to the calf muscles. In the CNS, isolated giant axonal swellings were found in the medulla oblongata and cerebellum. By six months, more advanced degeneration was presented in teased fibers in calf muscle branches and giant axonal swelling had ascended to the level of the sciatic notch. The spinal cord revealed scattered fiber degeneration in the ventral portion of the gracile tract and the caudal portion of descending fiber tracts in the lumbar region.

10-Month study: male rats, male monkeys

Johnson et al. (1977) exposed male Sprague-Dawley rats (10/per group) and male monkeys (*Macaca fascicularis*) (8/group) to 0, 100, or 1000 ppm (0, 410, or 4100 mg/m^3) commercial grade 2-hexanone (purity not stated) for 6 hours per day, 5 days per week for up to 10 months. Rats in the 1000-ppm exposure group exhibited progressive body weight loss beginning at 16 weeks and reaching statistical significance at 20 weeks ($p < 0.01$). Monkeys in the 1000-ppm group progressively lost body weight beginning at 8 weeks. No significant effect of 2-hexanone on body weight of rats or monkeys was found in the low-dose exposure groups.

Four neurological tests were conducted on both rats and monkeys: MCV of right sciatic-tibial nerves, MCV of the right ulnar nerve, absolute refractory period of these nerves, and MAP recorded in response to both sciatic and ulnar stimulation. In addition, electroencephalograms and visual evoked potentials were recorded from monkeys. All animals were administered an anesthetic prior to neurological testing: rats received an i.p. injection of 35 mg/kg of sodium pentobarbital, and monkeys were given 15 mg/kg of ketamine hydrochloride intramuscularly.

After 25 weeks, all rats and monkeys in the high-dose exposure group were removed from further exposure because neuropathy (hind-limb drag) apparently had developed. All eight monkeys in the 100 ppm group were exposed for a total of 41 weeks. Rats in the low-dose group were removed from 2-hexanone exposures after 29 weeks. Beginning at 3 months of exposure, monkeys in the 1000 ppm group showed a progressive decrease in the MCV of the sciatic-tibial nerves. After 6 months, the mean MCV of this group was 63% of the mean of control animals. Commencing at 9 months, the MCV for the sciatic-tibial nerves in monkeys in the 100 ppm group was significantly different from control values ($p = 0.05$). At the termination of the study, the MCV of monkeys from the 100 ppm group was 12% less than in the corresponding controls ($p < 0.05$).

A similar pattern of sciatic-tibial neuropathy developed in rats exposed to the higher concentration of 2-hexanone. A significant decrease in MCV was observed at approximately 3 months (13 weeks) of exposure ($p = 0.05$). A significant difference at 8 weeks between MCVs of control and 1000 ppm rats was considered spurious. In the 100 ppm group, a significant difference in MCVs between controls and treated rats occurred at 29 weeks ($p < 0.001$).

A neuropathy similar to that observed for the sciatic-tibial nerves was noted in the ulnar nerve of both the monkeys and rats. When compared with controls, commencing at 4 months,

monkeys showed a progressive decrease in the MCV of the ulnar nerve. At the end of 6 months' exposure to 1000 ppm, monkeys showed a significant decrease in ulnar MCV with values approximately 64% of those of controls ($p < 0.01$). Ulnar MCVs in the 100 ppm group showed a similar decreasing trend at about 6 months; however, these values were not statistically different from controls. In rats, ulnar MCVs were significantly decreased compared with control values ($p < 0.05$), beginning at about 17 weeks in both exposed groups.

Both monkeys and rats exposed to 1000 ppm 2-hexanone showed a continuous decrease in MAP amplitude in response to sciatic stimulation that became statistically significant in monkeys at 6 months ($p < 0.01$). This effect was not noted in the low-dose group of monkeys. Rats in the 100 ppm group had reduced MAP amplitudes for sciatic stimulation, beginning at 12 weeks. No effects of 2-hexanone on scalp-recorded electroencephalograms (EEGs) of monkeys were observed. Amplitude measures of the EEG were not affected at either exposure concentration. Visual examination of the EEG records did not reveal any abnormal patterns (e.g., spikes or abnormal waves).

Evidence of 2-hexanone-induced effects on average visual evoked potential (AVEP) was obtained in monkeys exposed to 1000 ppm. Specifically, latencies of certain AVEP components were increased beginning at 4 months. No effects on these latencies occurred as a result of the low-dose 2-hexanone exposure. The refractory time (i.e., the time that must elapse between two consecutive stimuli of a nerve in order for the second stimulus to also excite the nerve) was not affected by 2-hexanone at either level of exposure.

Only rats were examined for effects of 2-hexanone on operant behavior at 10 and 19 weeks of exposure to 100 and 1000 ppm, respectively. For operant behavior, animals were trained on a multiple fixed ratio of 5, fixed interval 3-minute (multi-FR5FI3) schedule for 20–40 days after shaping the bar press response. Once behavior was stable, animals were placed in exposure chambers and tested after exposure. A reduction in response rate in the 1000 ppm group developed by the second week of exposure; however, no effects of 2-hexanone on operant behavior were found with the 100 ppm group (Johnson et al., 1977).

2-Year study: cats

Groups of four domestic shorthair cats were exposed by inhalation to 0, 100, or 330 ppm (0, 410, or 1353 mg/m^3) 2-hexanone (purity not specified) for 6 hours/day, 5 days/week for 2 years (O'Donoghue and Krasavage, 1979). Clinical signs and body weights were monitored (for details, see Section 4.2.2.2). To follow the onset of neuropathy, biopsy specimens were collected from two randomly selected cats in each group at six intervals for the first 9 months of the exposure period. All specimens were taken from alternate hind paws and included 5–6 Pacinian corpuscles and plantar interosseous muscles. Cats were sacrificed at the end of the treatment and underwent gross and histopathologic examinations, and the nervous system was examined microscopically in detail.

No clinical neurological effects attributed to exposure to 2-hexanone were identified. Neuropathologic examination results for the control and low-dose groups were comparable. All cats in the high-dose group showed evidence of neuropathologic changes in the CNS and the PNS at and below the level of the cerebellum and pons (O'Donoghue and Krasavage, 1979). In the PNS, the highest incidences of change occurred in the tibial motor nerve branches to the musculature of the lower leg and then in the tibial nerve itself. In the branches, endoneural space was enlarged with clear fluid. Swelling of giant axons with myelin retraction was evident, and degenerating axons were found infrequently. No changes were found in the dorsal root ganglion cells. In the distal portion of the PNS in the high-dose animals, unusually large preterminal axonal processes were evident, a condition not seen in controls. Examinations of tibial nerve fibers indicated comparable percentages of the four fiber pathology categories (i.e., demyelination, remyelination, swelling, and degenerative fibers) in the control and low-dose groups, but the high-dose group had notable changes in each fiber pathology category except degenerative fibers. Demyelination, remyelination, swelling, and degeneration occurred in 12.3, 3.4, 6.3, and 0.4% of high-dose axons examined (average number of high-dose axons examined = 158), compared with 0, 0.3, 0, and 0.6% of control axons (average number of control axons examined = 84). In the CNS, swollen terminals were found in the posterior cerebellar peduncles, folial white matter, nucleus gracilis, fasciculis gracilis, spino-cerebellar tracts, medullary reticular formation, and all levels of the spinal cord.

4.4.1.3. *Other Routes of Exposure*

11-Month study: dogs (subcutaneous injections)

O'Donoghue and Krasavage (1981) administered 2-hexanone (>97% pure, with 2.9% MiBK and trace quantities of 2-hexanol) by daily subcutaneous (s.c.) injection to purebred male beagles (n = 4) for 11 months. Each dog received 300 mg/kg of the test compound or saline at first once daily and later (time not stated) divided into two equal doses 6 hours apart. All animals developed signs of neurotoxicity to varying degrees. The patellar reflex was lost unilaterally in two of the four dogs receiving 133 grams of 2-hexanone over a period of 96 days. One month later, the patellar reflex was lost bilaterally in both dogs, and clinical signs of neurotoxicity progressed with observations of muscle weakness and difficulty walking. The condition of both dogs gradually reversed during the course of the study, following an unspecified cessation of exposure. In the remaining two dogs, the clinical signs of neurotoxicity appeared later in the study or were apparent at study completion. In one dog, the patellar reflex could not be elicited after it had received 243 grams of 2-hexanone over a period of 156 days. Following cessation of exposure, the dog returned to apparent normality in approximately 56 days. In the remaining dog, no clear neuropathic abnormality was produced, but, although the patellar reflex was present, the response appeared sluggish. There was occasional evidence of hind-limb weakness.

Mean body weights of treated animals were comparable with those of controls, but individual animals showed weight loss or decreased weight gain. Hematology, clinical chemistry, and cerebrospinal fluid analysis were not affected by the treatment. Repeated biopsy examinations of distal peripheral nerves showed typical giant axonal swelling. The biopsy findings paralleled the clinical course except during a recovery phase, where the biopsy continued to be abnormal while the clinical course improved. Electromyographic examination of the treated dogs showed the persistence of abnormalities in two recovering dogs, no abnormalities in one recovering dog, and no abnormalities in the one dog that had appeared clinically normal throughout the study (O'Donoghue and Krasavage, 1981).

90-Day study: hens (intraperitoneal injections)

Abou-Donia et al. (1982) treated five groups of leghorn laying hens (*Gallus gallus domesticus*, n = 3) with daily injections of 2-hexanone (70% 2-hexanone and 30% methyl isobutyl ketone, i.p.) at 100 or 200 mg/kg for 90 days. Hens given a daily 100 mg/kg i.p. injection of 2-hexanone progressed through all successive stages of ataxia; the clinical conditions of two of them improved after treatment was stopped, while the third hen progressed to paralysis and died after 30 days of administration. Daily i.p. injection of 200 mg/kg 2-hexanone produced ataxia with near paralysis (T_4), which progressed to paralysis in one hen. The clinical condition of this hen, however, reverted to grade T_4 after cessation of administration.

Spinal cords from hens given daily i.p. 100 mg/kg injections of 2-hexanone did not exhibit any histopathologic changes. One of these hens, however, showed unequivocal histopathologic changes in the peripheral nerves. The sites of axonal degeneration were accompanied by myelin degeneration, and macrophages were observed containing debris with the staining properties of myelin. Although none of the hens given 200 mg/kg i.p. injections of 2-hexanone showed histopathologic alterations in peripheral nerves, two of these hens developed unequivocal histopathologic lesions in the spinal cord. A longitudinal section from the ventral column of the thoracic spinal cord from one of the hens showed axons with prominent swellings. These swellings have the morphologic configuration of the paranodal swelling that suddenly ends at the nodes of Ranvier. A longitudinal section of the thoracic spinal cord from the other affected hen demonstrated extensive degeneration in the ventral column and a markedly swollen axon and nests of macrophages.

4.4.2. Immunotoxicity Studies

No studies were located regarding immunological effects in humans by any route of exposure to 2-hexanone.

A reduction in total white blood cell counts to 60% of control values ($p < 0.05$), but no changes in differential white cell counts or evidence of bone marrow damage, was found in rats intermittently exposed to 700 ppm 2-hexanone after 8 weeks, during an 11-week study (Katz et

al., 1980). These findings, although inconclusive, suggest that immunological effects may warrant some consideration in future assessments of the potential toxicity of exposure to 2-hexanone.

4.5. OTHER STUDIES

4.5.1. Mechanistic Studies

4.5.1.1. *2-Hexanone and Enzyme Induction*

2-Hexanone and its neurotoxic metabolite 2,5-hexanedione are both effective inducers of microsomal enzyme activities. This can affect the toxicity of other xenobiotics and also can affect the toxicity of 2-hexanone itself (or its precursor, n-hexane) by increasing or decreasing the formation of toxic metabolites.

Nakajima et al. (1991) characterized the CYP450 enzymes in the livers of male Wistar rats that are induced following exposure to 2-hexanone (5 mmol/kg-day), 2,5-hexanedione (5 mmol/kg-day), or phenobarbital (80 mg/kg-day), administered intraperitoneally for 4 days. A control group received an equivalent volume of corn oil vehicle (4 mL/kg). All three treatments caused a statistically significant increase in microsomal protein content and overall CYP450 activity (Table 4-9).

Table 4-9. Effects of 2-hexanone, 2,5-hexanedione, and phenobarbital on microsomal protein and CYP450

Treatment	Body weight (g)	Liver weight (g)	Liver/body weight ratio (%)	Microsomal protein (mg/g liver)	CYP450 (nmol/mg protein)
Control	206 ± 7	6.6 ± 0.2	3.21 ± 0.11	21.5 ± 0.8	0.92 ± 0.002
2-Hexanone	192 ± 6	7.3 ± 0.3[a]	3.80 ± 0.05[a]	25.1 ± 1.5[a]	1.49 ± 0.10[a]
2,5-Hexanedione	184 ± 7[a]	6.4 ± 0.3	3.49 ± 0.07[a]	26.2 ± 1.7[a]	1.62 ± 0.10[a]
Phenobarbital	197 ± 5	7.9 ± 0.4[a]	4.01 ± 0.13[a]	31.5 ± 3.0[a]	2.12 ± 0.19[a]

[a]Significantly different ($p < 0.05$) from control.

Source: Nakajima et al. (1991).

The enzyme activities (i.e., benzene aromatic hydroxylase [CYP2E1], toluene side chain oxidation [CYP2C6/11], EROD [CYP1A1/2], and PROD [CYP2B1/2]) were measured as indicators of CYP450 activity. All three treatments caused a statistically significant increase in the rate of benzene hydroxylation at low (0.2 mM) and high (6.3 mM) concentrations and toluene side chain oxidation at low (0.2 mM) and high (5.0 mM) concentrations. EROD activity was not affected by pretreatment; however, a statistically significant increase in PROD activity was observed with all three treatments. A summary of the results for the CYP450 activity measured with specific substrates is listed in Table 4-10.

Table 4-10. Effect of enzyme inducers on the activities of CYP450-related enzymes in rats exposed to 2-hexanone or 2,5-hexanedione

Treatment	Enzyme activity					
	BAH[a]		TSO[b]		EROD	PROD
	0.2 mM	6.3 mM	0.2 mM	5.0 mM		
Control	0.68 ± 0.09	0.53 ± 0.11	1.87 ± 0.15	8.34 ± 0.67	0.32 ± 0.06	0.11 ± 0.02
2-Hexanone	1.10 ± 0.19[c]	1.76 ± 0.23[c,d]	5.65 ± 0.62[c]	19.07 ± 1.64[c,e]	0.41 ± 0.30	3.68 ± 0.70[c]
2,5-Hexanedione	0.98 ± 0.16[c]	1.57 ± 0.15[c,d]	5.05 ± 0.46[c]	19.98 ± 0.78[c,e]	0.26 ± 0.44	2.92 ± 0.90[c]
Phenobarbital	0.48 ± 0.11[c]	2.80 ± 0.23[c,d]	5.59 ± 0.87[c]	25.36 ± 6.23[c,e]	0.27 ± 0.04	5.22 ± 0.70[c]

[a]BAH = benzene aromatic hydroxylase.
[b]TSO = toluene side-chain oxidase.
[c]Significantly different ($p < 0.05$) from control.
[d]Significant difference ($p < 0.05$) between 0.2 and 6.3 mM of the corresponding group.
[e]Significant difference ($p < 0.05$) between 0.2 and 5.0 mM of the corresponding group.

Source: Nakajima et al. (1991).

Using immunoblotting and immunodetection assays, Nakajima et al. (1991) did not detect CYP4501A1/2 in microsomes from treated and control animals. CYP4502B1/2 was induced by treatment with phenobarbital > 2-hexanone = 2,5-hexanedione. Only trace amounts of CYP4502E1 were detected in phenobarbital-treated rats, whereas 2-hexanone and 2,5-hexanedione both induced this isoform efficiently.

In order to explore the effects of 2-hexanone, 2,5-hexanedione, and phenobarbital on CYP4502B1/2, CYP4502E1, and CYP4502C6/11, Nakajima et al. (1991) performed immunoinhibition analyses of toluene side-chain oxidase (TSO) activity by using monoclonal antibodies directed against each of these CYP450 isoforms. Anti-CYP4502E1 inhibited TSO activity in induced microsomes as follows (values are percent of activity in the absence of anti-CYP4502E1): phenobarbital, 97 ± 2%; 2,5-hexanedione, 79 ± 3%; 2-hexanone, 75 ± 11%; and controls, 65 ± 2%. Anti-CYP4502B1/2 inhibited TSO activity in induced microsomes differently: phenobarbital, 31 ± 4%; 2-hexanone, 65 ± 3%; 2,5-hexanedione, 69 ± 5%; and controls, 99 ± 2%. Anti-CYP4502C6/11 inhibited toluene metabolism in induced microsomes as follows: phenobarbital, 75 ± 5%; 2-hexanone, 69 ± 5%; 2,5-hexanedione, 70 ± 3%; and controls, 23 ± 4%.

Similar studies were performed by Imaoka and Funae (1991). The authors treated male Sprague-Dawley rats (number of rats not provided) with 2-hexanone (purity not stated; 5 mmol/kg, i.p.; dissolved in corn oil) daily for 4 days. This dose was considered a maximum tolerated dose. Control rats were given corn oil only. Hepatic microsomes were isolated, and the activities of CYP450 enzymes were determined against specific substrates (Table 4-11).

Table 4-11. Catalytic activities of CYP450 enzyme activities in rat liver following induction by 2-hexanone

Substrate	Enzyme activity (nmol/min-mg protein)[a]	
	Uninduced control	2-Hexanone-treated
Aminopyrine	2.40 ± 0.50	4.37 ± 0.82b
Aniline	0.283 ± 0.044	0.421 ± 0.070[b]
7-Ethoxycoumarin	3.62 ± 0.13	6.01 ± 1.24b
Testosterone-2α	0.684 ± 0.114	0.431 ± 0.158[c]
Testosterone-2β	0.140 ± 0.039	0.240 ± 0.056[c]
Testosterone-6β	0.959 ± 0.176	1.45 ± 0.341[c]
Testosterone-7α	0.056 ± 0.006	0.062 ± 0.013
Testosterone-15α	0.040 ± 0.007	0.056 ± 0.017
Testosterone-16α	1.09 ± 0.203	1.07 ± 0.347
Testosterone-16β	0.058 ± 0.006	0.250 ± 0.106[c]

[a]Mean ± SD, number of rats not provided.
[b]Significantly different from control, $p < 0.01$.
[c]Significantly different from control, $p < 0.05$.

Source: Imakoa and Funae (1991).

The content of total CYP450 measured photometrically did not change much with treatment. However, the activities of aminopyrine N-demethylase, aniline hydroxylase, and 7-ethoxycoumarin O-dealkylase were increased by pretreatment with 2-hexanone. Testosterone 2β-, 6β-, and 16β-hydroxylase activities were significantly increased, whereas the 2α-hydroxylase activity was decreased by treatment with 2-hexanone. The authors also measured changes in the levels of 11 forms of CYP450 in hepatic microsomes caused by treatment with 2-hexanone (Table 4-12).

The level of CYP4502C11, a male-specific form, was decreased by treatment with 2-hexanone in parallel with a decrease in testosterone 2α-hydroxylase activity, which is catalyzed by this isozyme (Kamataki et al., 1983) (cf. Table 4-12). CYP4502A2 is a constitutive testosterone 6β-hydroxylase; the increase in the level of this isoform explained the increase in testosterone 6β-hydroxylase activity, shown in Table 4-11. CYP4502B1 and 2B2 are typical phenobarbital-inducible forms. The level of CYP4502B1 in the hepatic microsomes of control rats was very low, and CYP4502B2 was detected at a slightly higher level. Both forms were strongly induced in 2-hexanone-treated rats. These results reflected the increases in testosterone 16β-hydroxylase and aminopyrine N-demethylase activities of hepatic microsomes (cf. Table 4-11) and suggest that 2-hexanone is a phenobarbital-type inducer.

Table 4-12. Changes in CYP450 levels following treatment with 2-hexanone

CYP450 isoform	CYP450 content (pmol/mg protein)[a]	
	Uninduced control	2-Hexanone-treated
2A1	7.0 ± 1.3	7.9 ± 1.5
2A2	10.4 ± 2.3	11.7 ± 2.8
2B1	<0.5	44.3 ± 9.4c
2B2	3.8 ± 1.2	29.3 ± 6.2c
2C6	52.1 ± 17.7	93.4 ± 16.9[b]
2C7	21.9 ± 3.3	24.8 ± 5.8
2C11	457.0 ± 52.6	343.8 ± 46.3[c]
2C13	171.4 ± 35.8	159.7 ± 24.5
2E1	49.8 ± 9.6	102.6 ± 14.8[b]
4A3	17.6 ± 3.2	16.7 ± 2.8

[a]Mean ± SD, number of rats not provided.
[b]Significantly different from control, $p < 0.01$.
[c]Significantly different from control, $p < 0.05$.

Source: Imakoa and Funae (1991).

Imaoka and Funae (1991) determined that the inducibility of CYP4502B1 and 2B2 was strongly correlated with the hydrophobicity (as estimated by the octanol/water partition coefficients, log K_{ow}) of several 2-hexanone homologues: 2-hexanone (1.38) > methyl n-propyl ketone (0.91) > MEK (0.29) > acetone (−0.24). In contrast, the inducibility of P4502E1 was not dependent on hydrophobicity. Each of the aforementioned chemicals, at equimolar concentrations, induced CYP4502E1 to a similar extent, approximately twofold, while acetone, a prototypical inducer of CYP2E1, induced this isoform approximately threefold.

Based on studies of 2-hexanone and the pesticide O-ethyl O-4-nitrophenyl phenylphosphonothioate (EPN) in hens, Abou-Donia et al. (1991, 1985) speculated that the potentiation of the neurotoxic effects of 2-hexanone by EPN may be due to induction of hepatic microsomal CYP450 by EPN with increased production of 2,5-hexanedione (Abou-Donia et al., 1991, 1985a). Similarly, MEK may also potentiate the toxicity of 2-hexanone through induction of CYP450 as MEK but not 2-hexanone and has been shown to decrease hexobarbital sleep time in rats (Couri et al., 1977). While MEK has been shown to potentiate the toxicity of 2-hexanone in rats (Saida et al., 1976), Shibata et al. (2002) have demonstrated that MEK depresses the metabolism of n-hexane in human volunteer subjects. If the metabolic pathways of 2-hexanone, as detailed in Section 3.3 and Figure 3-1, are common in humans and animals and MEK depresses the metabolism of n-hexane but increases the metabolism of 2-hexanone, then the step in 2-hexanone metabolism that MEK likely affects is the ω-1-oxidation to 5-hydroxy-2-hexanone. While no specific CYP450 isoenzymes have been implicated and the mechanisms are not fully elucidated, it appears that 2-hexanone has the ability to influence its own metabolism via effects on CYP450 enzymes that need more research to be fully understood.

It should be noted that, like 2-hexanone, MiBK, a common contaminant in the formulation of the 2-hexanone, has the potential to act as a CYP450 inducer. However, the 3.2% concentration of MiBK in 96% pure formulations of 2-hexanone, as reported by O'Donoghue et al. (1978), may not have a significant impact on the toxicity of 2-hexanone. To determine whether the concentration of MiBK as a contaminant may have altered the observed toxicity of 2-hexanone, other studies were evaluated that used MiBK as a test article. In a 13-week gavage study, 30 male and female Sprague-Dawley rats were treated daily with 0, 50, 250, or 1,000 mg MiBK/kg-bw (MAI, 1986). At the middle and high doses, adverse effects were observed in the liver and kidney, which progressed in severity in the high-dose animals. No treatment-related effects of any kind were observed at 50 mg/kg-day. The Carnegie-Mellon Institute of Research (1977) conducted a 120-day drinking water study with 1.3% MiBK, using female HLA Wistar rats. The authors estimated the dosage to be 1040 mg/kg-day. The only statistically significant finding was increased mean absolute and relative kidney weights in treated rats compared with controls. Histopathological examination revealed renal tubular cell hyperplasia in only one of five of the treated rats. No exposure-related histopathological changes were found in other organs. Based on the foregoing, it can be concluded that the dosage of MiBK received as an impurity in the study by O'Donoghue et al. (1978) did not contribute to the observed 2-hexanone-related effects. O'Donoghue et al. (1978) did not observe adverse effects in the kidney or liver of treated animals, despite these organs being the target organs of toxicity in experimental studies with MiBK from both the oral and inhalation routes (U.S. EPA, 2003a).

4.5.1.2. *2-Hexanone as a Sulfhydryl Reagent*

Both 2-hexanone and its metabolite 2,5-hexanedione can inhibit sulfhydryl-containing enzymes such as fructose-6-phosphate kinase and glyceraldehyde-3-phosphate dehydrogenase (enzymes in the pentose phosphate pathway [oxidative phase] and glycolytic pathway [nonoxidative phase], respectively) (Sabri, 1984; Sabri et al., 1979). Both of these chemicals inhibited fructose-6-phosphate kinase from rabbit muscle or rat brain homogenates; in each case, 2,5-hexanedione was the far more potent inhibitor (Sabri et al., 1979). Preincubation with dithiothreitol protected this enzyme from inhibition, which suggests that these compounds interfere with the sulfhydryl groups required for fructose-6-phosphate kinase activity. However, dithiothreitol could not restore enzyme activity after these compounds had been added. In addition, fructose-6-phosphate kinase activity was also reduced in brain homogenates of rats that had received 2,5-hexanedione at 0.5% in their drinking water for 10–12 weeks (Sabri et al., 1979). Glyceraldehyde-3-phosphate dehydrogenase from rabbit muscle (purified to crystalline state) was also inhibited in vitro by both compounds; in this case, 2-hexanone was the more potent inhibitor (Sabri, 1984). Levels of ATP were reduced in cat sciatic nerves treated with 2,5-hexanedione (Sabri, 1984), possibly an outcome of glyceraldehyde-3-phosphate

dehydrogenase inhibition. 2-Hexanone was found to irreversibly inhibit rat brain and rabbit muscle creatine kinase and mouse brain adenylate kinase (Lapin et al., 1982).

4.5.1.3. *Studies Exploring the Development of Neuropathy*

Groups of 12 Sprague-Dawley rats (sex unspecified) were continuously exposed (24 hours/day) via inhalation to 0, 225, or 400 ppm (0, 922.5, or 1,640 mg/m^3) 2-hexanone (purity not stated) for 16–66 days (Saida et al., 1976). Rats exposed to 400 ppm were sacrificed at 16, 28, and 42 days, and those exposed to 225 ppm were sacrificed at 16, 25, 35, 55, and 66 days to study the sequence of morphological changes. Paralysis was observed after 66 and 42 days at the low and high concentrations, respectively. Neuropathologic changes preceded paralysis and were observed at the initial sacrifice after 16 days of exposure. Two distinct changes occurred quite early and close to the same time: the first to appear was an increase in the number of neurofilaments and the other was an in-pouching of the myelin sheath. In animals exposed to 400 ppm, the first observable change at 16 days was, in larger diameter nerve fibers, a two- to threefold increase in the number of neurofilaments. As the duration of exposure lengthened and the number of neurofilaments increased, several interrelated morphological observations were made. In teased nerve fiber preparations, swelling of the axons could be seen frequently in the paranodal area and less often at focal sites along the internodal segment. High numbers of nerve fibers with in-pouching of the myelin sheath were found per mm^2 of nerve fascicle, increasing with time after administration of the high concentration. A summary of the comparative sequential clinical and pathological observations is presented in Table 4-13.

Table 4-13. Clinical and pathological observations with time of exposure to 2-hexanone in rats

	2-Hexanone exposure						
	400 ppm			225 ppm			
Days exposed	16	28	42	16	25	35	55
Clinical findings	N[a]	N	P[b]	N	N	N	N
In-pouchings (#/mm^2)	6	142	499	23	46	92	86
Denuded fibers (#/mm^2)	0	4	11	0	0	1	2
Swollen axons >11 µm (#/300 fibers)	0	1	3	0	0	0	0

[a]N = normal.
[b]P = paralyzed.

Source: Saida et al. (1976).

The anterior horn cells, nerve roots, nerve trunks, intramuscular nerves, and motor end plates were studied sequentially to determine the site with the earliest pathological involvement. In animals exposed for 16 days to 225 ppm, no abnormalities were found in the motor end plates

or intramuscular nerves of the intrinsic foot muscles. Only after prolonged exposure, 66 days, did the authors find typical signs of denervation in the motor end plates. These end plates showed atrophic axon terminals with Schwann cell processes interposed between the nerve terminal and postsynaptic membrane. There was also a loss of secondary synaptic clefts.

Anterior horn cells and dorsal root ganglion cells were also examined at various intervals of exposure. No changes were observed in these cell bodies, even after typical changes were seen in the main trunk of the sciatic nerve. Specifically, no abnormalities were seen that would suggest an increase in neurofilaments in these cell bodies, and no cells were observed undergoing chromatolysis.

4.5.2. Genotoxicity Studies

Mayer and Goin (1994) tested the ability of 2-hexanone to induce chromosome loss in strain D61.M of *Saccharomyces cerevisiae*. 2-Hexanone, alone or in combination with acetone and MEK, induced only a marginally positive chromosome loss (Mayer and Goin, 1994).

No data were identified for the mutagenicity of 2-hexanone with in vitro cytogenetic tests or in vivo tests.

4.5.3. Structure-Activity Relationships

A large body of toxicological information is available on n-hexane, a compound that is metabolized to 2-hexanone, on MiBK (a branched-chain homologue of 2-hexanone), and on MEK. These compounds have been reviewed in previous IRIS assessments, and a summary of the reference values derived for each is presented in Table 4-14. n-Hexane is the only compound of the above three that is also capable of producing the peripheral neuropathy similar to that observed in humans or animals exposed to 2-hexanone. Neither MiBK nor MEK can give rise to the neurotoxic metabolite 2,5-hexanedione.

Table 4-14. Summary of the toxicities of n-hexane, MiBK, and MEK

Chemical	Experimental dose	Critical effect	Reference value	Reference
n-Hexane (CASRN 110-54-3)	NOAEL[a]: 1762 mg/m^3	Peripheral neuropathy (decreased MCV at 12 weeks)	RfC: 7×10^{-1} mg/m^3	U.S. EPA (2005c)
Methyl isobutyl ketone (CASRN 108-10-1)	NOAEL: 1229 mg/m^3	Reduced fetal body weight, increased fetal death, and skeletal variations in mice and rats	RfC: 3 mg/m^3	U.S. EPA (2003a)
Methyl ethyl ketone (CASRN 78-93-3)	LEC[b]: 5202 mg/m^3	Developmental toxicity (skeletal variations)	RfC: 5 mg/m^3	U.S. EPA (2003b)
	NOAEL: 594 mg/kg-day (0.3% 2-butanol)	Decreased pup body weight	RfD: 0.6 mg/kg-day	

[a]NOAEL = no-observed-adverse-effect level.
[b]LEC = lowest effective concentration.

4.5.4. Potentiation and Other Interaction Studies

4.5.4.1. *Methyl Ethyl Ketone*

In a study of chemical interaction, Saida et al. (1976) exposed rats of unspecified sex (12/group) continuously, 24 hours/day, to 225 ppm (922 mg/m^3) 2-hexanone, 1125 ppm (3318 mg/m^3) MEK, or a combined exposure of 225 ppm (922 mg/m^3) 2-hexanone and 1125 ppm MEK for up to 66 days. No signs of neurotoxicity were observed in the MEK-exposed rats. Paralysis occurred earlier in the rats exposed to the mixture compared with rats exposed to 225 ppm 2-hexanone alone. In addition, an elevated severity of neuropathy, in the form of increased swollen axons, denuded fibers, and in-pouching of myelin sheaths, was observed histologically in the rats coexposed to MEK and 2-hexanone. Thus, MEK appeared to potentiate the toxicity of 2-hexanone. Yu et al. (2002) showed that the potentiating effect of MEK on n-hexane-induced neurotoxicity was due to an inhibitory effect of MEK on phase II biotransformation of 2,5-hexanedione (Yu et al., 2002). Since n-hexane is a precursor to 2-hexanone, and both compounds form the highly toxic 2,5-hexanedione, it is likely that the results of Yu et al. (2002) are applicable to coexposure studies with MEK and 2-hexanone.

As a test of in vivo enzyme induction, groups of five male Wistar rats were continuously exposed via inhalation to 225 ppm 2-hexanone, 750 ppm MEK, or the combination of 225 ppm 2-hexanone and 750 ppm MEK for 7 days (Couri et al., 1977). Subsequently, the animals were given sodium hexobarbital (100 mg/kg, i.p.), a substrate for phenobarbital-inducible CYP450 isoenzymes (Adedoyin et al., 1994; Knodell et al., 1988), and sleep time was measured. The average hexobarbital-induced sleep time of 2-hexanone-treated rats was comparable to that of controls (24.8 vs. 26.0 minutes); however, the sleep times in MEK and 2-hexanone/MEK-exposed rats were significantly ($p < 0.05$) less than in controls, 13.0 and 16.0 minutes, respectively. In a study by O'Donoghue and Krasavage (1979), sodium pentobarbital-induced sleep time was increased in 2-hexanone-treated cats.

4.5.4.2. *Chloroform*

Oral administration of 2-hexanone, followed by i.p. administration of chloroform to rats, resulted in a variety of hepatic and renal effects, including decreased hepatic glutathione levels, increased plasma levels of glutamic pyruvic transaminase and blood urea nitrogen, and degeneration and necrosis of hepatic and renal tissue (Hewitt et al., 1990, 1987; Brown and Hewitt, 1984; Branchflower and Pohl, 1981). Similarly, oral administration of both 2-hexanone and chloroform to rats resulted in altered permeability of the biliary tree (Hewitt et al., 1986). In these studies, some or no effect on the endpoints of interest was observed after administration of 2-hexanone or chloroform alone; administration of both substances resulted in statistically significant and dramatic changes in these effects. The authors speculated that 2-hexanone potentiated the hepatic toxicity of chloroform by decreasing glutathione levels and by increasing the metabolism of chloroform to the potent hepatotoxicant phosgene.

4.5.4.3. *O-Ethyl O-4-Nitrophenyl Phenylphosphonothioate*

2-Hexanone has been shown to potentiate the neurotoxic effects of EPN. In hens, dermal or inhalation exposure to 2-hexanone in combination with dermal application of the organophosphate pesticide EPN has resulted in earlier onset and far more severe clinical and histological manifestations of neurotoxic effects than with either chemical exposure alone (Abou-Donia et al., 1991, 1985a). The authors speculated that this potentiation effect may have been due to induction of hepatic microsomal CYP450 by EPN, leading to increased metabolism of 2-hexanone to its neurotoxic metabolite 2,5-hexanedione. An alternate explanation is that local trauma to the nervous tissue produced by 2-hexanone and EPN might increase vascular permeability and thus increase the entry of these compounds and their metabolites from circulation.

4.6. SYNTHESIS AND EVALUATION OF MAJOR NONCANCER EFFECTS

4.6.1. Oral

There are no studies that have examined the possible association between oral exposure to 2-hexanone and noncancer health effects in humans. There are six subchronic or chronic studies in which 2-hexanone was administered orally to experimental animals. These include a 90-day gavage study in hens, 90-day and 40-week gavage studies in rats, 120-day and 13-month drinking water studies in rats, and a 24-week drinking water study in guinea pigs. These studies demonstrate that the nervous system is the target organ for 2-hexanone toxicity following oral exposure. For example, O'Donoghue et al. (1978), a 13-month drinking water study using COBS CD(SD)BR rats, described the characteristic neuropathologic evidence of giant axonal neuropathy in 80% of animals at the lowest dose tested (143 mg/kg-day).

There are data suggesting that the principal metabolite of 2-hexanone, 2,5-hexanedione, is responsible for the neurotoxicity associated with oral exposure to 2-hexanone. For example, Krasavage et al. (1980) compared the neurotoxicity of 2-hexanone with that of n-hexane, 5-hydroxy-2-hexanone, 2,5-hexanediol, and 2-hexanol by administering equimolar doses of each chemical by gavage to five male COBS CD(SD)BR rats/group, 5 days/week for 90 days. Judged by the time required for the rats to develop hind-limb paralysis, 2,5-hexanedione had a higher neurotoxic potency than 2-hexanone.

In summary, the chronic and subchronic studies conducted with rats, hens, and guinea pigs provide ample evidence that the nervous system is the target of toxicity following oral exposure to 2-hexanone. A summary of the oral studies with 2-hexanone is provided in Table 4-15.

Table 4-15. A synopsis of oral toxicity studies with 2-hexanone

Species, strain	Group size (sex)	Dosage; duration; purity	Effects at LOAEL	NOAEL[a] (mg/kg-day)	LOAEL[a] (mg/kg-day)	Reference
Adult leghorn laying hens (*Gallus gallus domesticus*)	3/group (female)	100 mg/kg, gavage; 7 days/week for 90 days; technical grade containing 70% 2-hexanone and 30% MiBK	Mild ataxia at 12 ± 1 days with progression to severe ataxia by 50 ± 1 days	Not identified	100	Abou-Donia et al., 1982
Rat, COBS/ CD(SD)BR	6/group (male)	660 mg/kg, gavage; 5 days/week for 90 days; 2-hexanone containing 3.2% MiBK and 0.7% unknown contaminants	Clinical and histological findings of neuropathy at 55.8 ± 4.3 days	Not identified	660	Krasavage et al. (1980)
Rat, Wistar	5/group (female)	0, 0.65, or 1.3% (0, 480, or 1010 mg/kg-day) in drinking water; 120 days; purity not stated	Mild atrophy affecting skeletal muscles of the hind limbs in 2 of 5 animals examined	Not identified	480	Homan et al. (1977)
Guinea pig, English short hair	5/group (sex not stated)	0, 0.1, or 0.25% (0, 97, or 243 mg/kg-day) in drinking water; 24 weeks; purity not stated	Decreased pupillary response to light stimulus	Not identified	97	Abdel-Rahman et al. (1978)
Rat, Wistar	6/group (male)	400 mg/kg-day, gavage; 40 weeks; 2-hexanone 98% pure, contaminants not characterized	Hind-limb weakness from the 17th–28th week, with improvement thereafter	Not identified	400	Eben et al. (1979)
Rat, COBS/ CD(SD)BR	10/group (male)	0, 0.25, 0.5, or 1.0% (0, 143, 266, or 560 mg/kg-day) in drinking water; 13 months; 2-hexanone containing 3.2% MiBK and 0.7% unknown contaminants	Clinical neurological deficits	143	266	O'Donoghue et al. (1978)
			Neuropathologic evidence of myofibrillar atrophy of the calf muscle in 1/10 animals	143	266	
			Neuropathologic evidence of myofibrillar atrophy of the quadriceps muscle in 2/10 animals	143	266	
			Neuropathologic evidence of giant axonal neuropathy in 8/10 animals	Not identified	143	

[a]No-observed-adverse-effect levels (NOAELs) and lowest-observed-adverse-effect levels (LOAELs) determined by 2-hexanone assessment authors

4.6.2. Inhalation

Several studies have established associations between inhalation exposure to 2-hexanone and human health effects. Specifically, occupational studies and case reports suggest that inhalation exposure to 2-hexanone in humans may be associated with neurotoxicity. For example, a cross-sectional study of employees at a coated fabrics plant was conducted when it was noted that six workers from the print department had developed severe peripheral neuropathy soon after the plant began phasing in the use of 2-hexanone (Allen et al., 1974; Billmaier et al., 1974). Definite signs, symptoms and electrodiagnostic findings of peripheral neuropathy were confirmed in 68 out of 192 employees. The prevalence of peripheral neuropathy was clearly increased in jobs with evident exposure to 2-hexanone vapors and with time spent at work sites with 2-hexanone exposure.

Mallov (1976) reported one probable and two definite cases of 2-hexanone-induced peripheral neuropathy that were identified during an investigation of 26 painters. Similar to the studies reported above, (Allen et al., 1974; Billmaier et al., 1974), neuropathy was observed in the painters when the formulation of paint solvents was changed from MEK and methyl isoamyl ketone, both not neurotoxic, to 2-hexanone (Mallov, 1976). In another case of occupational exposure to 2-hexanone, symmetrical polyneuropathy was reported in a furniture finisher (Davenport et al., 1976). Six months prior to the onset of the worker's illness, 2-hexanone had been substituted for MiBK. A similar progressive distal extremity weakness developed in a coworker of the patient, which also improved following the coworker's removal from contact with lacquer products.

The toxicity of 2-hexanone via inhalation was studied extensively in experimental animals. As with oral exposures, the target organ for toxicity following inhalation exposure to 2-hexanone was the nervous system, and the most sensitive measures of intoxication were histopathological and clinical findings of peripheral neuropathy. Numerous studies are available, with duration varying from subchronic to chronic, in many different test species, including monkeys, rats, and cats. A summary of the available inhalation studies with 2-hexanone is provided in Table 4-16.

Table 4-16. Synopsis of animal inhalation toxicity studies with 2-hexanone

Species, strain	Number (sex)	Concentration; duration; purity	Effects at LOAEL	NOAEL[a] (mg/m^3)	LOAEL[a] (mg/m^3)	Reference
Developmental study						
Rat, pregnant F-344	25/group (female)	0, 1000, or 2000 ppm (0, 4100, or 8200 mg/m^3); day 0 of gestation through day 21, 6 h/day, 7 d/wk; purity not stated	Hyperactivity in behavioral testing	Not identified	4100	Peters et al. (1981)
Subchronic exposure studies						
Rat, strain not stated	9/group (sex not stated)	0 or 200 ppm (0 or 819 mg/m^3); 6 weeks, 8 h/d, 5 d/wk; purity not stated	Axonal hypertrophy, beading and degeneration of sciatic nerve	Not identified	819	Duckett et al. (1974)
Rat, Wistar	20/group (sex not stated)	40 ppm (164 mg/m^3); 22–88 days, 8h/d, 5d/wk; purity not stated	Peripheral neuropathy (demyelination of sciatic nerve) in 3/20	164	205	Duckett et al. (1979)
Rat, Sprague-Dawley	12/group (sex not stated)	0, 225, or 400 ppm (0, 922.5, or 1640 mg/m^3); 42–66 days, 24 h/d, 7 d/wk; purity not stated	Increased number of fibers with in-pouchings per mm^2 of nerve fascicle	Not identified	922.5	Saida et al. (1976)
Rat, COBS/ CD(SD) BR	5/group (male)	0 or 700 ppm (0 or 2870 mg/m^3); 81 days, 72 h/wk; 96.1% pure with 3.2% MiBK and 0.7% unidentified contaminants	Severe neuropathy consisting of difficulty extending hind limbs and a flat-footed gait with feet splayed in 5/5 at 71 ± 9 days	Not identified	2870	Katz et al. (1980)
Adult leghorn laying hens (*Gallus gallus domesticus*)	5/group	0, 10, 50, 100, 200, or 400 ppm (0, 41, 205, 410, 820, or 1640 mg/m^3); 90 days (continual exposure); technical grade containing 70% 2-hexanone and 30% MiBK	Mild ataxia (27 $\pm$ 2 days) progressing to severe ataxia/near paralysis (89 $\pm$ 1 days)	41	205	Abdo et al. (1982)
Rat, Sprague-Dawley	4/group (sex not stated)	0 or 400 ppm (0 or 1640 g/m^3) (adjusted); 12 weeks, 24 h/d, 7 d/wk; purity not stated	Dragging of hind limbs at 11–12 weeks	Not identified	1640	Mendell et al. (1974)
Domestic Chickens	5/group (not stated)	0 or 200 ppm (0 or 820 mg/m^3), adjusted to 100 ppm (410 mg/m^3)(time not stated); 12 weeks (24 h/d, 7 d/wk); purity not stated	Inability to stand on legs at 4–5 weeks	Not identified	820	Mendell et al. (1974)
Cat, domestic, strain not stated	4/group (sex not stated)	0 or 400 ppm (1640 mg/m^3) (adjusted); 12 weeks, 24 h/d, 7 d/wk; purity not stated	Dragging of hind limbs and forelimb weakness at 5–8 weeks	Not identified	1640	Mendell et al. (1974)

Table 4-16. Synopsis of animal inhalation toxicity studies with 2-hexanone

Species, strain	Number (sex)	Concentration; duration; purity	Effects at LOAEL	NOAEL[a] (mg/m^3)	LOAEL[a] (mg/m^3)	Reference
Rat, Wistar	20/group (sex not stated)	50 ppm (205 mg/m^3); 13 weeks, 8h/d, 5 d/wk; purity not stated	Peripheral neuropathy (demyelination of sciatic nerve) in 3/20	164	205	Duckett et al. (1979)
Chronic exposure studies						
Rat, strain not stated	6/group (sex not stated)	0 or 1300 ppm (5325 mg/m^3); 4 months, 6 h/d, 5d/w; purity not stated	Nerve fiber degeneration in the peripheral nerves, spinal cord, medulla, and cerebellum	Not identified	5325	Spencer et al. (1975)
Rat, Wistar	40/group (sex not stated)	50 ppm (205 mg/m^3); 6 months, 8h/d, 5 d/wk; purity not stated	Widespread demyelination of the sciatic nerve in 32/40	Not identified	205	Duckett et al. (1979)
Rat, Sprague-Dawley	6/group (male)	0 or 100 ppm (0 or 410 mg/m^3); 6 months, 22 h/d, 7 d/wk; 96.66% pure, impurities not characterized	Giant axonal swelling of peripheral nerves after 4 months	Not identified	410	Egan et al. (1980)
Rat, Sprague-Dawley	10/group (male)	0, 100, or 1000 ppm (0, 410, or 4100 mg/m^3); 10 months, 6 h/d, 5d/wk; commercial grade, impurities not stated	Decreased motor conduction velocity between treated and control animals beginning at 29 weeks	Not identified	410	Johnson et al. (1977)
Monkey, *Macaca fascicularis*	8/group (male)	0, 100, or 1000 ppm (0, 410, or 4100 mg/m^3); 10 months, 6 h/d, 5d/wk; commercial grade, impurities not stated	Decreased motor conduction velocity at 9 months (right sciatic-tibial nerve, right ulnar nerve)	Not identified	410	Johnson et al. (1977)
Rat, Sprague-Dawley	18/group (male)	0, 100, or 330 ppm (0, 410, or 1353 mg/m^3); 72 weeks, 6h/d, 5d/wk; purity not stated	Severe polyradiculoneuritis in the lumbar and sacral spinal nerves and roots and the sciatic and tibial nerves in one rat	410	1353	Krasavage and O'Donoghue (1977)
Cat, domestic shorthair	4/group (female)	0, 100, or 330 ppm (0, 410, or 1353 mg/m^3); 2 years (6h/d, 5d/wk); purity not stated	Giant axonal neuropathy of the spinal cord and peripheral nerve in 4/4	410	1353	O'Donoghue and Krasavage (1979)

[a]No-observed-adverse-effect levels (NOAELs) and lowest-observed-adverse-effect levels (LOAELs) determined by 2-hexanone assessment authors.

4.6.3. Mode-of-Action Information

Exposure to 2-hexanone in humans and experimental animals demonstrates that the nervous system is the target organ of toxicity, regardless of the route of exposure. The toxicity is attributed to the neurotoxic metabolite 2,5-hexanedione. A strong relationship has been noted between the concentration of 2,5-hexanedione in the urine and the onset of neuropathic symptoms (Eben et al., 1979). Similarly, 2,5-hexanedione has been described as eliciting severe neurotoxic symptoms following oral, dermal, or i.p. administration to hens and oral administration to rats (Abou-Donia et al., 1985a; Abdo et al., 1982; Krasavage et al., 1980).

Current research supports a mode of action for γ-diketones, such as the 2-hexanone metabolite 2,5-hexanedione, which involves the covalent cross-linking of neuronal macromolecules with proteins as the primary target. The result is axonal swelling, specifically of giant axons, that ultimately ends in retrograde degeneration of the axon. 2,5-Hexanedione is an electrophilic species that reacts with nucleophilic sites of proteins via a substitution or addition reaction, with the subsequent formation of a covalent bond (Lopachin and Decaprio, 2005). Although 2,5-hexanedione has been shown to react with sulfhydryl groups of enzymes (Section 4.5.1.2), the compound causes distal axonopathy by covalent reaction with nucleophilic lysine ε-amine groups to form 2,5-dimethylpyrrole adducts with neurofilaments and other proteins (LoPachin et al., 2005, 2004). Oxidation of the pyrrole moiety with molecular oxygen can generate a cation intermediate that can undergo further reactions with amino- or sulfhydryl groups. This results in the development of neurofilament aggregates in the distal, subterminal axon that, as they grow larger, form massive swellings, often just proximal to the nodes of Ranvier (Graham, 1999).

One of the major hypotheses related to the mechanism of neurotoxicity of 2,5-hexanedione is covalent binding with axonal components of nerve tissue. In vitro studies in which 2,5-hexanedione was incubated with proteins demonstrated that this compound binds to the lysine ε-amino group, resulting in the formation of the substituted pyrrole adduct ε-N-(2,5-dimethylpyrrole)norleucine (DeCaprio et al., 1982). Covalent binding of 2,5-hexanedione with axonal components leading to pyrrole formation and protein cross-linking was hypothesized as a possible initiation step leading to axonal degeneration and thus may account for the neurotoxic effects observed with exposure to γ-diketones in general (DeCaprio et al., 1988; DeCaprio et al., 1982). In vivo pyrrole formation was confirmed by the demonstration of ε-N-(2,5-dimethylpyrrole)norleucine in the hydrolyzed serum of a hen that had received 2,5-hexanedione at 200 mg/kg-day for two weeks (DeCaprio et al., 1982). The proposed mechanism for 2,5-hexanedione in the development of progressive sensorimotor distal axonopathy is presented in Figure 4-1.

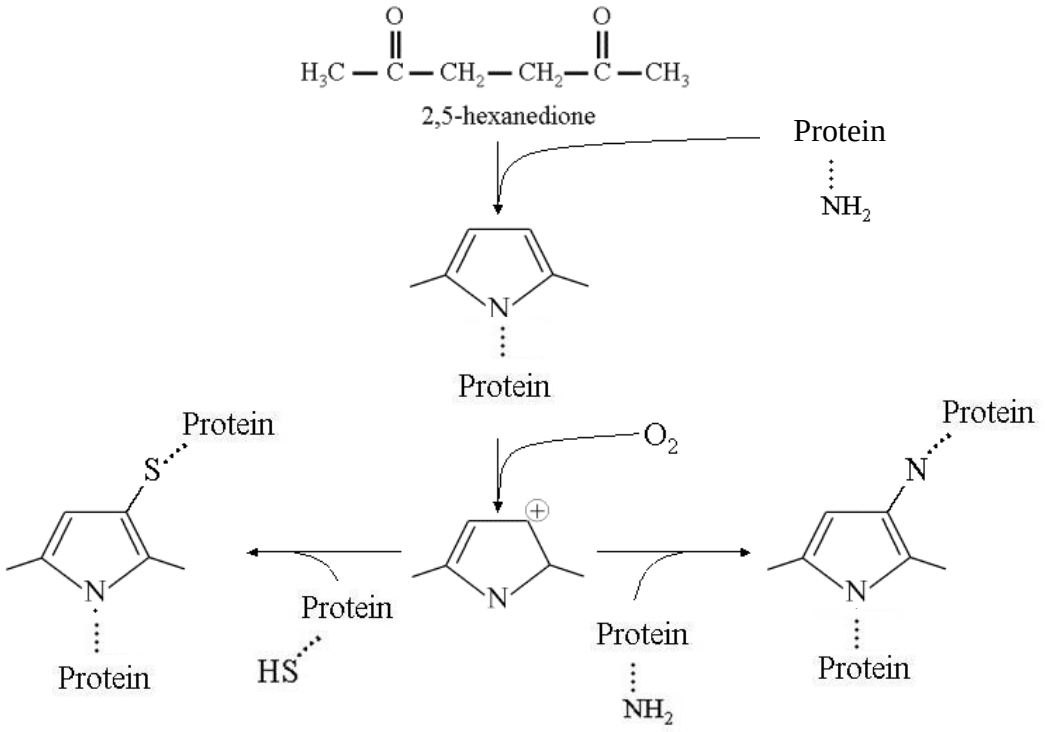


Figure 4-1. Proposed mechanism for 2,5-hexanedione-induced axonopathy.

Note: γ-Diketones, such as 2,5-hexanedione, react with amino groups in all tissues to form pyrroles. The pyrrole moiety can undergo further oxidation reactions with amino- or sulfhydryl groups. This results in the development of neurofilament aggregates (in the distal, subterminal axon), which, as they grow larger, form massive swellings of the axon.

Source: Adapted from DeCaprio et al. (1988, 1982).

4.7. WEIGHT-OF-EVIDENCE EVALUATION AND CANCER CHARACTERIZATION

4.7.1. Summary of Overall Weight of Evidence

Under EPA's *Guidelines for Carcinogen Risk Assessment* (U.S. EPA, 2005a), there is "inadequate information to assess the carcinogenic potential" of 2-hexanone. Specifically, there are no animal carcinogenicity studies available that examine exposure to 2-hexanone, and there are no studies available that assert a genotoxic potential of 2-hexanone. The available occupational studies do not present evidence for any carcinogenic action of 2-hexanone and are limited by frequent coexposure to other chemicals (e.g., MEK).

4.8. SUSCEPTIBLE POPULATIONS AND LIFE STAGES

4.8.1. Possible Childhood Susceptibility

The susceptibility of the developing brain is based on the timing of neuronal development, the rapid growth that occurs in the third trimester and early infancy, and the lack of a protective barrier early in life (Costa et al., 2004). In the cerebellum, Purkinje cells develop early, weeks 5–7 in humans, whereas granule cells are generated much later, gestational weeks

24–40 in humans. The developing brain is distinguished by the absence of a blood-brain barrier. The development of this barrier is a gradual process, beginning in utero and complete at approximately 6 months of age. Because the blood-brain barrier limits the passage of substances from blood to brain, in its absence, toxic agents can freely enter the developing brain. Since Purkinje-cell degeneration has been observed with adult rats exposed to high levels of 2,5-hexanedione, infants may be at an increased risk for this type of damage at lower levels of exposures, due to the incomplete maturation of the blood-brain barrier (Hernandez-Viadel et al., 2002). However, this would depend on the capacity of infants and small children to bioactivate 2-hexanone to 2,5-hexanedione.

Metabolism of 2-hexanone may vary between children and adults due to differences in the development and maturity of phase I and phase II enzymes (Johnsrud et al., 2003). Studies indicate that the mode of action of 2-hexanone toxicity involves the metabolism to a more toxic metabolites, namely 2,5-hexanedione. Several enzymes, such as CYP2E1, CYP2B1/2, and CYP2C6/11, are inducible following administration of 2-hexanone in animal models (Imaoka and Funae 1991; Nakajima et al., 1991); however, the individual isoforms involved in its metabolism have not been fully elucidated. Toftgard et al. (1986) found that the formation of 2,5-hexanediol from 2-hexanol was catalyzed by a CYP isozyme different from CYP2B and present in liver but not in lung microsomes. The authors concluded that 2-hexanol must be transported to the liver before the neurotoxic metabolite 2,5-hexanedione can be formed (Toftgard et al., 1986). Because of this, changes in CYP protein levels and phase II enzymes during development may likely have an impact on susceptibility to 2-hexanone. As mentioned above, the possible susceptibility of 2-hexanone may be influenced by life stage, but there are few studies to confirm the impact and severity of such exposure. Thus, the evidence of possible childhood susceptibility is inconclusive.

4.8.2. Possible Gender Differences

Evaluations of human occupational exposures have not provided evidence that 2-hexanone acts in a gender-specific way. Most animal studies also have not brought forth strong evidence of a sex-specific action of 2-hexanone. However, it should be mentioned that in a few rat studies 2-hexanone appeared to affect the male reproductive system (Katz et al., 1980; Krasavage et al., 1980; O'Donoghue et al., 1978).

5. DOSE-RESPONSE ASSESSMENTS

5.1. ORAL REFERENCE DOSE (RfD)

The RfD is an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily oral exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime. It can be derived from a no-observed-adverse-effect level (NOAEL), lowest-observed-adverse-effect level (LOAEL), or benchmark dose (BMD), with uncertainty factors generally applied to reflect limitations of the data used.

5.1.1. Choice of Principal Study and Critical Effect—with Rationale and Justification

The 13-month drinking water study (10 animals/dose/sex) conducted by O'Donoghue et al. (1978) is the most suitable study for deriving a 2-hexanone RfD assessment Five other subchronic studies are available and are considered as supporting studies. Of these five studies, Krasavage et al. (1980) and Eben et al. (1979) both observed neurotoxicity after administration of single doses of 2-hexanone via gavage. These two studies were not considered as principal studies because only single relatively high doses were administered and gavage administration is less relevant to human exposure than administration in drinking water. Abdo et al. (1982) observed mild ataxia, which progressed to severe ataxia, in hens gavaged daily with 100 mg/kg 2-hexanone. This study was not chosen as the principal study because the hen's digestive system is anatomically distinct from humans and thus a poor model for assessing the effects of human oral exposure.[3] Finally, two subchronic drinking water studies that utilized multiple doses of 2-hexanone and identified neurotoxicological outcomes were considered. The first study, conducted by Homan et al. (1977), utilized doses that were higher than those used by O'Donoghue et al. (1978), and the purity of 2-hexanone was not stated. The second study, by Abdel-Rahman et al. (1978), utilized lower doses than the chronic study by O'Donoghue et al. (1978); however, the authors did not include complete data sets; that is, only data from the first 4 weeks of the study were presented. Further, the purity of the compound used was not stated.

O'Donoghue et al. (1978) conducted a 13-month study in male COBS/CD(SD) rats. The animals' drinking water contained 0, 0.25, 0.5, or 1.0% (0, 143, 266, or 560 mg/kg-day) 2-hexanone (96% pure, containing 3.2% MiBK and 0.7% unknown contaminants). In this study, 2-hexanone produced a dose-dependent reduction in body weight at all doses tested. The critical endpoints evaluated from this study were the incidences of myofibrillar atrophy of the quadriceps muscle and the calf muscle in male rats. These endpoints were chosen over the other neuropathologic endpoints in Table 5-1 because they occur due to axonal atrophy, an endpoint

[3] The lower portion of a hen's esophagus forms a pouch called the crop, which serves as a temporary storage site for food prior to passage to the stomach. The two-part structure of the hen's stomach, which consists of the proventriculus and the gizzard, further alters the absorption and distribution of chemicals.

identified as the best correlate of nerve dysfunction, regardless of route of exposure (Lehning et al., 2000). Though axonal swelling was observed with high incidence in the peripheral nerve and spinal cord at the lowest dose tested, axonal swelling poorly correlates with nerve dysfunction and can occur without progression to nerve dysfunction (LoPachin et al., 2004, 2003; Lehning et al., 2000, 1995). Because myofibrillar atrophy of the quadriceps and calf muscles displayed a clear dose-dependent response, these data were evaluated further by BMD modeling.

5.1.2. Method of Analysis: Benchmark Dose Modeling

The animal data evaluated for derivation of an RfD for 2-hexanone are displayed in Table 5-1. These data are from a chronic toxicity study in rats in which 10 animals per dose group were administered 2-hexanone in drinking water at four different concentrations (i.e., 0, 0.25, 0.5, and 1.0%) for 13 months (O'Donoghue et al., 1978). The critical endpoints evaluated from this study were the incidences of myofibrillar atrophy of the quadriceps muscle and the calf muscle in male rats, which displayed a clear dose-dependent response.

Table 5-1. Summary of neuropathologic findings in male rats administered 2-hexanone in drinking water for 13 months

Treatment (dose)	Incidence of axonal swelling				Incidence of myofibrillar atrophy	
	Brain	Spinal cord	Dorsal root ganglia	Peripheral nerve	Quadriceps muscle[a]	Calf muscle[a]
Control	0/10	0/5	0/5	0/10	**0/10**	**0/10**
0.25% 2-hexanone (143 mg/kg-day)	2/10	7/10	0/7	8/10	**1/10**	**2/10**
0.5% 2-hexanone (266 mg/kg-day)	4/10	5/5	0/5	10/10	**5/10**	**6/10**
1.0% 2-hexanone (560 mg/kg-day)	8/10	5/5	3/5	10/10	**10/10**	**10/10**

[a]The data in bold were further evaluated for RfD derivation.

Source: O'Donoghue et al. (1978).

The BMD software (BMDS, version 1.3.2) (U.S. EPA, 1999) was used to estimate a point of departure (POD) for deriving an RfD for 2-hexanone from data on myofibrillar atrophy of the quadriceps and calf muscles. This POD, called the BMDL, is defined as the 95 percent lower bound on the benchmark dose (BMD) associated with the benchmark response (BMR). For this study, a BMR of 10% extra risk (ER) was selected because it represents a response at the lower end of the observable range of the data, and provides a consistent basis of comparison across assessments. Table 5-2 presents the "best–fit" model results based on data on the incidence of myofibrillar atrophy of the quadriceps and calf muscles in rats exposed to 2-hexanone in drinking water. A more detailed presentation of the BMD modeling results is

contained in Appendix B-1. In the absence of any compelling biological reason to choose one of these endpoints over the other for RfD derivation, myofibrillar atrophy of the quadriceps muscle was used because this endpoint yielded a slightly lower BMDL than myofibrillar atrophy of the calf muscle.

Table 5.2. Best fit BMD modeling results for data on myofibrillar atrophy of the quadriceps muscle and calf muscle

Endpoint (myofibrillar atrophy)	Model	AIC[a]	*p* Value	BMD (mg/kg-day)	BMDL (mg/kg-day)	BMD/BMDL
Quadriceps muscle	Multistage	22.3952	0.9995	141.4	49.9	2.8
Calf muscle	Quantal quadratic	25.8664	0.9701	88.7	69.2	1.3

[a]AIC = Akaike Information Criterion.

5.1.3. Derivation of Human Equivalent Doses

For 2-hexanone, no PBTK model is currently available. Therefore, the first step required for the final chronic RfD derivation is to determine whether intermittent doses were employed in the animal study and, if so, to adjust these doses to reflect continuous exposures, based on the assumption that the product of dose and time is constant (U.S. EPA, 2002). In the principal study (O'Donoghue et al., 1978), animals were administered 2-hexanone in drinking water 24 hours/day, 7 days/week for 13 months. Therefore, in this case, a duration adjustment is not required (i.e., the POD [adjusted BMDL or $BMDL_{ADJ}$] for 2-hexanone equals the study BMDL) as follows:

$$BMDL_{ADJ} = BMDL \times (\text{\# of hours per day exposed}/24 \text{ hours}) \times (\text{\# of days per week exposed}/7 \text{ days})$$

$$BMDL_{ADJ} = 50 \text{ mg/kg-day} \times (24 \text{ hours}/24 \text{ hours}) \times (7 \text{ days}/7 \text{ days}) = 50 \text{ mg/kg-day}$$

EPA currently does not provide a specific procedure for calculating a human equivalent dose for oral (or dermal) exposure scenarios that parallel calculation of the inhalation human equivalent concentration (HEC). Hence, the $BMDL_{ADJ}$ is used as the point of departure from which to apply uncertainty factors.

5.1.4. Calculation of the RfD—Application of Uncertainty Factors

The RfD for myofibrillar atrophy of the quadriceps muscle as the critical effect is calculated from the $BMDL_{ADJ}$ by application of uncertainty factors (UFs) as follows:

$$RfD = BMDL_{ADJ} \div UF$$

$$RfD = 50 \text{ mg/kg-day} \div 300 = 0.166 \text{ mg/kg-day} = 2 \times 10^{-1} \text{ mg/kg-day}$$

The composite UF of 300 was derived as follows:

- An intraspecies uncertainty factor (UF_H) of 10 was applied to adjust for potentially sensitive human subpopulations. A default value is warranted because insufficient information is currently available to assess human-to-human variability in 2-hexanone toxicokinetics or toxicodynamics.
- A default interspecies uncertainty factor (UF_A) of 10 was applied for extrapolation from animals to humans. No suitable data on the toxicity of 2-hexanone to humans exposed by the oral route only were identified. Insufficient information is currently available to assess rat-to-human differences in 2-hexanone toxicokinetics or toxicodynamics.
- A UF of 3 was applied to account for database deficiencies (UF_D). The database includes subchronic animal studies in rats and hens and a chronic study in rats but does not include multigenerational reproductive and developmental studies. Though no 2-hexanone-specific developmental studies are available, supporting developmental studies with n-hexane, a precursor of 2-hexanone, and 2,5-hexanedione, the ultimate toxic metabolite of n-hexane and 2-hexanone, have been primarily negative. Mouse reproductive/developmental and teratological studies with n-hexane have been negative with doses administered on GDs 6–15 by gavage of up to 2200 mg/kg-day or by daily injection up to 9900 mg/kg-day (Marks et al., 1980), and rat developmental neurotoxicity studies with 2,5-hexanedione have found minimal effects (e.g., aggregated and fused axons, identified with electron microscopy) from daily s.c. injections on GDs 12–20 with 340 mg/kg 2,5-hexanedione (Ogawa et al., 1993). It should be noted that the available studies with 2-hexanone following inhalation exposure suggest the possibility of immunotoxicity and reproductive toxicity as areas of potential concern with human exposure. For example, a reduction in total white blood cell count to ~60% of control values was reported in rats intermittently exposed to 700 ppm 2-hexanone via inhalation for 8 weeks (Katz et al., 1980). In addition, behavioral alterations observed in offspring of pregnant rats exposed to 1000 ppm 2-hexanone (Peters et al., 1981) and atrophy of testicular germinal epithelium observed in male rats exposed to 700 ppm 2-hexanone (Katz et al., 1980) suggest there may be cause for concern. However, there are no studies that evaluate immunotoxicity following oral exposure to 2-hexanone. Because of the absence of studies evaluating the possible immunotoxicity or reproductive toxicity of 2-hexanone following exposure via the oral route, a UF_D of 3 is warranted.
- An uncertainty factor for LOAEL-to-NOAEL extrapolation was not used because the current approach is to address this factor as one of the considerations in selecting a BMR for benchmark dose modeling. In this case, a BMR of a 10% extra risk of myofibrillar atrophy of the quadriceps muscle was selected under an assumption that it represents a minimal biologically significant change.

- A subchronic-to-chronic UF (UF_S) was not applied because the principal study involved a chronic exposure.

5.1.5. RfD Comparison Information

Figure 5-1 presents PODs, applied UFs, and derived RfD for the endpoints considered for 2-hexanone. As stated previously, of the available chronic and subchronic studies, the 13-month drinking water study conducted by O'Donoghue et al. (1978) was considered the most suitable study to derive an RfD. Within this study, two potential endpoints, myofibrillar atrophy of either the quadriceps muscle or the calf muscle were considered. The points of departure based on the best fit models from BMD models from Table 5.2 are presented in Figure 5-1. Axonal swelling in the brain, spinal cord and dorsal root ganglia were endpoints noted in O'Donoghue et al. (1978). These endpoints are also illustrated in Figure 5-1, but as previously mentioned, axonal swelling poorly correlates with nerve dysfunction and can occur without progression to nerve dysfunction and thus is deemed less relevant endpoints. The supporting studies outlined in Table 4-15 were deemed less relevant to human exposure as they either involved single relatively high doses via gavage in rodents (Krasavage et al., 1980; Eben et al., 1979), used a test species such as hens (which might be a poor model for assessing human exposure) (Abdo et al., 1982), were subchronic in design with higher doses administered than the chronic study by O'Donoghue et al. (1978) (Homan et al, 1977), or did not include complete data (Abdel-Rahman et al., 1978).

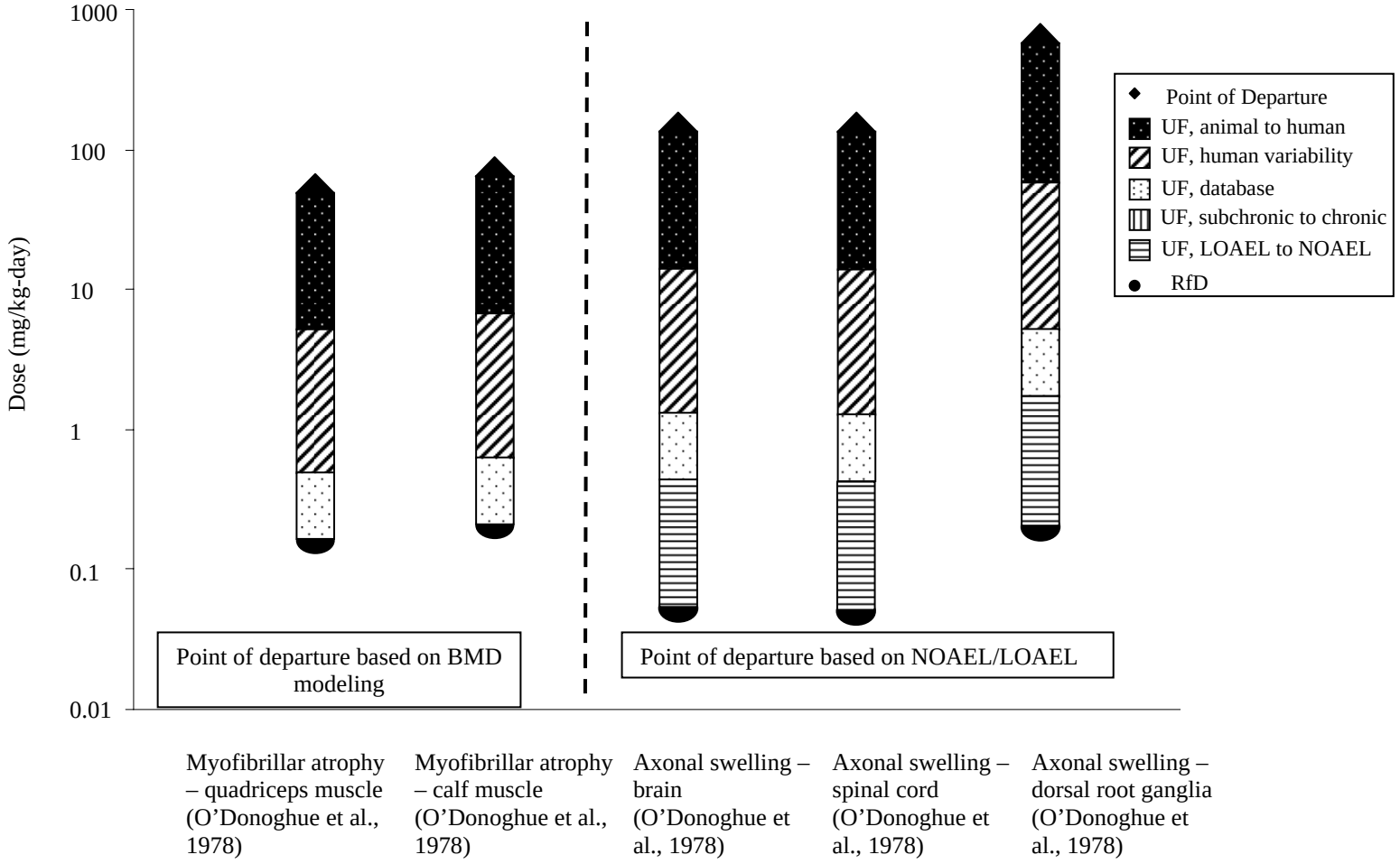


Figure 5-1. Points of departure for endpoints from O'Donoghue et al. (1978) with corresponding applied uncertainty factors and derived RfD.

5.1.6. Previous Oral Assessment

There was no previous RfD assessment for 2-hexanone with which to compare and contrast the RfD developed in this assessment.

5.2. INHALATION REFERENCE CONCENTRATION

The inhalation RfC is an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human general population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects over a lifetime. It can be derived from a NOAEL, a LOAEL, or a benchmark concentration (BMC), with UFs generally applied to reflect uncertainties and/or limitations in the data used.

5.2.1. Choice of Principal Study and Critical Effect, with Rationale and Justification

An inhalation study that exposed monkeys and rats to 0, 100, or 1000 ppm (0, 410, or 4100 mg/m^3) commercial grade 2-hexanone for 6 hours per day, 5 days per week for up to 10 months was used as the principal study in the derivation of the RfC (Johnson et al., 1977).

As discussed in Chapter 4, human and animal data indicate that neurological effects are a characteristic and sensitive endpoint of inhalation exposure to 2-hexanone. Neuropathy has been observed in humans following inadvertent occupational exposure (Allen et al., 1975; Billmaier et al, 1974; Gilchrist et al., 1974) and has been demonstrated repeatedly in laboratory animals (Katz et al., 1980; Egan et al., 1980; O'Donoghue and Krasavage, 1979; Johnson et al., 1979, 1977; Duckett et al., 1979, 1974; O'Donoghue et al., 1978; Krasavage and O'Donoghue, 1977; Spencer et al., 1975; Mendell et al., 1974).

Several studies of workers in a coated fabrics plant (Allen et al., 1975; Billmaier et al., 1974; Gilchrist et al., 1974) provide evidence in humans of a concentration-dependent neurotoxic response to 2-hexanone exposure. Although personal air samples were not collected in these studies, the available measures of exposure were sufficient to produce quantitative estimates of 2-hexanone inhalation exposure for two groups of workers (i.e., print operators and print helpers), both of whom exhibited peripheral neuropathy. In these workers, exposure to 2-hexanone also occurred via oral and dermal routes, as the study authors noted that individuals frequently ate at the work site and were accustomed to washing their hands with 2-hexanone. Because the magnitude of exposure to 2-hexanone from these two other exposure routes (i.e., oral and dermal), which could have been considerable, was not quantified by the study authors and the workers were coexposed with MEK, which can potentiate the toxicity of 2-hexanone, this study was deemed unsuitable for use in RfC derivation.

Of the available animal studies on 2-hexanone, the subchronic studies by Abdo et al. (1982), Duckett et al. (1979, 1974), Krasavage and O'Donoghue (1977), Saida et al. (1976), Mendell et al. (1974) and the chronic study by O'Donoghue and Krasavage (1979) were not selected for use in deriving the RfC. Duckett et al. (1979, 1974) did not report the sex of the

animals or the purity of 2-hexanone used. Further, the authors used only one exposure concentration per series of experiments. Krasavage and O'Donoghue (1977) utilized two exposure concentrations (e.g., 100 and 330 ppm); however, the purity of 2-hexanone was not stated and limited data were provided. As mentioned previously, MiBK, a potential inducer of CYP450, is a common contaminant in the formulations of 2-hexanone. Without the more information on the purity of the 2-hexanone administered, it is difficult to ascertain if MiBK impacted the toxicity of 2-hexanone in Krasavage and O'Donoghue (1977). Saida et al. (1976) used two exposure concentrations (e.g., 225 ppm and 400 ppm) but did not state the sex of the animals or the purity of 2-hexanone used. Finally, Mendell et al. (1974) and Abdo et al. (1982) reported findings using hens. Although the exposure-concentration regimen used by Abdo et al. (1982) included five exposure concentrations (i.e., 10, 50, 100, 200, and 400 ppm), hens are not a suitable model for extrapolating experimental results to humans.[4] The remaining studies by Johnson et al. (1977), Katz et al. (1980), and Egan et al. (1980) were all considered further as possible principal studies.

The study by Johnson et al. (1977) was performed in two different animal species, monkeys and rats, with 8 and 10 animals per dose group, respectively. Two concentrations of commercial grade 2-hexanone were employed (100 and 1000 ppm in air) with exposures occurring 6 hours per day, 5 days per week for a duration of 10 months. Concurrent control groups were used in both species. As part of this study, Johnson et al. (1977) conducted four neurological tests in each species (usually once per month) to identify adverse effects in treated versus control animals. These four tests were MCV of the right sciatic-tibial nerve, MCV of the right ulnar nerve, absolute refractory period of these two nerves, and muscle action potentials in response to both sciatic and ulnar nerve stimulation.

The animal studies by Katz et al. (1980) and Egan et al. (1980) consisted of exposure to 2-hexanone (purity > 96%) at a single concentration for a period of 6 months or less, using only one strain and sex of rats. Both Katz et al. (1980) and Egan et al. (1980) utilized clinical chemistry and histopathologic changes to identify treatment-related effects of 2-hexanone. Despite the use of commercial grade 2-hexanone, the study by Johnson et al. (1977) was chosen as the most suitable study on which to base the RfC because Johnson et al. (1977) used two different animal species, including nonhuman primates, and two 2-hexanone exposure concentrations, while also employing larger treatment groups and longer exposure durations than either Katz et al. (1980) or Egan et al. (1980). Although duration of the study by Krasavage and O'Donoghue (1979) was longer than the study by Johnson et al. (1977), the latter utilized monkeys, a more biologically relevant species than rats, when assessing inhalation exposure. Also, Krasavage and O'Donoghue (1979) provide limited information to serve as the basis for a reference concentration.

[4] Birds have an intricate respiratory system that is exclusive to birds and includes a system of air sacs that surround the internal organs and provide reserve air space to increase lung capacity.

As previously discussed, the toxic effects seen in humans and experimental animals following exposure to 2-hexanone via inhalation provide evidence that the nervous system is the primary target of 2-hexanone toxicity. Data from Johnson et al. (1977) on both sciatic-tibial and ulnar nerve MCVs in 2-hexanone-exposed monkeys and rats were considered for use in deriving the RfC, but, ultimately, the monkey sciatic-tibial nerve MCV data were selected for the following reasons. Both monkeys and rats exhibited significant decrements in sciatic-tibial nerve MCVs at the lowest administered concentration of 2-hexanone, beginning at 9 and 7 months on study, respectively. A neuropathy similar to that observed for the sciatic-tibial nerves occurred in the ulnar nerves of both monkeys and rats. Although monkeys in the low exposure group exhibited statistically significant decreases in ulnar nerve MCVs relative to control values at 1 and 3 months, beginning at 6 months on study, this decline was not statistically significant. As monkeys have a similar respiratory tract and breathing patterns to humans, and the 2,5-hexanedione, the metabolite of 2-hexanone, typically affects long axons such as the sciatic-tibial nerve prior to other nerves, the sciatic-tibial nerve motor conduction velocity in monkeys is used to derive the RfC, though both sciatic-tibial MCV and ulnar MCV for both monkeys and rats were modeled.

5.2.2. Methods of Analysis: Benchmark Concentration Modeling

Table 5-3 displays monthly mean MCV values (in m/second) for both the sciatic-tibial and ulnar nerves of monkeys exposed to three different concentrations of 2-hexanone in air (i.e., 0, 100, or 1000 ppm) for durations ranging from 1 to 10 months. These data were extracted (via digitization [5]) from Figure 1 (for the sciatic-tibial nerve) and Figure 3 (for the ulnar nerve) of Johnson et al. (1977). Similarly, Table 5-4 displays monthly mean MCV values (in m/second) for both the sciatic-tibial and ulnar nerves of rats exposed to three different concentrations of 2-hexanone in air (i.e., 0, 100, or 1,000 ppm) for durations ranging from 2 to 29 weeks. These data were extracted (via digitization) from Figure 2 (for the sciatic-tibial nerve) and Figure 4 (for the ulnar nerve) of Johnson et al. (1977).

Because MCV values are continuous (as opposed to dichotomous), the data in Tables 5-3 and 5-4 were subjected to BMD modeling employing the available continuous models in EPA's

[5] Values from Johnson et al. (1977) were digitized using the line tool on Microsoft Office Word 2003, followed by measuring the values with the distance tool function on Adobe® Acrobat® 6.0 Professional (version 6.0.0, 5/19/2003). To accomplish this task, the figures from Johnson et al. (1977) were inserted into a Word document using the snapshot tool from Adobe® Acrobat® 6.0 Professional. Then, horizontal lines were applied over the data points, the measurement markers on the y-axis, and extended through the y-axis. Lines from the data points to the x-coordinates were not traced over, since Johnson et al. (1977) provided the absolute values in the text. Once all of the lines were traced from the data points through the y-coordinates, a vertical line was traced over the y-axis. Then the Word document was saved in portable document format (pdf) and opened using Adobe® Acrobat® 6.0 Professional. The y-axis was viewed at 300% magnification, and the distance tool was used to measure from the origin to each y-coordinate for each horizontal line, including data points and measurement markers. The distance tool allows measurements to be made down to one hundredth of a millimeter, and repeated measures placed the reproducibility of this technique at greater than 99%.

BMDS, version 1.3.2 (i.e., linear, polynomial, power, and Hill models). The BMR was defined as a 10% relative change in nerve conduction velocity from the control mean. Changes in nerve conduction velocity are thought to represent a clinically significant effect.

A difficulty encountered in conducting a BMD analysis on these data was that no information was provided regarding the standard errors or confidence limits for the mean nerve conduction velocities shown in Figures 1 through 4 in Johnson et al. (1977) nor was any of the raw data on which these means were based presented in the paper. Attempts to obtain the raw data from the investigators were unsuccessful. In BMDS, estimates of the standard deviation of the response in each dose group are needed to calculate BMDs and their corresponding BMDLs. Therefore, an indirect method for estimating this missing information on response variability was devised.

Information regarding the variability in MCV measurements in Johnson et al. (1977) can be derived from the results of statistical tests that are reported in the paper. In this study, two different statistical procedures were employed. An ANOVA was used to test for statistically significant differences in mean MCVs at specific test periods (usually monthly) whenever data across the three exposure groups (i.e., 0, 100, or 1000 ppm) were compared. After approximately 6 months on study, however, animals (both monkeys and rats) in the highest exposure group (1000 ppm) were removed from further 2-hexanone exposure. Consequently, with termination of this 1000 ppm exposure group, only two dose groups remained for each species. Thus, subsequently, the Student's *t*-test was used to test for statistically significant changes in mean MCVs across these two groups (i.e., 0 and 100 ppm) for the remaining test periods.

In an ANOVA, an *F* statistic is used to test for a significant difference among the means of *g* groups. An *F* statistic is defined as, $F(g\text{-}1, N\text{-}g)$ = between-group variance/within-group variance, where g-1 represents the numerator degrees of freedom and N-g represents the denominator degrees of freedom (g is the number of groups and N is the sample size within each group). In the specific case where only two group means are being compared, the *F* statistic reduces to a *t* statistic (i.e., $F(1, N\text{-}g) = t(N\text{-}g)^2$), where *t* has a Student's *t*-distribution. In order to fit a continuous dose-response model in BMDS, an estimate of the within-group variance or s^2 is needed from which the estimated standard deviation can be obtained simply by taking the square root of this variance estimate.

The estimated within-group variance can be derived using the following procedure. If the within-group means and the numbers of observations on which each of these means are based are known, the between-group variance can be calculated. Once the between-group variance has been determined and the corresponding value of the *F* or *t* statistic is known, an estimate of the within-group variance or s^2 can be derived from the following equation: s^2 = (between-group variance)/$F(g - 1, N - g)$ or s^2 = (between-group variance)/$t(N\text{-}g)^2$. In Johnson et al. (1977), for monkeys, *F* statistics were reported for mean MCVs at both 4 and 6 months, while *t* statistics

were reported for mean MCVs at both 9 and 10 months. These data yielded four estimates of the within-group variance or standard deviation. The arithmetic average of these four estimates was then used in BMD modeling as the estimated standard deviation for MCVs in each dose group, assuming a constant variance across dose groups. For rats, *F* statistics were reported in Johnson et al. (1977) for mean MCVs at both 13 and 17 weeks, while a *t* statistic was reported for mean MCVs at 29 weeks. These data yielded three estimates of the within-group variance or standard deviation. The arithmetic average of these three estimates was then used in BMD modeling as the estimated standard deviation for MCVs in each dose group, assuming a constant variance across dose groups.

Table 5-3. Effect of 2-hexanone inhalation exposure on the MCV of the sciatic-tibial and ulnar nerves in monkeys

Exposure duration (months)	2-Hexanone concentration (ppm in air)	Mean MCV: sciatic-tibial nerve (m/s)[a]	Mean MCV: ulnar nerve (m/s)[b]
1	0	42	54
	100	42	**46**[c]
	1000	40	**47**[c]
2	0	51	61
	100	46	63
	1000	44	**49**[c]
3	0	54	53
	100	48	**47**[c]
	1000	46	**45**[c]
4	0	56	63
	100	50	58
	1000	**41**[c]	**49**[c]
5	0	53	61
	100	48	63
	1000	**36**[c]	**43**[c]
6	0	50	58
	100	47	56
	1000	**33**[c]	**41**[c]
7	0	51	65
	100	48	62
8	0	50	58
	100	46	58
9	0	53	63
	100	**49**[c]	60
10	0	53	58
	100	**48**[c]	57

[a]Values extracted from Figure 1 in Johnson et al. (1977).
[b]Values extracted from Figure 3 in Johnson et al. (1977).
[c]Statistically significantly different compared with corresponding controls ($p < 0.05$), as determined by the study authors.

Table 5-4. Effect of 2-hexanone inhalation exposure on the MCV of the sciatic-tibial and ulnar nerves in rats

Exposure duration (weeks)	2-Hexanone concentration (ppm in air)	Mean MCV: sciatic-tibial nerve (m/s)[a]	Mean MCV: ulnar nerve (m/s)[b]
13	0	34	
	100	37	
	1000	**40**[c]	
17	0		42
	100		**36**[c]
	1000		**38**[c]
25	0	42	40
	100	41	37
	1000	**27**[c]	**31**[c]
29	0	39	45
	100	**25**[c]	**30**[c]

[a]Values extracted from Figure 2 in Johnson et al. (1977).
[b]Values extracted from Figure 4 in Johnson et al. (1977).
[c]Statistically significantly different compared with corresponding controls ($p < 0.05$), as determined by the study authors.

The "best-fit" model from BMDS was selected by examining the results of the chi-squared goodness-of-fit test and comparing the magnitudes of the Akaike's Information Criterion (AIC). All models with chi-squared *p* values ≥0.1 were considered to exhibit an adequate fit to the data. Of the models exhibiting adequate fit, the model with the lowest AIC was selected as the best-fit model. These criteria for model selection are consistent with those described in the *Benchmark Dose Technical Guidance Document* (U.S. EPA, 2000c). For the MCV data in both monkeys and rats, the 1st-degree polynomial model provided the best fit for both sciatic-tibial and ulnar nerve MCVs.

The 95% lower confidence limits on the benchmark concentration estimates (BMCLs) derived from the best-fit models for sciatic-tibial and ulnar nerve MCV values in monkeys and rats are presented in Table 5-4. Detailed BMDS outputs from the BMD of the monkey and rat MCV data are contained in Appendix B-1.

5.2.3. Exposure Duration Adjustments and Conversion to Human Equivalent Concentrations

Because the RfC is a metric that assumes continuous human exposure for a lifetime, adjustments need to be made to animal (or human) data obtained from intermittent and/or less-than-lifetime exposures, as outlined in the *Methods for Derivation of Inhalation Reference Concentrations and Application of Inhalation Dosimetry* (U.S. EPA, 1994). The first step in this process is adjusting intermittent inhalation exposures to continuous inhalation exposures, based on the assumption that the product of exposure concentration and time is constant (U.S. EPA, 2002). In Johnson et al (1977), animals were exposed to 2-hexanone for 6 hours/day, 5 days/week. Therefore, the $BMCL_{ADJ}$, reflecting continuous inhalation exposure to 2-hexanone,

is derived as follows:

$BMCL_{ADJ}$ = BMCL × hours exposed per day/24 hours × Days exposed per week/7 days.

$BMCL_{ADJ}$ = $243 \times 6/24 \times 5/7$ = 43 ppm, based on monkey sciatic-tibial nerve MCV

= $278 \times 6/24 \times 5/7$ = 50 ppm, based on monkey ulnar nerve MCV

= $232 \times 6/24 \times 5/7$ = 41 ppm, based on rat sciatic-tibial nerve MCV

= $352 \times 6/24 \times 5/7$ = 63 ppm, based on rat ulnar MCV

Furthermore, because RfCs are typically expressed in units of mg/m^3, the above ppm values need to be converted to mg/m^3 using the conversion factor specific to 2-hexanone of 1 ppm = 4.1 mg/m^3. Thus, the final $BMCL_{ADJ}$ values are as follows:

$BMCL_{ADJ}$ = 43×4.1 = 176.3 mg/m^3, monkey sciatic-tibial nerve MCV

= 50×4.1 = 205 mg/m^3, based on monkey ulnar nerve MCV

= 41×4.1 = 168.1 mg/m^3, based on rat sciatic-tibial nerve MCV

= 63×4.1 = 258.3 mg/m^3, based on rat ulnar nerve MCV

Finally, this $BMCL_{ADJ}$ value must be converted to an HEC. The HEC that elicits decreased MCV, which is not a respiratory (or portal-of-entry) effect, but a systemic effect, is derived based on the following. For systemic effects, 2-hexanone is classified as a category 3 gas under EPA guidelines (U.S. EPA, 1994). According to this guidance, in order to convert the concentration effective in animals to human equivalents, a multiplicative factor based on the ratio of blood:gas partition coefficients is employed as follows:

$$HEC = BMCL_{ADJ} \times [(H_{b/g})_A/(H_{b/g})_H]$$

Where,

$(H_{b/g})_A$ = blood:gas partition coefficient for 2-hexanone in animals

$(H_{b/g})_H$ = blood:gas partition coefficient for 2-hexanone in humans.

The blood:gas partition coefficient $(H_{b/g})_H$ for 2-hexanone in humans is 127 (Sato and Nakajima, 1979); however, no value has been reported for monkeys or rats. In the absence of a measured blood:gas partition coefficient in the test species, the ratio $[(H_{b/g})_A/(H_{b/g})_H]$ defaults to unity, and the conversion to a HEC becomes the following:

$BMCL_{HEC}$ = $BMCL_{ADJ} \times [(H_{b/g})_A/(H_{b/g})_H] = 176.3 \times 1$ = 176.3 mg/m^3 based on monkey

sciatic-tibial nerve MCV

= 205×1 = 205 mg/m^3 based on monkey ulnar nerve MCV

= 168.1×1 = 168.1 mg/m^3 based on rat sciatic-tibial nerve MCV

= 258.3×1 = 258.3 mg/m^3 based on rat ulnar nerve MCV

These HEC values are presented in the last column of Table 5-5.

Table 5-5. Summary of BMCLs and HECs for 2-hexanone

Study reference	Study duration and type	2-Hexanone exposure (ppm)	Species/sex	Toxicological endpoint	BMDS "best fit" continuous model	BMC (ppm)	BMCL or POD[a] (ppm)	Adjusted BMCL ($BMCL_{ADJ}$)[b]	HEC[c]
Johnson et al. (1977)	10-month inhalation (subchronic)	0, 100, 1000	Male monkeys (n = 8 per dose group)	Sciatic-tibial nerve motor conduction velocity (at 6 months)	1st degree polynomial	293	243	176	176
				Ulnar nerve motor conduction velocity (at 6 months)	1st degree polynomial	335	278	205	205
Johnson et al. (1977)	29-week inhalation (subchronic)	0, 100, 1000	Male rats (n = 10 per dose group)	Sciatic-tibial nerve motor conduction velocity (at 25 weeks)	1st degree polynomial	271	232	168	168
				Ulnar motor nerve conduction velocity (at 25 weeks)	1st degree polynomial	471	352	258	258

[a]BMCLs or PODs were estimated at a BMR of 0.1 or 10% relative change from controls.

[b]Conversion factors and assumptions: molecular weight (2-hexanone) = 100.16 and 1 ppm = 100.16/24.45 = 4.1 mg/m^3 (at 25°C and 760 mm Hg). Duration adjustment of exposure concentrations and conversion to mg/m^3 was accomplished as follows: $BMCL_{ADJ}$ = 243 ppm × 6h/24h × 5 d/7d = 43 ppm × 4.1 = 176 mg/m^3.

[c]The $BMCL_{HEC}$ was calculated for an extrarespiratory effect of a category 3 gas. The blood:gas partition coefficient (Hb/g) value for 2-hexanone in humans is 127 (Sato and Nakajima, 1979); however, no value has been reported for monkeys or rats. According to EPA's RfC methodology (U.S. EPA, 1994), when the ratio of animal to human blood:gas partition coefficients [(Hb/g)A/(Hb/g)H] is greater than one or the values are unknown, a value of one is used for the ratio by default. Thus, $BMCL_{HEC}$ = 176 × [(Hb/g)A/(Hb/g)H] = 176 mg/m^3.

5.2.4. Calculation of the RfC: Application of Uncertainty Factors

As monkeys have a similar respiratory tract and breathing patterns to humans, and the 2,5-hexanedione, the metabolite of 2-hexanone, typically affects long axons such as the sciatic-tibial nerve prior to other nerves, the $BMCL_{HEC}$ based on sciatic-tibial nerve motor conduction velocity in monkeys (Table 5-4) is used to derive the RfC. It should be noted that ulnar nerve motor conduction velocity in monkeys and sciatic-tibial nerve motor conduction velocity in rats were found to have similar $BMCL_{HEC}$ as the endpoint selected above and would not result in significantly different RfCs if those alternatives were utilized.

The RfC for 2-hexanone based on peripheral neuropathy as the critical effect is derived from the $BMCL_{HEC}$ by application of UFs as follows:

$$RfC = BMCL_{HEC} \div UF$$

$$RfC = 176 \div 1000 = 0.168 \text{ mg/m}^3 \approx 2 \times 10^{-1} \text{ mg/m}^3$$

This composite UF of 1000 is composed of the following:

- A default intraspecies uncertainty factor (UF_H) of 10 was applied to adjust for potentially sensitive human subpopulations (intraspecies variability).
- A default subchronic-to-chronic uncertainty factor (UF_S) of 10 was applied to account for the less-than-lifetime exposure (10 months) in the principal study.
- A factor of 3 was selected to account for uncertainties in extrapolating from rats to humans. This value is adopted by convention where an adjustment from an animal-specific $NOAEL_{ADJ}$ to a $NOAEL_{HEC}$ has been incorporated. Application of a full uncertainty factor of 10 would depend on two areas of uncertainty (i.e., toxicokinetic and toxicodynamic uncertainties). In this assessment, the toxicokinetic component is mostly addressed by the determination of a human equivalent concentration as described in the RfC methodology (U.S. EPA, 1994b). The toxicodynamic uncertainty is also accounted for to a certain degree by the use of the applied dosimetry method and an UF of 3 is retained to fully address this component. An uncertainty factor for LOAEL-to-NOAEL extrapolation was not used because the current approach is to address this factor as one of the considerations in selecting a BMR for benchmark dose modeling. In this case, a BMR of a 10% change in nerve conduction velocity from the control mean was selected under an assumption that it represents a minimal biologically significant change. An uncertainty factor of 3 was applied to account for database deficiencies (UF_D). The database includes a human occupational exposure study (with coexposure to MEK), subchronic animal studies in rats and hens, and a chronic study in cats. One postnatal development and behavior study on 2-hexanone (Peters et al., 1981) exists, identifying a LOAEL of 1000 ppm (no NOAEL

reported), but no other developmental or teratology studies on 2-hexanone exist. However, support for applying a UF_D of 3 in the absence of other 2-hexanone-specific studies is based on the availability of developmental and teratology studies with n-hexane, a precursor of 2-hexanone, and 2,5-hexanedione, a metabolite of n-hexane and 2-hexanone. The rationale for the UF_D of 3 is based on the following: (1) developmental studies with n-hexane concentrations of 100 (GDs 6–15), 400 (GDs 6–15), or 1000 ppm (GDs 8–16) have been negative (Bus et al., 1979; Litton Bionetics, 1979); (2) a teratology study conducted on behalf of the National Toxicology Program, in which dams were exposed on GDs 6–19 to 200, 1000, or 5000 ppm n-hexane, identified a NOAEL of 200 ppm (Mast, 1987), a concentration nearly double the highest NOAEL identified from inhalation studies with 2-hexanone (See Table 4-16); and (3) rat developmental neurotoxicity studies with 2,5-hexanedione, the ultimate toxic metabolite of n-hexane and 2-hexanone, have found minimal effects (e.g., aggregated and fused axons, identified with electron microscopy) from daily s.c. injections on GDs 12–20 with 340 mg/kg 2,5-hexanedione (Ogawa et al., 1993).

5.2.5. RfC Comparison Information

Figure 5-2 presents PODs, applied UFs, and derived RfCs for several studies and endpoints considered for 2-hexanone. Of the chronic and subchronic studies available on inhalation exposure to 2-hexanone, Johnson et al. (1977) was deemed the most suitable to derive an RfC. The endpoints considered from Johnson et al. (1977) include MCV for both sciatic-tibial and ulnar nerves of both rats and monkeys. The PODs based on the best fit models from BMD models from Table 5-4 are presented in Figure 5-2. Subchronic rodent studies by Katz et al. (1980) and Egan et al. (1980) were also considered; however, both studies evaluated exposure to a single concentration of 2-hexanone for a period of less than 6 months, using clinical chemistry or histopathologic changes to identify treatment-related effects. The unpublished study by Krasavage and O'Donoghue (1977) was longer in exposure duration than the study by Johnson et al. (1977) and utilized two exposure concentrations, though purity of 2-hexanone was not specified. The Johnson et al. (1977) study is preferred because the study involved nonhuman primates that are more relevant to assessing human exposure than obligatory nose-breathing species such as rats. Figure 5-2 provides LOAEL and NOAEL PODs from Katz et al. (1980), Egan et al. (1980), and Krasavage and O'Donoghue (1977) as a comparison to the four BMCL endpoints from the Johnson et al. (1977) study.

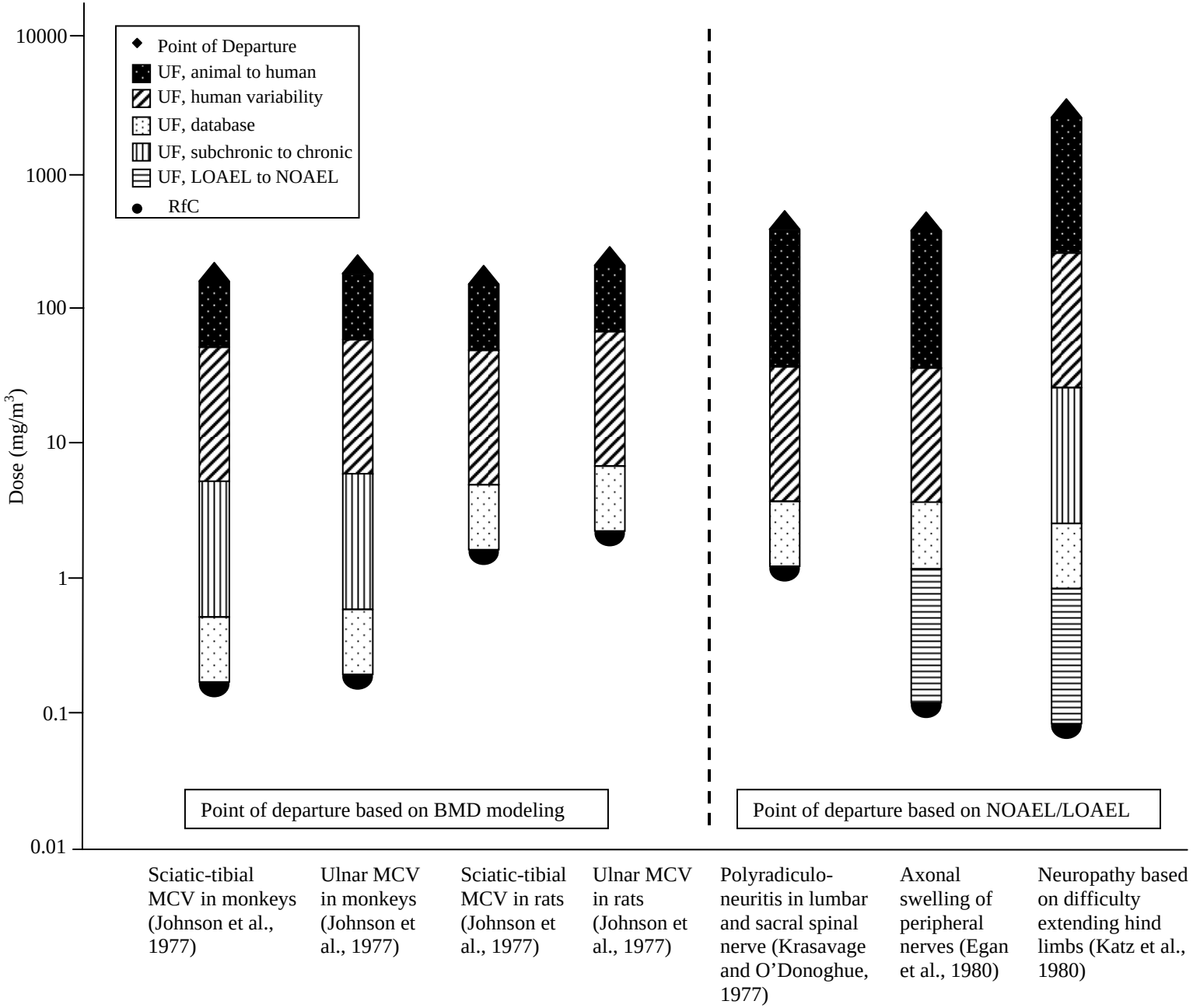


Figure 5-2. PODs for endpoints from select studies from Table 4-16, with corresponding applied UFs and derived RfCs.

5.2.6. Previous Inhalation Assessment

No previous RfC assessment for 2-hexanone exists on IRIS.

5.3. CANCER ASSESSMENT

As discussed in Section 4.6.1, the available database for 2-hexanone contains inadequate information to assess the carcinogenic potential according to *Guidelines for Carcinogen Risk Assessment* (U.S. EPA, 2005a).

6. MAJOR CONCLUSIONS IN THE CHARACTERIZATION OF HAZARD AND DOSE RESPONSE

6.1. HUMAN HAZARD POTENTIAL

2-Hexanone (methyl butyl ketone, CASRN 591-78-6) has the chemical formula $C_6H_{12}O$ and a molecular weight of 100.16. It is a clear, volatile, flammable fluid with a pungent, acetone-like odor. 2-Hexanone is most commonly used as a paint or printing ink thinner, as a solvent for oils, waxes, and resins, or as a cleaning agent. It is currently not produced commercially in the U.S., and no information on importation is available (ATSDR, 1992).

2-Hexanone is well absorbed by the inhalation route and in the gastrointestinal tract. Animal studies suggest that 2-hexanone does not penetrate skin very efficiently, but there is evidence that it penetrates human skin easily (Bos et al., 1991). The distribution of 2-hexanone has not been studied thoroughly. In a rat study, it appeared in the plasma and the lung at higher concentrations than in the liver after both oral and inhalation administration (Duguay and Plaa, 1995) but did not show an affinity for a lipid rich tissue such as the brain (Granvil et al., 1994). In guinea pigs, 2-hexanone was eliminated quite rapidly, with a half-life of a little more than 1 hour for the parent compound and values not exceeding 2½ hours for the major metabolites (DiVincenzo et al., 1976). In rats, on the other hand, 2-hexanone was eliminated more slowly (Bus et al., 1981). The biological half-life of 2-hexanone in humans is not known. A PBTK model has not been proposed.

Metabolites of 2-hexanone include 2-hexanol, 2,5-hexanediol, 5-hydroxy-2-hexanone, 2,5-hexanedione, and some cyclic furan derivatives. The enzymes that metabolize 2-hexanone have not been characterized well. Among the metabolites of 2-hexanone, 2,5-hexanedione is the most important because it is a well-known neurotoxicant. It causes neuropathy specifically of the peripheral giant axons that involves neurofilament cross-linking and axonal swelling and proceeds to retrograde axonal degeneration. 2-Hexanone-induced neuropathy has been observed clinically in occupationally exposed humans (Davenport et al., 1976; Mallov, 1976; Allen et al., 1974; Billmaier et al., 1974), but the findings are frequently obscured by coexposure to other solvents, most frequently MEK, which is known to potentiate the toxicity of 2-hexanone.

A significant number of studies have been conducted in which laboratory animals were exposed orally or via inhalation for up to 2 years. Oral exposure studies used rats (Krasavage et al., 1980) and guinea pigs (Abdel-Rahman et al., 1978), with doses ranging up to 600 mg/kg-day by gavage or up to 1.3% in drinking water (amounting to 1010 mg/kg-day). The 13-month study in rats by O'Donoghue et al. (1978) that gave a detailed report of neuropathy incidences was used in the RfD assessment for 2-hexanone. Inhalation studies employed rats (Egan et al., 1980; Katz et al., 1980; Duckett et al., 1979, 1974; Johnson et al., 1977; Krasavage and O'Donoghue, 1977; Saida et al., 1976; Spencer et al., 1975), cats (O'Donoghue and Krasavage, 1979), and

monkeys (Johnson et al., 1977), with exposures ranging from 10–1300 ppm (41–5325 mg/m^3). The hallmark symptom observed in any of these studies was neuropathy. The 2-hexanone-induced neuropathy also has been characterized mechanistically in animal studies (DeCaprio et al., 1988, 1982). Also a study in beagles that received 2-hexanone via the subcutaneous route reported neuropathy (O'Donoghue and Krasavage, 1981).

It is not clear whether 2-hexanone causes any other significant illness in humans. The available animal studies do not provide sufficient information to assess carcinogenicity of 2-hexanone. Currently, there is no evidence that this chemical causes cancer in humans or animals. According to *Guidelines for Carcinogen Risk Assessment* (U.S. EPA, 2005a), there is "inadequate information to assess the carcinogenic potential" of 2-hexanone.

Estimates of risks from other organizations

Estimates of risk for 2-hexanone derived by other organizations are compiled by the National Library of Medicine and can be found on the TOXNET Web page at http://toxnet.nlm.nih.gov/.

6.2. DOSE RESPONSE

6.2.1. Noncancer/Oral

There are no chronic or subchronic data for oral exposure of humans to 2-hexanone. There is no standard 2-year bioassay for 2-hexanone in any animal species; the only study with a chronic exposure time, the 13-month study in rats by O'Donoghue et al. (1978), was adequately conducted and reported critical, chemical-related effects with sufficient detail to be eligible as the principal study. Myofibrillar atrophy of the quadriceps muscle and the calf muscle in male rats is the critical endpoint evaluated. This endpoint was chosen over other neuropathic endpoints because it occurs due to axonal atrophy, an endpoint that correlates best to nerve dysfunction regardless of route of exposure. Another endpoint described in O'Donoghue et al. (1978) was peripheral nerve axonopathy. This endpoint was not well characterized, with incidences jumping from 0% (0/10 animals) in controls to 80% (8/10 animals) at the lowest dose (143 mg/kg-day) and 100% (10/10 animals) at both higher doses (266 and 560 mg/kg-day). Though peripheral nerve axonopathy may have exhibited the most sensitive response to 2-hexanone exposure, axonal swelling may not be an appropriate proximal marker of neuropathy because this endpoint poorly correlates with nerve dysfunction.

The RfD of 2×10^{-1} mg/kg-day was derived from myofibrillar atrophy of the quadriceps muscle in male COBS/CD(SD)BR rats following 13 months of oral exposure to 2-hexanone (O'Donoghue et al., 1978). There is sufficient evidence from other studies in experimental animals to confirm that the nervous system is the primary target for the toxicological effects of 2-hexanone (Abdo et al., 1982; Krasavage et al., 1980; Eben et al., 1979; Abdel-Rahman et al.,

1978; Homan et al., 1977). Because there are no compelling biological reasons to choose myofibrillar atrophy of the quadriceps muscle over myofibrillar atrophy of the calf muscle, the slightly lower BMDL was chosen. A graphical comparison of the RfDs from these two endpoints is illustrated in Figure 5-1.

A composite UF of 300 was applied; 10 for intraspecies (interindividual) variability, 10 for interspecies variability, and 3 for database uncertainty. Information was unavailable to quantitatively assess toxicokinetic or toxicodynamic differences between animals and humans and the potential variability in human susceptibility; thus, the interspecies and intraspecies UFs of 10 were applied. A threefold database deficiency UF was applied to reflect that, though chronic and subchronic information on 2-hexanone was available, there are no 2-hexanone-specific multigenerational reproductive and developmental studies. Developmental studies on n-hexane, a precursor of 2-hexanone and 2,5-hexanedione, have shown low risk of toxicity, but there is still a level of concern because available studies on 2-hexanone via inhalation exposure have suggested the possibility of immunotoxicity and reproductive toxicity. Rat developmental neurotoxicity studies with 2,5-hexanedione have found minimal effects (e.g., aggregated and fused axons, identified with electron microscopy) from daily s.c. injections on GDs 12–20 with 340 mg/kg 2,5-hexanedione. Thus, due to the absence of studies specifically evaluating immunotoxicity or reproductive toxicity of 2-hexanone via an oral route of exposure, a UF of 3 was applied to account for database deficiency.

The overall confidence in this RfD assessment is medium. Confidence in the principal study (O'Donoghue et al., 1978) is medium. The study involves a comparatively low but acceptable number of animals per group (10) and reports clinical neurological deficits and neuropathologic effects within a dose range in which LOAEL could be identified for the critical effect. Animal studies in two additional species (guinea pigs and hens) corroborate the primacy of the neurological endpoint and confirm the validity of peripheral neuropathy as the critical effect. Confidence in the database is medium. The database lacks chronic exposure information on pure 2-hexanone via any route of exposure, as well as a multigenerational developmental and reproductive toxicity study and a developmental neurotoxicity study. The chronic drinking water study of O'Donoghue et al. (1978) satisfies the minimum oral database requirements for deriving an RfD for 2-hexanone. Reflecting medium confidence in the principal study and medium confidence in the database, confidence in the RfD is medium.

6.2.2. Noncancer/Inhalation

Dose-dependent development of 2-hexanone-induced neuropathy was confirmed in numerous subchronic studies in rats (Egan et al., 1980; Katz et al., 1980; Duckett et al., 1979, 1974; Johnson et al., 1977; Krasavage and O'Donoghue, 1977; Saida et al., 1976; Spencer et al., 1975) and one chronic study in cats (O'Donoghue and Krasavage, 1979). One 10-month study was Johnson et al. (1977), using two different species (monkeys and rats; n = 8 and n = 10 per

group, respectively) with two concentrations of 2-hexanone (commercial grade). Johnson et al. (1977) utilized four sensitive neurological tests to identify subtle changes in treated versus control animals. The study by Johnson et al. (1977) was chosen as the most suitable study for RfC development. Both sciatic-tibial MCV and ulnar MCV in 2-hexanone-exposed monkeys and rats were considered in deriving the RfC. A graphical comparison of the potential RfCs from these endpoints, as well as other endpoints and studies considered, are illustrated in Figure 5-2. Because monkeys have a similar respiratory tract and breathing patterns to humans and 2,5-hexanedione, the metabolite of 2-hexanone, typically affects long axons such as the sciatic-tibial nerve prior to other nerves, sciatic-tibial nerve MCV in monkeys was used to derive the RfC. It should be noted that ulnar nerve MCV in monkeys and sciatic-tibial nerve MCV in rats were found to have similar $BMCL_{HEC}$ as the endpoint selected above and would not result in significantly different RfCs if those alternatives were utilized.

The RfC of 2×10^{-1} mg/m^3 was derived from the decrease in sciatic-tibial MCV in monkeys exposed to 2-hexanone for 10 months (Johnson et al., 1977). A composite UF of 1000 was applied in the derivation of the RfC: a default of 10 for intraspecies (interindividual) variability, a default of 10 for subchronic-to-chronic uncertainty, 3 for interspecies variability, and 3 for database uncertainty. Information was unavailable to predict potential variability in susceptibility among the population; thus, the intraspecies variability UF of 10 was applied. A subchronic-to-chronic UF of 10 was applied to account for the less-than-lifetime exposure in the principal study, because the data utilized for calculating the RfC were based on values obtained at 25 weeks. An interspecies UF of 3 (rather than 10) was applied because a dosimetric adjustment was made. A UF of 3 was applied to account for database deficiencies. Although a developmental study exists that did not identify a NOAEL (a LOAEL of 1000 ppm was identified), the available developmental studies with n-hexane, a precursor of 2-hexanone, provide support for applying a UF_D of 3. Namely, developmental studies with n-hexane concentrations of 100 (GDs 6–15), 400 (GDs 6–15), or 1000 ppm (GDs 8–16) have been negative; a teratology study in which dams were exposed to n-hexane identified nearly double the highest NOAEL identified from inhalation studies with 2-hexanone. Also, rat developmental neurotoxicity studies with 2,5-hexanedione, the ultimate toxic metabolite of n-hexane and 2-hexanone, have found minimal effects from daily s.c. injections on GDs 12–20 with 340 mg/kg 2,5-hexanedione.

The overall confidence in this RfC assessment is medium. Confidence in the principal study is medium; it involves exposures in two species via the inhalation route and sensitive diagnostic tests for determining treatment-related neurotoxicity. In addition, animal studies in four different species (monkeys, rats, cats, and hens) and occupational exposures corroborate the primacy of the neurological endpoint and confirm the relevance of the critical effect for decreased MCV values.

6.2.3. Cancer

Under the *Guidelines for Carcinogen Risk Assessment* (U.S. EPA, 2005a), there is inadequate information to assess the carcinogenic potential of 2-hexanone. As such, data are unavailable to calculate quantitative cancer risk estimates.

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APPENDIX B-1. DOSE-RESPONSE MODELING FOR DERIVATION OF AN RfD FOR 2-HEXANONE

B-1.1. METHODS

The models in U.S. EPA's benchmark dose (BMD) software (BMDS) (version 1.3.2) were fit to data sets for myofibrillar atrophy of the quadriceps and calf muscle in a 13-month drinking water study with exposure to 2-hexanone (O'Donoghue, 1978). The dose levels used were those reported in the study. A BMR of a 10% extra risk of myofibrillar atrophy of the quadriceps muscle or calf muscle was selected under an assumption that it represents a minimal biologically significant change. Models were run using the default restrictions on parameters built into the BMDS.

B-1.2. RESULTS

The BMD modeling results for myofibrillar atrophy of the quadriceps and calf muscles are summarized in Table B-1.1 and Table B-1.2, respectively. The tables show the BMDs and the 95% lower bounds on the doses (BMDLs) derived from each endpoint modeled. The remainder of this section shows detailed summaries of the best-fit models for myofibrillar atrophy of the quadriceps and calf muscles, presented sequentially.

Table B-1.1. BMD modeling results for animals with myofibrillar atrophy of the quadriceps muscle

Model	AIC[a]	*p* Value	BMD	BMDL	BMD/BMDL
Gamma multi-hit	24.6565	0.9034	150.665	86.2822	1.746189
Log logistic	25.1541	0.7602	156.315	96.3847	1.621782
Logistic	24.5648	0.9392	155.905	94.5301	1.649263
Multistage	**22.3952**	**0.9995**	**141.38**	**49.9434**	2.830804
Log probit	24.9892	0.7974	152.728	98.9646	1.543259
Probit	24.4241	0.9822	148.53	86.9997	1.707247
Quantal linear	29.9156	0.1628	34.9514	22.8722	1.528117
Quantal quadratic	23.7952	0.8118	100.711	78.3857	1.284813
Weibull	24.3816	0.9945	145.517	78.2565	1.859488

[a]AIC = Akaike Information Criterion.

Table B-1.2. BMD modeling results for animals with myofibrillar atrophy of the calf muscle

Model	AIC[a]	*p* Value	BMD	BMDL	BMD/BMDL
Gamma multi-hit	27.7837	0.8972	117.834	48.9374	2.407852
Log logistic	28.36	0.7402	122.843	63.2262	1.942913
Logistic	27.9769	0.8457	120.47	70.8106	1.701299
Multistage	27.4841	0.9956	95.8576	30.1238	3.182122
Log probit	28.0906	0.8019	123.737	67.2193	1.840796
Probit	27.7116	0.9227	114.43	65.7944	1.739206
Quantal linear	30.2036	0.3498	28.7546	19.0312	1.510919
Quantal quadratic	**25.8664**	**0.9701**	**88.7125**	**69.2097**	1.281793
Weibull	27.5386	0.9756	109.348	45.8927	2.382688

[a]AIC = Akaike Information Criterion.

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Multistage Model
MYOFIBRILLAR ATROPHY OF THE QUADRICEPS MUSCLE
==========

BMDS MODEL RUN
~~~~~~~~~~

The form of the probability function is:

P[response] = background + (1-background)*[1-EXP(
-beta1*dose^1-beta2*dose^2-beta3*dose^3)]

The parameter betas are restricted to be positive

Dependent variable = Incidence
Independent variable = Dose

Total number of observations = 4
Total number of records with missing values = 0
Total number of parameters in model = 4
Total number of specified parameters = 0
Degree of polynomial = 3

Maximum number of iterations = 250
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008

Default Initial Parameter Values
Background = 0
Beta(1) = 0
Beta(2) = 0
Beta(3) = 5.88262e+011

Asymptotic Correlation Matrix of Parameter Estimates

(*** The model parameter(s) -Background -Beta(1) -Beta(2)
have been estimated at a boundary point, or have been specified by the user,
and do not appear in the correlation matrix)

Beta(3)

Beta(3) 1

Parameter Estimates

Variable	Estimate	Std. Err.
Background	0	NA
Beta(1)	0	NA
Beta(2)	0	NA
Beta(3)	3.72829e-008	2.10431e-008
~~~~~~~~~~

NA - Indicates that this parameter has hit a bound
implied by some inequality constraint and thus
has no standard error.

Analysis of Deviance Table

Model	Log(likelihood)	Deviance	Test DF	P-value
Full model	-10.1823			
Fitted model	-10.1976	0.0306013	3	0.9986
Reduced model	-26.9205	33.4763	3	<.0001

AIC: 22.3952

Goodness of Fit

Dose	Est._Prob.	Expected	Observed	Size	Chi^2 Res.
i: 1					
0.0000	0.0000	0.000	0	10	0.000
i: 2					
143.0000	0.1033	1.033	1	10	-0.036
i: 3					
266.0000	0.5043	5.043	5	10	-0.017
i: 4					
560.0000	0.9986	9.986	10	10	1.001

Chi-square = 0.02 DF = 3 P-value = 0.9995

Benchmark Dose Computation

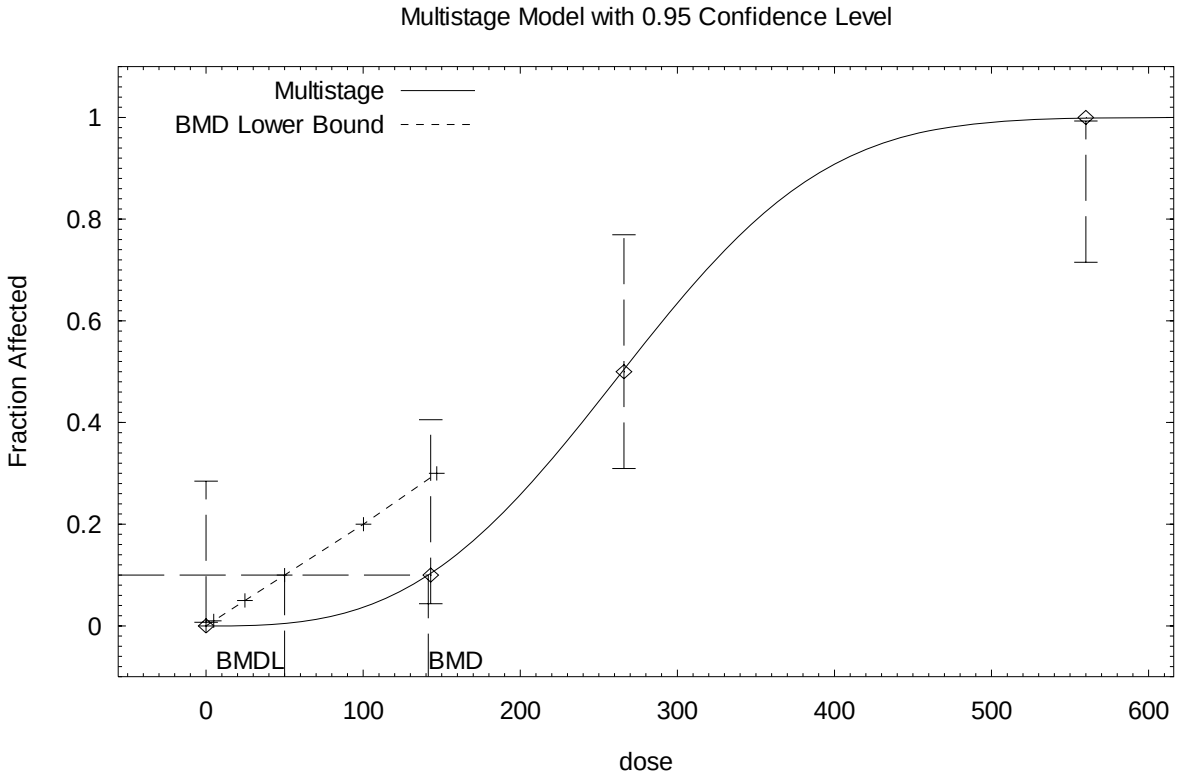
Specified effect = 0.1

Risk Type = Extra risk

Confidence level = 0.95

BMD = 141.38

BMDL = 49.9434



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Quantal Quadratic Model

MYOFIBRILLAR ATROPHY OF THE CALF MUSCLE

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BMDS MODEL RUN

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The form of the probability function is:

P[response] = background + (1-background)*[1-EXP(-slope*dose^2)]

Dependent variable = Incidence
Independent variable = Dose

Total number of observations = 4
Total number of records with missing values = 0
Maximum number of iterations = 250
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008

Default Initial (and Specified) Parameter Values
Background = 0.0454545
Slope = 9.7083e-006
Power = 2 Specified
~~~~~~~~~~

Asymptotic Correlation Matrix of Parameter Estimates

(*** The model parameter(s) -Background -Power
have been estimated at a boundary point, or have been specified by the user,
and do not appear in the correlation matrix)

	Slope
Slope	1

Parameter Estimates

Variable	Estimate	Std. Err.
Background	0	NA
Slope	1.33878e-005	4.17409e-006

NA - Indicates that this parameter has hit a bound
implied by some inequality constraint and thus
has no standard error.

Analysis of Deviance Table

Model	Log(likelihood)	Deviance	Test DF	P-value
Full model	-11.7341			
Fitted model	-11.9332	0.398099	3	0.9406
Reduced model	-27.5256	31.5828	3	<.0001

AIC: 25.8664

Goodness of Fit

Dose	Est._Prob.	Expected	Scaled Observed	Size	Residual
0.0000	0.0000	0.000	0	10	0
143.0000	0.2395	2.395	2	10	-0.2926
266.0000	0.6122	6.122	6	10	-0.07918
560.0000	0.9850	9.850	10	10	0.3905

Chi-square = 0.24 DF = 3 P-value = 0.9701

Benchmark Dose Computation

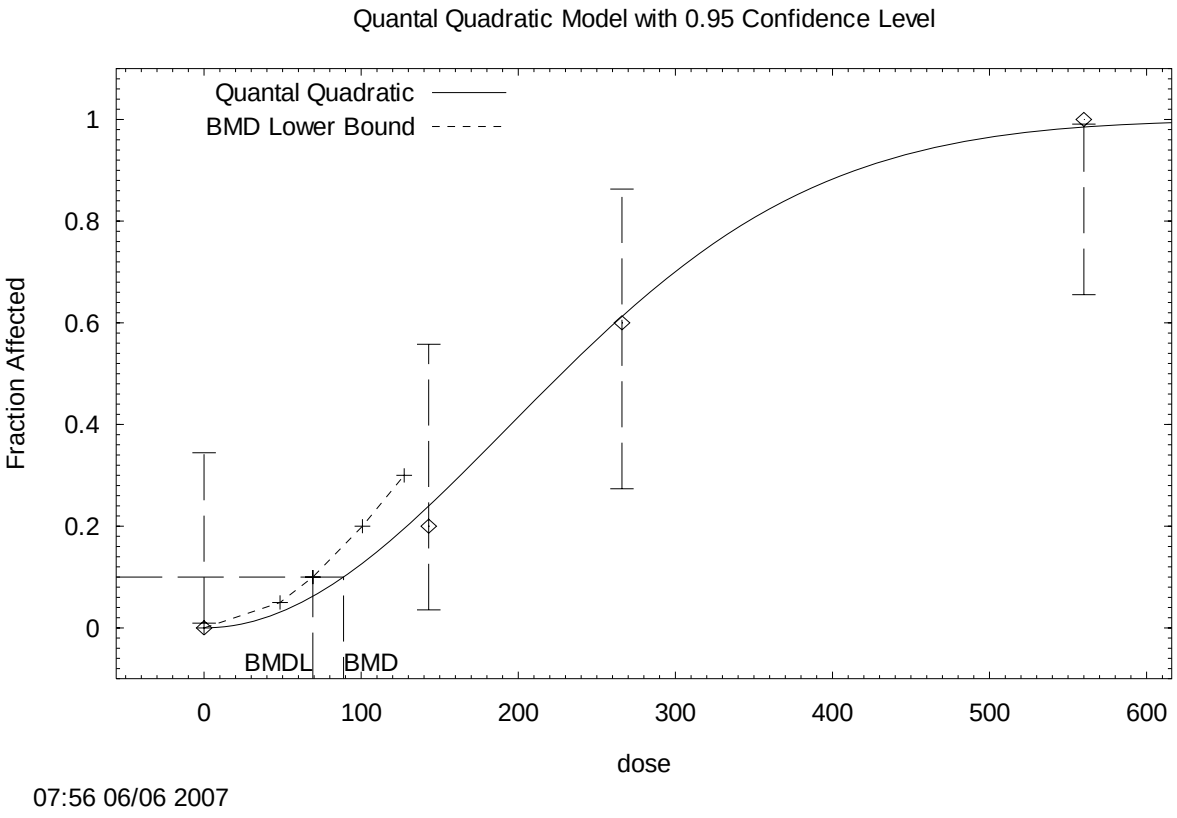
Specified effect = 0.1

Risk Type = Extra risk

Confidence level = 0.95

BMD = 88.7125

BMDL = 69.2097


Quantal Quadratic Model with 0.95 Confidence Level
Quantal Quadratic
BMD Lower Bound
Fraction Affected
1
0.8
0.6
0.4
0.2
0
BMDL
BMD
0
100
200
300
400
500
600
dose
07:56 06/06 2007

APPENDIX B-2. EXPOSURE-RESPONSE MODELING FOR DERIVATION OF AN RfC FOR 2-HEXANONE

B-2. 1. METHODS

The models in U.S. EPA's benchmark dose (BMD) software (BMDS) (version 1.3.2) were fit to multiple data sets presented in an inhalation study with exposure to monkeys and rats (Johnson et al., 1977). Motor conduction velocity (MCV) was determined to be the most relevant endpoint in both species and was modeled for the sciatic and tibial nerves. The exposure concentrations used were those reported in the study. The U.S. EPA (2000c) BMD methodology suggests that in the absence of any other idea of what level of response to consider adverse, a change in the mean equal to one control standard deviation from the control should be used as the benchmark response (BMR). A BMR of a 10% change in nerve conduction velocity from the control mean was selected under an assumption that it represents a minimal biologically significant change. Thus, a 10% BMR was utilized in the derivation of the reference concentration (RfC).

B-2.2. RESULTS

The BMD modeling results are summarized in Table B-2.1. This table shows the BMDs and 95% lower bounds on doses (BMDLs) derived from each endpoint modeled in monkeys and rats. The remainder of this section shows detailed summaries of the modeling results for monkey sciatic and ulnar nerves for both monkeys and rats (all 1st degree polynomial), presented sequentially.

Table B-2.1. Summary of BMDS modeling results for 2-hexanone

Animal/endpoint	Model[a]	*p* Value	AIC[b]	BMD	BMDL
Monkey sciatic-tibial nerve (MCV at 6 months)	**1st degree polynomial**	**0.59**	**105.59**	**293.184**	**243.262**
	2nd degree polynomial	--	107.29	169.254	68.8063
	Power	--	105.58	293.184	243.262
	Hill	--	--	--	--
Monkey ulnar nerve (MCV at 6 months)	**1st degree polynomial**	**0.90**	**105.31**	**334.691**	**278.471**
	2nd degree polynomial	--	107.29	293.8	94.1174
	Power	--	109.31	334.691	278.471
	Hill	--	--	--	--
Rat sciatic-tibial nerve (MCV at 25 weeks)	**1st degree polynomial**	**0.79**	**121.55**	**270.959**	**232.105**
	2nd degree polynomial	--	123.48	355.94	100.045
	Power	--	125.48	329.704	232.56
	Hill	--	--	--	--
Rat ulnar nerve (MCV at 25 weeks)	**1st degree polynomial**	**0..26**	**122.77**	**470.964**	**352.274**
	2nd degree polynomial	--	606.18	133.181	87.3758
	Power	--	125.48	177.555	14.1388
	Hill	--	--	--	--

[a]Bolded values were the models used for further evaluation and RfC derivation.
[b]AIC = Akaike Information Criterion.

==========

1st Degree Polynomial Model
MONKEYS MCV SCIATIC TIBIAL
==========

BMDS MODEL RUN
~~~~~~~~~~

The form of the response function is:

Y[dose] = beta_0 + beta_1*dose + beta_2*dose^2 + ...

Dependent variable = MEAN
Independent variable = Dose
rho is set to 0
Signs of the polynomial coefficients are not restricted
A constant variance model is fit

Total number of dose groups = 3
Total number of records with missing values = 0
Maximum number of iterations = 250
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008

Default Initial Parameter Values

alpha =	28.6225
rho =	0 Specified
beta_0 =	49.3606
beta_1 =	-0.0168361

Parameter Estimates

Variable	Estimate	Std. Err.	95.0% Wald Confidence Interval Lower Conf. Limit	Upper Conf. Limit
alpha	25.351	7.31821	11.0076	39.6944
beta_0	49.3606	1.3264	46.761	51.9603
beta_1	-0.0168361	0.0023421	-0.0214265	-0.0122456

Asymptotic Correlation Matrix of Parameter Estimates

	alpha	beta_0	beta_1
alpha	1	4.8e-015	-5.1e-015
beta_0	4.8e-015	1	-0.63
beta_1	-5.1e-015	-0.63	1

Table of Data and Estimated Values of Interest

Dose	N	Obs Mean	Obs Std Dev	Est Mean	Est Std Dev	Chi^2 Res.
0	8	50	5.35	49.4	5.03	0.359
~~~~~~~~~~

98	8	47	5.35	47.7	5.03	-0.399
976	8	33	5.35	32.9	5.03	0.0401

Model Descriptions for likelihoods calculated

Model A1: Yij = Mu(i) + e(ij)
Var{e(ij)} = Sigma^2

Model A2: Yij = Mu(i) + e(ij)
Var{e(ij)} = Sigma(i)^2

Model R: Yi = Mu + e(i)
Var{e(i)} = Sigma^2

Warning: Likelihood for model A1 larger than the Likelihood for model A2.

Likelihoods of Interest

Model	Log(likelihood)	DF	AIC
A1	-50.647941	4	109.295882
A2	-50.647941	6	113.295882
fitted	-50.793824	2	105.587648
R	-65.085067	2	134.170135

Test 1: Does response and/or variances differ among dose levels
(A2 vs. R)
Test 2: Are Variances Homogeneous (A1 vs A2)
Test 3: Does the Model for the Mean Fit (A1 vs. fitted)

Tests of Interest

Test	-2*log(Likelihood Ratio)	Test df	p-value
Test 1	28.8743	4	<.0001
Test 2	-1.42109e-014	2	<.0001
Test 3	0.291767	1	0.5891

The p-value for Test 1 is less than .05. There appears to be a
difference between response and/or variances among the dose levels.
It seems appropriate to model the data

The p-value for Test 2 is less than .05. Consider running a
non-homogeneous variance model

The p-value for Test 3 is greater than .05. The model chosen appears
to adequately describe the data

Benchmark Dose Computation

Specified effect = 0.1

Risk Type = Relative risk

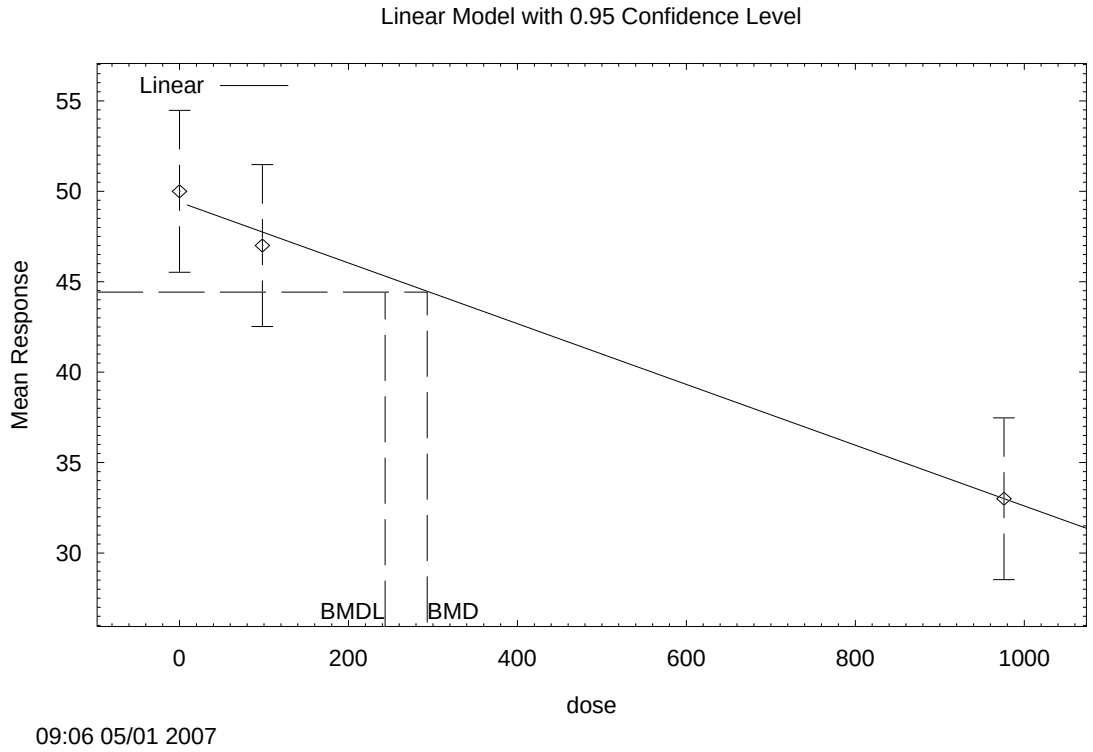
Confidence level = 0.95

BMD = 293.184

BMDL = 243.262

BMDL computation failed for one or more points on the BMDL curve.

The BMDL curve will not be plotted



==========

1st Degree Polynomial Model.
MONKEYS MCV ULNAR

==========

BMDS MODEL RUN

~~~~~~

The form of the response function is:

Y[dose] = beta_0 + beta_1*dose + beta_2*dose^2 + ...
~~~~~~

Dependent variable = MEAN
Independent variable = Dose
rho is set to 0
Signs of the polynomial coefficients are not restricted
A constant variance model is fit

Total number of dose groups = 3
Total number of records with missing values = 0
Maximum number of iterations = 250
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008

Default Initial Parameter Values
alpha = 28.6225
rho = 0 Specified
beta_0 = 57.8551
beta_1 = -0.0172861

Parameter Estimates

Variable	Estimate	Std. Err.	95.0% Wald Confidence Interval Lower Conf. Limit	Upper Conf. Limit
alpha	25.0604	7.23432	10.8814	39.2394
beta_0	57.8551	1.31877	55.2704	60.4399
beta_1	-0.0172861	0.00232864	-0.0218502	-0.0127221

Asymptotic Correlation Matrix of Parameter Estimates

	alpha	beta_0	beta_1
alpha	1	-4.3e-012	8.7e-012
beta_0	-4.3e-012	1	-0.63
beta_1	8.7e-012	-0.63	1

Table of Data and Estimated Values of Interest

Dose	N	Obs Mean	Obs Std Dev	Est Mean	Est Std Dev	Chi^2 Res.
0	8	58	5.35	57.9	5.01	0.0819
98	8	56	5.35	56.2	5.01	-0.091
976	8	41	5.35	41	5.01	0.00914

Model Descriptions for likelihoods calculated

Model A1: Yij = Mu(i) + e(ij)
Var{e(ij)} = Sigma^2

Model A2: Yij = Mu(i) + e(ij)
Var{e(ij)} = Sigma(i)^2

Model R: Yi = Mu + e(i)
Var{e(i)} = Sigma^2

Warning: Likelihood for model A1 larger than the Likelihood for model A2.

Likelihoods of Interest

Model	Log(likelihood)	DF	AIC
A1	-50.647941	4	109.295882
A2	-50.647941	6	113.295882
fitted	-50.655476	2	105.310953
R	-65.478867	2	134.957734

Test 1: Does response and/or variances differ among dose levels
(A2 vs. R)
Test 2: Are Variances Homogeneous (A1 vs A2)
Test 3: Does the Model for the Mean Fit (A1 vs. fitted)

Tests of Interest

Test	-2*log(Likelihood Ratio)	Test df	p-value
Test 1	29.6619	4	<.0001
Test 2	-1.42109e-014	2	<.0001
Test 3	0.0150715	1	0.9023

The p-value for Test 1 is less than .05. There appears to be a
difference between response and/or variances among the dose levels.
It seems appropriate to model the data

The p-value for Test 2 is less than .05. Consider running a
non-homogeneous variance model

The p-value for Test 3 is greater than .05. The model chosen appears
to adequately describe the data

Benchmark Dose Computation
Specified effect = 0.1

Risk Type = Relative risk

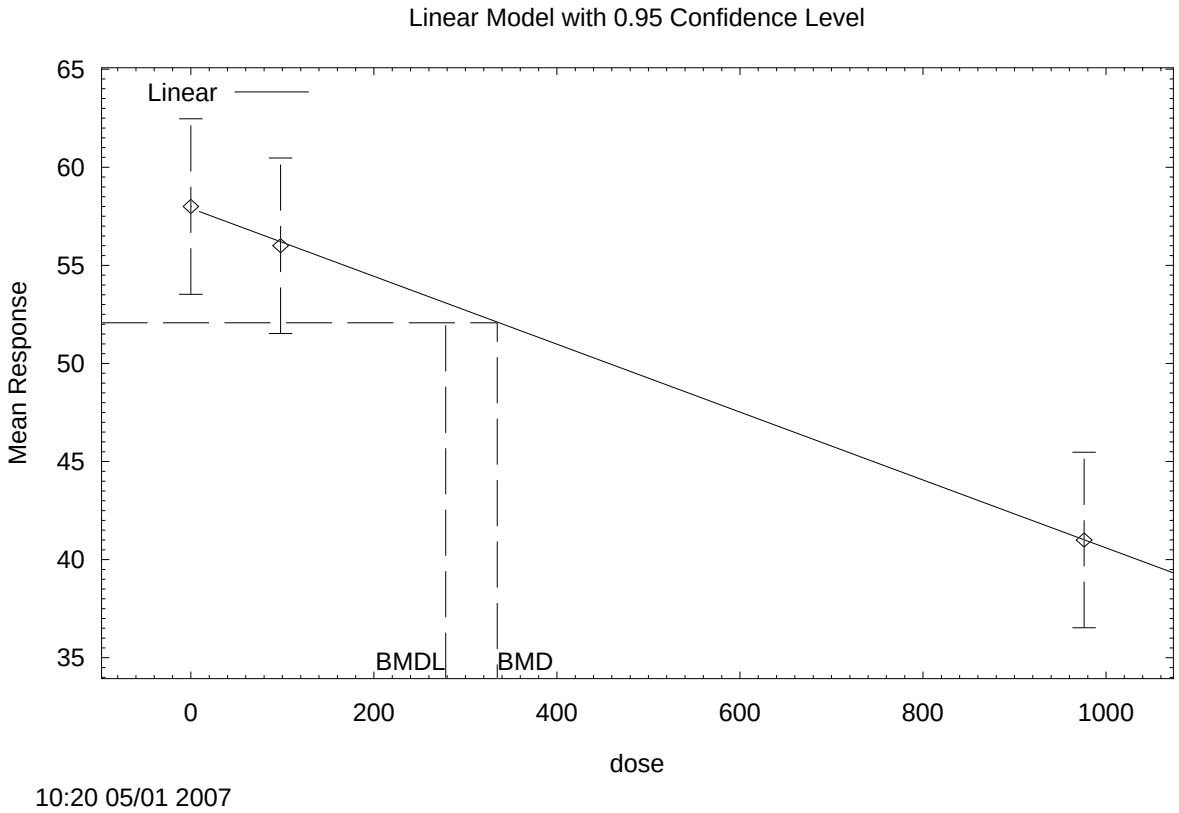
Confidence level = 0.95

BMD = 334.691

BMDL = 278.471

BMDL computation failed for one or more points on the BMDL curve.

The BMDL curve will not be plotted



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1st Degree Polynomial Model.
RATS MCV SCIATIC TIBIAL

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BMDS MODEL RUN

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The form of the response function is:

Y[dose] = beta_0 + beta_1*dose + beta_2*dose^2 + ...

Dependent variable = MEAN
Independent variable = Dose
rho is set to 0
Signs of the polynomial coefficients are not restricted
A constant variance model is fit

Total number of dose groups = 3
Total number of records with missing values = 0
Maximum number of iterations = 250
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008
~~~~~~

Default Initial Parameter Values

alpha =	20.5209
rho =	0 Specified
beta_0 =	42.2427
beta_1 =	-0.0155901

Parameter Estimates

			95.0% Wald Confidence Interval	
Variable	Estimate	Std. Err.	Lower Conf. Limit	Upper Conf. Limit
alpha	18.5129	4.78001	9.14425	27.8815
beta_0	42.2427	1.01325	40.2568	44.2287
beta_1	-0.0155901	0.00178935	-0.0190972	-0.012083

Asymptotic Correlation Matrix of Parameter Estimates

	alpha	beta_0	beta_1
alpha	1	-4.2e-008	6.6e-008
beta_0	-4.2e-008	1	-0.63
beta_1	6.6e-008	-0.63	1

Table of Data and Estimated Values of Interest

Dose	N	Obs Mean	Obs Std Dev	Est Mean	Est Std Dev	Chi^2 Res.
0	10	42	4.53	42.2	4.3	-0.178
97	10	41	4.53	40.7	4.3	0.198
976	10	27	4.53	27	4.3	-0.0197

Model Descriptions for likelihoods calculated

Model A1: Yij = Mu(i) + e(ij)
Var{e(ij)} = Sigma^2

Model A2: Yij = Mu(i) + e(ij)
Var{e(ij)} = Sigma(i)^2

Model R: Yi = Mu + e(i)
Var{e(i)} = Sigma^2

Likelihoods of Interest

Model	Log(likelihood)	DF	AIC
A1	-58.741250	4	125.482501
A2	-58.741250	6	129.482501
fitted	-58.777017	2	121.554034

R -78.206652 2 160.413304

Test 1: Does response and/or variances differ among dose levels
(A2 vs. R)
Test 2: Are Variances Homogeneous (A1 vs A2)
Test 3: Does the Model for the Mean Fit (A1 vs. fitted)

Tests of Interest

Test	-2*log(Likelihood Ratio)	Test df	p-value
Test 1	38.9308	4	<.0001
Test 2	0	2	1
Test 3	0.0715333	1	0.7891

The p-value for Test 1 is less than .05. There appears to be a
difference between response and/or variances among the dose levels.
It seems appropriate to model the data

The p-value for Test 2 is greater than .05. A homogeneous variance
model appears to be appropriate here

The p-value for Test 3 is greater than .05. The model chosen appears
to adequately describe the data

Benchmark Dose Computation
Specified effect = 0.1

Risk Type = Relative risk

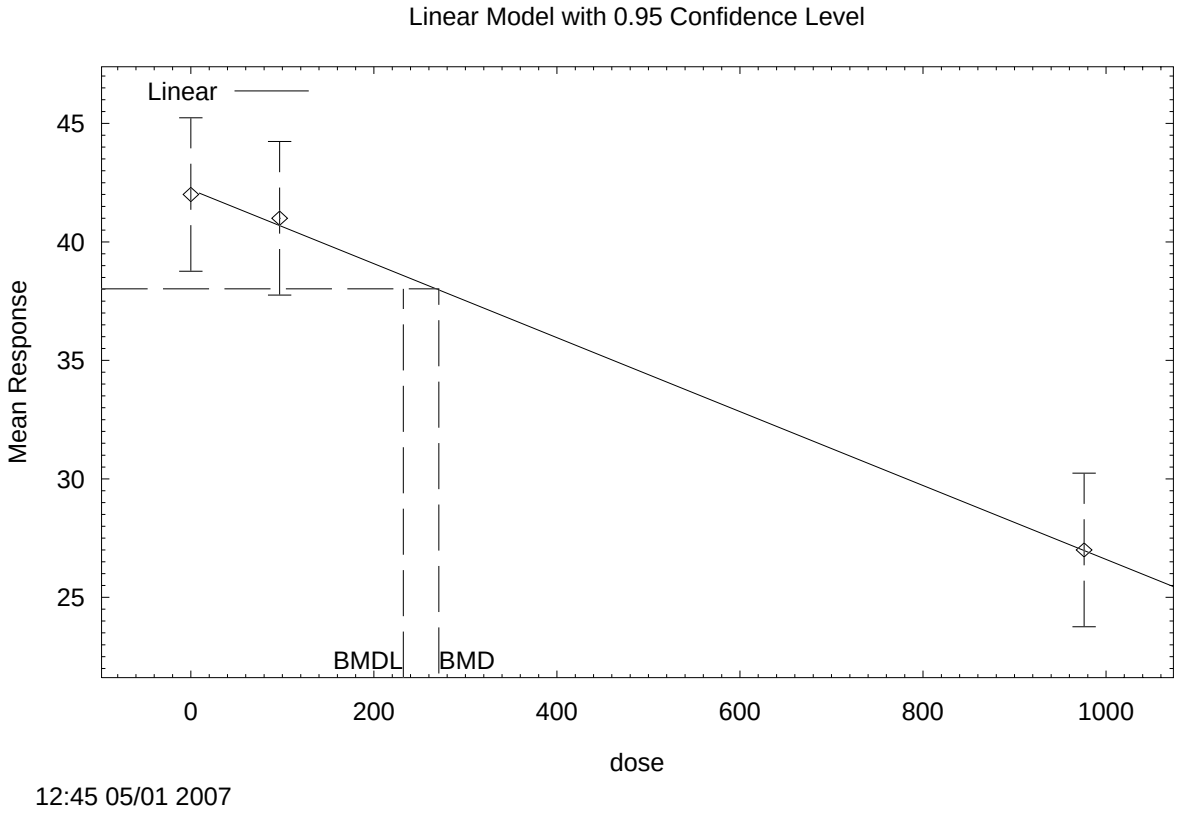
Confidence level = 0.95

BMD = 270.959

BMDL = 232.105

BMDL computation failed for one or more points on the BMDL curve.

The BMDL curve will not be plotted



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1st Degree Polynomial Model.

RATS MCV ULNAR

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BMDS MODEL RUN

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The form of the response function is:

Y[dose] = beta_0 + beta_1*dose + beta_2*dose^2 + ...

Dependent variable = MEAN
Independent variable = Dose
rho is set to 0
Signs of the polynomial coefficients are not restricted
A constant variance model is fit

Total number of dose groups = 3
Total number of records with missing values = 0
Maximum number of iterations = 250
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008
~~~~~~

Default Initial Parameter Values

alpha = 20.5209
rho = 0 Specified
beta_0 = 38.9587
beta_1 = -0.0082721

Parameter Estimates

Variable	Estimate	Std. Err.	95.0% Wald Confidence Interval Lower Conf. Limit	Upper Conf. Limit
alpha	19.2803	4.97816	9.52331	29.0373
beta_0	38.9587	1.03404	36.932	40.9853
beta_1	-0.0082721	0.00182606	-0.0118511	-0.00469309

Asymptotic Correlation Matrix of Parameter Estimates

	alpha	beta_0	beta_1
alpha	1	7.6e-015	3.4e-015
beta_0	7.6e-015	1	-0.63
beta_1	3.4e-015	-0.63	1

Table of Data and Estimated Values of Interest

Dose	N	Obs Mean	Obs Std Dev	Est Mean	Est Std Dev	Chi^2 Res.
0	10	40	4.53	39	4.39	0.75
97	10	37	4.53	38.2	4.39	-0.833
976	10	31	4.53	30.9	4.39	0.0828

Model Descriptions for likelihoods calculated

Model A1: Yij = Mu(i) + e(ij)
Var{e(ij)} = Sigma^2

Model A2: Yij = Mu(i) + e(ij)
Var{e(ij)} = Sigma(i)^2

Model R: Yi = Mu + e(i)
Var{e(i)} = Sigma^2

Likelihoods of Interest

Model	Log(likelihood)	DF	AIC
A1	-58.741250	4	125.482501
A2	-58.741250	6	129.482501
fitted	-59.386277	2	122.772554
R	-67.712722	2	139.425445

Test 1: Does response and/or variances differ among dose

levels (A2 vs. R)
Test 2: Are Variances Homogeneous (A1 vs A2)
Test 3: Does the Model for the Mean Fit (A1 vs. fitted)

Tests of Interest

Test	-2*log(Likelihood Ratio)	Test df	p-value
Test 1	17.9429	4	0.000127
Test 2	0	2	1
Test 3	1.29005	1	0.256

The p-value for Test 1 is less than .05. There appears to be a difference between response and/or variances among the dose levels. It seems appropriate to model the data

The p-value for Test 2 is greater than .05. A homogeneous variance model appears to be appropriate here

The p-value for Test 3 is greater than .05. The model chosen appears to adequately describe the data

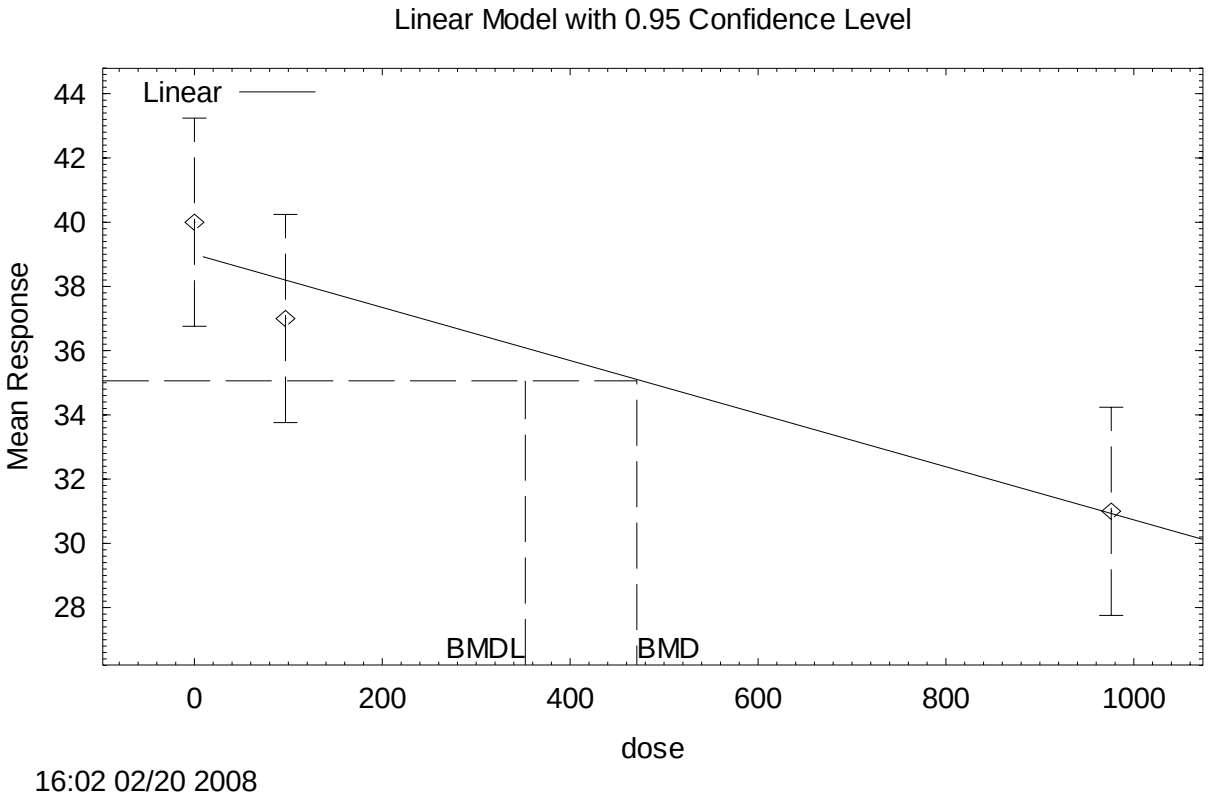
Benchmark Dose Computation
Specified effect = 0.1

Risk Type = Relative risk

Confidence level = 0.95

BMD = 470.964

BMDL = 352.274


Linear Model with 0.95 Confidence Level
Linear
Mean Response
44
42
40
38
36
34
32
30
28
BMDL
BMD
0
200
400
600
800
1000
dose
16:02 02/20 2008

Superfund Technical Support Center

National Center for Environmental Assessment
U.S. Environmental Protection Agency
26 West Martin Luther King Drive, MS-AG41
Cincinnati, Ohio 45268

Jon Reid/Director, **Pat Daunt/Administrator**
Hotline 513-569-7300, FAX 513-569-7159, E-Mail: STSC.Superfund@epa.gov

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March 14, 2008

Michael Sivak
U.S. EPA, Region 2

ASSISTANCE REQUESTED: PPRTVs for 1,1,2-Trichloroethane, 1,2,4-Trimethylbenzene, 1,2-Dichloroethane, 1,2-Dichloropropane and 2,4-Dichlorophenol

ENCLOSED INFORMATION:

Attachment 1: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 1,1,2-TRICHLOROETHANE (CASRN 79-00-5) Derivation of Subchronic and Chronic Inhalation RfCs**

Attachment 2: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 1,2,4-TRIMETHYLBENZENE (CASRN 95-63-6)**

Attachment 3: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) (CASRN 107-06-2) Derivation of a Chronic Oral RfD**

Supported by ECFlex, Incorporated, under
U.S. Environmental Protection Agency Contract No. EP-C-06-088.

Attachment 4: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 1,2-DICHLOROPROPANE (CASRN 78-87-5) Derivation of a Carcinogenicity Assessment**

Attachment 5: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2,4-DICHLOROPHENOL (CASRN 120-83-2)**

BE ADVISED: *Unless specifically indicated to have been peer reviewed, it is to be noted that the attached Provisional Toxicity Value Paper(s) have not been through the U.S. EPA's formal review process; therefore, they do not represent a U.S. EPA verified assessment.*

If you have any questions regarding this transmission, please contact the STSC at (513) 569-7300.

Attachments (5)

cc: STSC Files

Supported by ECFlex, Incorporated, under
U.S. Environmental Protection Agency Contract No. EP-C-06-088.

7-5-2006

Provisional Peer Reviewed Toxicity Values for

1,1,2-Trichloroethane

(CASRN 79-00-5)

Derivation of Subchronic and Chronic Inhalation RfCs

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
ì g	microgram
ì mol	micromoles
VOC	volatile organic compound

7-5-2006

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 1,1,2-TRICHLOROETHANE (CASRN 79-00-5) Derivation of Subchronic and Chronic Inhalation RfCs

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

An RfC for 1,1,2-trichloroethane is not listed on IRIS (U.S. EPA, 2006) or in the HEAST (U.S. EPA, 1997). EPA review documents for 1,1,2-trichloroethane that were identified in the CARA list (U.S. EPA, 1991, 1994) and examined for relevant information were a Health Effects Assessment (U.S. EPA, 1984) and a Drinking Water Health Advisory (U.S. EPA, 1987), neither of which attempted an inhalation toxicity assessment. ATSDR (1989) declined to derive minimal risk levels for inhalation exposure to 1,1,2-trichloroethane. ACGIH (2001, 2003), NIOSH (2003), and OSHA (2003) all list TWA occupational exposure levels of 10 ppm (55 mg/m^3) for 1,1,2-trichloroethane to protect against central nervous system depression, eye and upper respiratory tract irritation, and liver damage. The toxicity of 1,1,2-trichloroethane has been studied by NTP (2003) by oral exposure, and has been reviewed by IARC (1991, 1999). WHO (2003) does not have a toxicological review for this chemical. Literature searches were

conducted for the period from 1988 to July 2003 in the following databases: TOXLINE (including NTIS and BIOSIS updates), CANCERLIT, MEDLINE, CCRIS, GENETOX, HSDB, EMIC/EMICBACK, DART/ETICBACK, RTECS and TSCATS. Additional literature searches from July 2003 through October 2004 were conducted by NCEA-Cincinnati using MEDLINE, TOXLINE, Chemical and Biological Abstracts databases.

REVIEW OF PERTINENT LITERATURE

Human Studies

No relevant data were located regarding the toxicity of 1,1,2-trichloroethane to humans following inhalation exposure.

Animal Studies

On June 7, 2002 HAP Task Force of Millwood, VA presented to the EPA's Office of Pollution Prevention and Toxics a non-peer reviewed subchronic inhalation study on 1,1,2-Trichloroethane (1,1,2-TCE) conducted by WIL Laboratories, Ashland, OH. In this study 8 week old 10 male and 10 female Fischer 344 CDF (F-344) Crl:BR rats in each group were exposed to filtered air, 15, 40 and 100 ppm of 1,1,2-Trichloroethane through inhalation route for 13 weeks. Minimal hepatocellular vacuolation was observed in 15 and 40 ppm dosed groups. According to the author of the study the presence of minimal hepatocellular vacuolation, which might represent lipid accumulation, without centrilobular necrosis or an increase in serum levels of enzymes indicative of hepatocellular injury suggest that this degree of vacuolation lacks toxicological significance. Olfactory epithelium, including atrophy and respiratory epithelial metaplasia of the nasal turbinate were found in the 40 and 100 ppm dosed groups of animals. The authors of this study concluded that based on the results of the study for whole-body inhalation for 1,1,2-Trichloroethane to rats for 13 weeks, the NOEL was less than 15 ppm and NOAEL was less than 40 ppm. According to this study the hepatic and nasal effects observed in this study were not considered to be toxicologically significant. Olfactory epithelial atrophy and respiratory epithelial metaplasia are considered to be precancerous lesions. Such precancerous lesions are not adequate for developing an RfC.

In an unpublished study by Dow Chemical Company (briefly summarized by ACGIH, 2001; ATSDR, 1989; and U.S. EPA, 1984), unspecified numbers of male and female rats, guinea pigs, and rabbits were exposed to 1,1,2-trichloroethane vapors at a concentration of 15 ppm, 7 hours per day, 5 days per week for 6 months. No treatment-related adverse effects were noted regarding growth, mortality, organ weight, hematology, or clinical chemistry. Nor were there indications of treatment-related histopathologic changes. Sixteen 7-hour exposures of rats to a 1,1,2-trichloroethane vapor concentration of 30 ppm resulted in minor fatty changes and cloudy

swelling in the liver of female rats, but male rats appeared unaffected. The secondary accounts of these unpublished studies do not provide sufficient detail to provide a basis for an RfC for 1,1,2-trichloroethane.

A single male dog and 24 Sprague-Dawley rats (12/sex) were exposed to 1,1,2-trichloroethane at a target vapor concentration of 100 ppm (mean measured concentration of 84 ppm) 7 hours per day (on alternate days) for up to 6 months (Mellon Institute, 1947). Air-exposed animals (1 dog and 12 male and 12 female rats) served as controls. Endemic lung infection in the entire rat colony resulted in high mortality among treated and control rats (57 and 62%, respectively) during the study and rendered it unuseable for determining the toxicity of 1,1,2-trichloroethane. The treated dog exhibited a 13.2% decrease in body weight gain relative to the control dog, but no obvious treatment-related effects on hematology or clinical chemistry, and no pathological signs. Inclusion of only a single treated dog is an obvious limitation of this study.

DERIVATION OF A PROVISIONAL SUBCHRONIC AND CHRONIC RfC FOR 1,1,2-TRICHLOROETHANE

Due to the lack of adequate health effects data for either subchronic or chronic duration inhalation exposure, it is not feasible to derive a subchronic or chronic p-RfC for 1,1,2-trichloroethane.

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Provisional Peer Reviewed Toxicity Values for

1,2,4-Trimethylbenzene
(CASRN 95-63-6)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
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U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 1,2,4-TRIMETHYLBENZENE (CASRN 95-63-6)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and

circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

Neither a reference dose (RfD) nor a reference concentration (RfC) are available for 1,2,4-trimethylbenzene in the Integrated Risk Information System (IRIS) database (U.S. EPA, 2007) or the Health Effects Assessment Summary Tables (HEAST) (U.S. EPA, 1997). There is no Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile on 1,2,4-trimethylbenzene, other trimethylbenzene isomers, or mixtures of trimethylbenzene isomers (ATSDR, 2006). The Chemical Assessments and Related Activities (CARA) list (U.S. EPA, 1991, 1994a) and the HEAST (U.S. EPA, 1997) list a Health and Environmental Assessment (HEA) for trimethylbenzenes (U.S. EPA, 1987a); however, the available toxicity data were considered inadequate for quantitative risk assessment (U.S. EPA, 1997). The CARA (U.S. EPA, 1991, 1994a) lists a Drinking Water Health Advisory for 1,2,4-trimethylbenzene (U.S. EPA, 1987b). Because available human and animal toxicity data were considered inadequate for longer-term and lifetime quantitative risk assessment, the U.S. EPA (1987b) derived an RfD of 0.64 mg/kg-day for 1,2,4-trimethylbenzene based on assumptions that the Threshold Limit Value (TLV) of 25 ppm (125 mg/cu.m) for mixed trimethylbenzenes recommended by the American Conference of Governmental Industrial Hygienists (ACGIH, 2001, 2005) represents a NOAEL for 1,2,4-trimethylbenzene and that exposure results in 50% absorption. The National Institute of Occupational Safety and Health (NIOSH) adopted a recommended exposure limit (REL) time-weighted average (TWA) of 25 ppm (123 mg/m^3) for 1,2,4-trimethylbenzene (NIOSH, 2006). The Occupational Safety and Health Administration (OSHA) has not adopted a permissible exposure limit (PEL) for 1,2,4-trimethylbenzene (OSHA, 2006). Health assessments for 1,2,4-trimethylbenzene are not available from other major sources, including CalEPA (2006), the

National Toxicology Program (NTP, 2006), the World Health Organization (WHO, 2006), and the International Agency for Research on Cancer (IARC, 2006).

A Group D (not classifiable as to human carcinogenicity) cancer classification is included in the Drinking Water Standards and Health Advisories list (U.S. EPA, 2004). A cancer assessment for 1,2,4-trimethylbenzene is not available on IRIS (U.S. EPA, 2007) or the HEAST (U.S. EPA, 1997). A cancer assessment for 1,2,4-trimethylbenzene is not available from CalEPA (2006), the National Toxicology Program (NTP, 2006), the World Health Organization (WHO, 2006), or the International Agency for Research on Cancer (IARC, 2006). Occupational exposure limits for 1,2,4-trimethylbenzene listed by NIOSH (2006) include no cancer notation.

Literature searches were performed to identify relevant information for 1,2,4-trimethylbenzene for the years 1986-1998 in the databases HSDB, RTECS, TSCATS, MEDLINE, and TOXLINE. Update literature searches were conducted in TOXLINE, MEDLINE (plus PubMed cancer subset), and DART/ETICBACK for the time period including January, 1998 to December, 2005. Update search of the TOXCENTER database was performed for the time period of August, 2000 to December, 2005. Databases searched without date limitations in December, 2005, included TSCATS, RTECS, GENETOX, HSDB and CCRIS. Search of Current Contents encompassed July to December, 2005.

REVIEW OF PERTINENT DATA

Human Studies

Oral Exposure

No data were located regarding the oral toxicity or carcinogenicity of 1,2,4-trimethylbenzene in humans.

Inhalation Exposure

Data regarding the inhalation toxicity of 1,2,4-trimethylbenzene in humans come from an occupational exposure study in which workers were exposed to a mixture of trimethylbenzene isomers. Bättig et al. (1958) examined 27 workers exposed to Fleet-X DV 99 solvent in the painting shop of a Swiss transportation plant. The solvent was analyzed spectrographically and was found to consist primarily of aromatic hydrocarbons (97.5%) and paraffinic and naphthenic hydrocarbons (2.5%). The aromatic hydrocarbon portion was composed of 1,2,4-trimethylbenzene (>50%), 1,3,5-trimethylbenzene (>30%), and possibly included 1,2,3-trimethylbenzene, 1-methyl-2-ethyl benzene, 1-methyl-3-ethyl benzene, and 1-methyl-4-ethyl benzene. Based on analysis of air samples collected from the plant, the concentration of the solvent was roughly estimated at 10-60 ppm (49-295 mg/m^3). The control group consisted of 10 unskilled workers employed in a different section of the plant. Although the authors stated that the Fleet-X DV 99 solvent was used for "a period of some ten years," the average exposure duration of the workers was not reported. The workers reported CNS symptoms (vertigo, headaches and drowsiness) more often than the control group (70% versus 30% in the controls).

Chronic asthma-like bronchitis (30% of workers versus 10% of controls), anemia [defined as < 4.5 million erythrocytes/mm^3 and usually combined with normal hemoglobin] (52% versus 20%) and alterations in blood clotting (30% versus 10%) were also observed in the exposed workers. The incidence of CNS symptoms was statistically significantly higher in the exposed workers than in the control group (Fisher's exact test conducted for this assessment; $p<0.05$). For the other effects, the incidences did not significantly differ between the groups. A higher incidence of vitamin C deficiency was observed in the control group, suggesting that the two groups may not have been matched for socioeconomic status. If the assumption is made that the solvent exclusively contained trimethylbenzene isomers, then this study identifies a LOAEL in the range of 10-60 ppm (49-295 mg/m^3) for signs of neurotoxicity.

Animal Studies

Oral Exposure

The database of repeated oral exposure studies in animals for 1,2,4-trimethylbenzene is limited to a 4-week study (Borriston Laboratories, 1984) and a chronic exposure carcinogenicity study (Maltoni et al., 1997). No oral developmental or reproductive toxicity studies were located for 1,2,4-trimethylbenzene.

The primary focus of the Borriston Laboratories (1984) study was the ability of 1,2,4-trimethylbenzene to induce nephrotoxicity. In this study, groups of 10 male Fischer-344 rats were administered doses of 0.5 or 2.0 g/kg neat 1,2,4-trimethylbenzene by gavage 5 days/week for 4 weeks; the duration-adjusted doses were 357 and 1429 mg/kg-day, respectively. A group of rats serving as controls were gavaged with saline. Gross necropsy was conducted in all rats, but only the kidneys underwent histopathologic examination. Mortality rates during treatment in the control, low-, and high-dose groups were 0/10, 1/10, and 10/10, respectively. Deaths in the high-dose group occurred as early as the third day of treatment. Final body weight and absolute kidney weight of low-dose rats were not significantly different than controls. Gross necropsy findings in low-dose animals included speckled cortical surfaces in the kidneys and white gelatinous material inside the urinary bladders. High-dose rats exhibited mottled and red thymus, spotty kidney and liver surfaces, enlarged adrenals, gas filled and yellow intestines and lung congestion. The presence or absence of hydrocarbon nephropathy was determined by examining the incidence of hyaline droplet changes, regenerative epithelium and tubular dilation with granular material. Treatment with 1,2,4-trimethylbenzene did not significantly increase the incidence or severity of nephropathy relative to controls; however, according to the authors, it is possible that high-dose rats died before nephropathy could develop. A NOAEL or LOAEL could not be determined due to the limited scope of the study, although the high dose of 1429 mg/kg-day was clearly a frank effects level (FEL) for mortality.

Maltoni et al. (1997) investigated the carcinogenicity of 1,2,4-trimethylbenzene (99% pure) in a long-term oral exposure experiment. Male and female Sprague-Dawley rats (50/sex/group) received doses of either 0 or 800 mg/kg (4 days/week) of 1,2,4-trimethylbenzene by gavage in 1 ml olive oil for 104 weeks. Food and water consumption and body weights were recorded throughout the experiment. Upon death or terminal sacrifice at 123 weeks, the animals were subjected to systemic necropsy. Histopathology was performed on brain, pituitary gland,

Zymbal glands, salivary glands, Harderian glands, head, tongue, thymus, mediastinal lymph nodes, lung, heart, diaphragm, liver, spleen, pancreas, kidneys, adrenal glands, esophagus, stomach, intestine (four levels), bladder, prostrate, uterus, vagina, gonads, interscapular fat pad, subcutaneous and mesenteric lymph nodes, sternum, femur, spinal cord and any other organs and tissues with pathological lesions. No statistical analysis of the data was presented.

"Slight" reduction in the survival of the female Sprague-Dawley rats and an "intermediate" reduction in the survival of male rats were reported (Maltoni et al., 1997). However, quantitative survival data were not presented in the report and no statistical analysis of the decreases in survival were presented. Although the study report indicated that food and water consumption and body weight data were recorded, these data were not included in the report. There was no significant increase in the incidence of animals bearing either malignant or benign + malignant tumors (Table 1). Fisher's exact tests conducted for EPA indicated that the differences in total tumors between the exposed and treated animals were not statistically significant ($p<0.05$). Neuroesthesioepitheliomas were observed in the nasal cavity of 3/100 exposed animals (M + F). This tumor was not seen in concurrent controls, and a Fisher's exact test of the data showed that the increase in incidence of neuroesthesioepitheliomas was not statistically significant ($p<0.05$). The authors, however, indicated that these tumors are quite rare in the colony of Sprague-Dawley rats used for these experiments and suggested that this finding presents some evidence for carcinogenicity of 1,2,4-trimethylbenzene.

Table 1. Incidences of Benign and Malignant Tumors in Male and Female Sprague-Dawley Rats after a Long-term (104 week) Oral Exposure to 1,2,4-Trimethylbenzene.[a]

Dose (mg/kg bw)[b]	Animals		Percent of animals with tumors	
	Sex	Number	Benign + Malignant	Malignant
800	M	50	62	26
	F	50	66	24
	M + F	100	64	25
0	M	50	54	24
	F	50	70	22
	M + F	100	62	23

[a]Source: Maltoni et al., 1997
[b]Gavage dose administered 4 days/week for 104 weeks and animals were terminated after 123 weeks.

Inhalation Exposure

Korsak and Rydzyński (1996) examined the neurotoxic effects of acute exposure of male Wistar rats (10/group) to 1,2,4-trimethylbenzene (>97% pure) and other trimethylbenzene isomers, and also examined the neurotoxic effects of subchronic exposure to 1,2,4-trimethylbenzene and 1,2,3-trimethylbenzene. In the acute experiment, rats were exposed to concentrations of 250-2000 ppm (1227-9816 mg/m^3) for 4 hours. Acute exposure to 1,2,4-trimethylbenzene caused concentration-related impairment in a rotarod performance test (EC_{50} = 4693 mg/m^3) and concentration-related decreased pain sensitivity (as measured by increased paw-lick response latency; EC_{50} = 5682 mg/m^3).

In the subchronic experiment, rats were exposed to 1,2,4-trimethylbenzene at concentrations of 0, 25, 100 or 250 ppm (0, 123, 491 or 1227 mg/m^3), 6 hours/day, 5 days/week for 3 months and observed for exposure-related clinical signs and body weight effects (Korsak and Rydzyński, 1996). Rotarod performance and hot-plate behavior were measured as indices of the neurotoxicity of trimethylbenzene isomers. Rotarod performance was tested prior to start of the study, weekly during exposure, and 2 weeks after the termination of the exposure. Hot-plate behavior was tested immediately after termination of the exposure. Fisher's exact test was used for analysis of rotarod performance and the Kruskall-Wallis test used for changes in pain sensitivity (hot plate behavior). Exposures to 1,2,4-trimethylbenzene did not result in any apparent body weight effects or clinical signs of toxicity. However, exposure-related indicators of neurotoxicity were noted. Rotarod performance failure increased in a concentration-related manner in the groups exposed to 1,2,4-trimethylbenzene, but reached the level of statistical significance (40% failure; $p<0.05$) only in the highest (1227 mg/m^3) exposure group following 8 or 13 weeks of exposure. The incidence of rotarod performance failure in control rats was 0% throughout the study period. Although the mean rotarod performance failure rate in the highest exposure group remained at 30% after a 2-week recovery period, the rate was not significantly different from controls. Pain-sensitivity was also decreased in a concentration dependent manner (evidenced by increased latency of the paw-lick response). As shown in Table 2, the increased latency reached the level of statistical significance in the 491- and 1227-mg/m^3 groups. After a 2-week recovery period, the highest (1227 mg/m^3) exposure group no longer exhibited a significant difference in pain sensitivity, relative to controls. This study identified a NOAEL of 123 mg/m^3 and a LOAEL of 491 mg/m^3 (6 hours/day, 5 days/week) for significantly decreased pain sensitivity.

Table 2. Exposure-Related Effect on Latency of the Paw-Lick Response in Rats Exposed to 1,2,4-Trimethylbenzene Vapors 6 Hours/Day, 5 Days/Week for 3 Months.[a]

Number of rats	Exposure level (mg/m^3)	Mean latency of paw-lick response (seconds)
9	0	15.4 ± 5.8[b]
10	123	18.2 ± 5.7
9	491	27.6 ± 3.2[c]
10	1227	30.1 ± 7.9[c]

[a] Source: Korsak and Rydzyński, 1996
[b] The authors did not specify whether standard deviation or standard error of the mean is presented
[c] Statistically significantly different from controls ($p \leq 0.01$)

Gralewicz et al. (1997a) investigated 1,2,4-trimethylbenzene-induced behavioral effects on groups of male Wistar rats (15/group) exposed to vapor concentrations of 0, 50, 100 or 250 ppm (0, 123, 491 or 1227 mg/m^3) for 6 hours/day, 5 days/week for 4 weeks. To assess the effect of exposure on short-term working memory, choice accuracy in a radial arm maze was tested. Effects on spontaneous activity were evaluated with an open field test. Effects on long-term memory and learning ability were assessed on the basis of conditioned passive and active avoidance tests. The hot-plate test was performed to compare the groups with respect to the decrease in responsiveness to a thermal stimulus following a brief intermittent foot shock. Animals were subjected to the following sequence of behavioral testing:

1. radial maze: 2 weeks before exposure and on days 14-18 after exposure,
2. open field activity: day 25 after exposure,
3. passive avoidance: days 35-45 after exposure,
4. hot-plate test: days 50 and 51 after exposure,
5. active avoidance: day 54 after exposure.

The data were analyzed by ANOVA and comparisons among treatments were made using Sheffe's test, or Tukey's test for 2-way ANOVA.

There was no significant effect of 1,2,4-trimethylbenzene exposure on body weight gain during the 4-week exposure. Passive-avoidance learning was significantly ($p<0.001$) retarded in groups exposed to 491 or 1227 mg/m^3 of 1,2,4-trimethylbenzene and tested 35-45 days after the end of the exposure period. Retardation of passive-avoidance learning was more pronounced in the 491 mg/m^3 exposure group than in the 1227 mg/m^3 group. In the hot-plate test following foot shock, evaluation of rats 50 days following termination of exposures to 491 or 1227 mg/m^3 of 1,2,4-trimethylbenzene revealed significantly ($p<0.01$) increased paw-lick latency times, in comparison to unexposed controls. There was no significant change in the active avoidance test, although there was a trend toward decreased avoidance responses with increasing 1,2,4-trimethylbenzene exposure concentration. Short-term working memory did not appear to be adversely affected by 1,2,4-trimethylbenzene exposure. In the open field test there was no significant effect on spontaneous movement or on rearing behavior; however, there was a significant ($p<0.05$) increase in grooming behavior of animals exposed to 1,2,4-trimethylbenzene at 491 mg/m^3. Although grooming behavior also was increased above controls in the 123 and 1227 mg/m^3 groups, the difference was not statistically significant. The results of these experiments suggest that 4-week exposures at concentrations that produced no overt clinical signs of toxicity can produce long-term effects on the functional state of the rat central nervous system. Based on findings of significantly retarded passive avoidance learning and increased paw-lick latency in rats of the 491 and 1227 mg/m^3 exposure groups, the 123 mg/m^3 group represented a NOAEL and the 491 mg/m^3 group represented a LOAEL (6 hours/day, 5 days/week) for persistent neurotoxic effects.

Gralewicz and Wiaderna (2001) employed the same general protocol used by Gralewicz et al. (1997a) in a comparative study of the behavioral effects of repeated inhalation exposure to individual trimethylbenzene isomers or *m*-xylene. The study included a group of 11 adult male Wistar rats exposed to 100 ppm (491 mg/m^3) of 1,2,4-trimethylbenzene (purity not stated) and a control (air only) group of 10 male rats. Exposures were for 6 hours/day, 5 days/week for 4

weeks. The sequence of behavioral testing varied slightly from that employed by Gralewicz et al. (1997a) and included:

1. radial maze: 1 week before exposure and on days 14-18 after exposure,
2. open field activity: day 8 before exposure and day 25 after exposure,
3. passive avoidance: days 39-48 after exposure,
4. hot-plate test: days 50 and 51 after exposure,
5. active avoidance: days 54 and 60 after exposure.

No significant exposure-related effects were seen regarding body weights or short-term working memory (as determined in the radial arm maze test) for any of the trimethylbenzene isomers or *m*-xylene. Acquisition, but not retention, of the two-way active avoidance response was significantly impaired in all solvent-exposed groups. Results of other behavioral tests demonstrated exposure-related effects for each of the solvents. In the case of 1,2,4-trimethylbenzene, significantly increased spontaneous locomotor activity in the open field, impaired passive avoidance learning and significantly longer paw-lick latencies in the hot-plate test 24 hours after foot shock were observed. These results support the findings of the earlier study (Gralewicz et al., 1997a) in which the 491 mg/m^3 (6 hours/day, 5 days/week) exposure level represented a LOAEL for neurotoxic effects in 1,2,4-trimethylbenzene-exposed rats.

Gralewicz et al. (1997b) investigated the effect of a 4-week (6 hours/day, 5 days /week) inhalation exposure to 1,2,4-trimethylbenzene (purity not stated) at concentrations of 0, 25, 100 or 250 ppm (0, 123, 491 or 1227 mg/m^3) on the occurrence of spike-wave discharges (SWD) in the neurocortex of male Wistar rats (9-10/group). Bursts of SWD increase in number and/or duration with advancing age and it was hypothesized that exposure to neurotoxic solvents may accelerate the aging process in the brain. Electrodes were implanted into the fronto-parietal cortex and into the dorsal hippocampus. One-hour EEG recordings were performed immediately before initiation of exposure, at the end of the exposure period, 1 month later and 3 months later. The occurrence of SWD bursts is limited to the state of awake immobility. The number and total duration of SWD bursts were determined from each EEG. The data were analyzed by ANOVA and multiple comparisons among treatments was performed with Tukey's test. The study results included information regarding mean body weights, but the study report did not provide details of body weight data collection.

The study authors (Gralewicz et al., 1997b) indicated that 1,2,4-trimethylbenzene exposure resulted in no statistically significant body weight effects. In the control and lowest (123 mg/m^3) exposure groups, the total duration of SWD showed an increasing trend with time, in comparison to pre-exposure SWD and reached statistical significance ($p<0.05$) at 3 months after exposure. In contrast, the total duration of SWD tended to decline with time in the mid- and high-exposure groups after exposure. The decrease in SWD occurrence, however, was statistically significant only for the measurements performed 1 month after the end of exposure in the mid-exposure (491 mg/m^3) group. A similar trend was seen when the number of SWD bursts per hour was determined. The frequency of SWD bursts increased with age in the control and lowest exposure groups and tended to decline with time in the mid- and high-exposure groups. The data, however, were highly variable and were statistically significantly different from pre-exposure SWD only for the highest exposure level at 3 months after exposure. Thus,

there were no clear 1,2,4-trimethylbenzene induced concentration-related effects on SWD, although the results are suggestive that long-term effects on brain activity may have occurred.

Korsak et al. (2000) exposed groups of male and female rats (10/sex/group; 20/sex/group at the highest exposure concentration) of outbred Imp:WIST to 1,2,4-trimethylbenzene (97% pure) vapors at target concentrations of 0, 123, 492 or 1230 mg/m^3 for 6 hours/day, 5 days/week for 3 months. Animals were observed twice daily for clinical signs of toxicity. Body weights were recorded prior to initiation of exposures and weekly thereafter and food consumption was measured weekly. Blood was drawn for hematological examination prior to initiation of exposures and 1 week prior to exposure termination. Clinical chemistry testing was performed at the end of the 3-month exposure period. Organ weights were determined for lungs, liver, spleen, kidneys, adrenals, heart and gonads. Histopathological examinations were performed on tissues from brain, nose, larynx, trachea, thymus, lungs, heart, liver, spleen, kidney, adrenals, thyroid, pancreas, gonads, urinary bladder, stomach, duodenum, small and large intestines and salivary glands.

Clinical findings were unremarkable (Korsak et al., 2000). No significant exposure-related effects were seen regarding food consumption or body weights. The few differences in some relative or absolute organ weights did not appear to be of toxicological relevance. Significant concentration-related trends ($p<0.01$) for decreased numbers of red blood cells and increased numbers of white blood cells were noted for male (but not female) rats. In the male rats of the highest 1,2,4-trimethylbenzene exposure group (1230 mg/m^3), both red and white blood cell counts were significantly different ($p<0.01$) from those of control males. A significant trend ($p<0.01$) for concentration-related decreased reticulocyte counts was observed in female rats and the difference was significant ($p<0.05$) in the 1230 mg/m^3 group. Hematological testing also revealed a significant trend ($p<0.01$) for decreased clotting time in female (but not male) rats; the decrease reached the level of statistical significance ($p<0.05$) in the 492 and 1230 mg/m^3 groups. Clinical chemistry results were unremarkable, with the exception of significantly increased serum sorbitol dehydrogenase in all 1,2,4-trimethylbenzene-exposed groups of male rats (not concentration related). Histopathological examinations revealed exposure-related significantly increased severity of pulmonary lesions, which included increased proliferation of peribronchial lymphatic tissue in males of the mid- (but not highest) exposure level, increased alveolar macrophages in males of the highest exposure level and increases in interstitial lymphocytic infiltrations in males of the mid- (but not highest) exposure level and females of the highest exposure level. No significant exposure-related changes were seen in the other examined organs and tissues. The mid exposure level of 492 mg/m^3 can be considered a LOAEL for hematological and respiratory effects in this study. The low exposure level of 123 mg/m^3 is a NOAEL.

Korsak et al. (1997) exposed male Wistar rats of IMP:DAK outbreed stock (10/group) to 1,2,4-trimethylbenzene (≥97% pure) at concentrations of 0, 25, 100 or 250 ppm (0, 123, 491 or 1227 mg/m^3) for 90 days (6 hours/day, 5 days/week). Lung lavage fluid was collected 24 hours after termination of the subchronic exposure and centrifuged at 400 g for 10 minutes. Differential counts of bronchoalveolar lavage (BAL) cell smears were determined by light microscopy after staining and the trypan blue test was used to determine cell viability. Total

protein concentration, mucoprotein concentration, lactate dehydrogenase and acid phosphatase activity were determined in the BAL supernatant.

All rats exposed to 1,2,4-trimethylbenzene for 90 days survived the experiment and there were no significant differences in final body weight. Statistically significant increases were observed in total cell and macrophage numbers in BAL of all treated groups after 90 days in comparison to controls. Significant increases were also observed in total protein, lactate dehydrogenase (LDH) and acid phosphatase (AP) in BAL fluid of all treated groups. However, the observed increases in these parameters were either at or near their highest observed response at the lowest exposure concentration, and there was no indication of further concentration-related increases. For the observed effects, the lowest exposure level used (123 mg/m^3) would be a LOAEL; however, the toxicological significance of these effects is not clear.

In a study by IBT (1981), groups of 5 male and 5 female COBS rats were exposed to 49 or 480 mg/m^3 MCS-1809 6 hours/day, 5 days/week for 4 weeks (IBT, 1981). MCS-1809 was identified as a compound containing 75% 1,2,4-trimethylbenzene and 25% C9 aromatics (Monsanto, 1992). The test atmosphere was generated by passing the MCS-1809 through a nebulizer; no information on the particle size distribution was reported. Based on the vapor pressure of 1,2,4-trimethylbenzene, it is likely that the animals were predominantly exposed to 1,2,4-trimethylbenzene vapors rather than a mist. The following parameters were used to assess toxicity: daily observations, weekly body-weight measurements, organ weights (adrenal glands, brain, gonads, heart, kidneys, liver, lungs, spleen and thyroid gland), gross necropsy and histopathological examination of adrenal glands, brain, bronchi, gonads, heart, kidneys, liver, lungs, pancreas, pituitary glands, lymph nodes, spleen, trachea and thyroid gland of the control and 480 mg/m^3 groups (tissues from the 49 mg/m^3 group were examined if significant findings were found in the 480 mg/m^3 group).

Exposure to MCS-1809 did not result in deaths. Clinical signs of toxicity in the 480 mg/m^3 group included ataxia and hypoactivity that persisted between exposures, ptosis, red ocular discharge, and ruffed fur. Less pronounced hypoactivity and ruffed fur were observed in the 49 mg/m^3 group. In the 480 mg/m^3 group, significant decreases in body weight gain (35% lower in the males; no significant alteration in females), increases in absolute (females only) and relative liver weights and decreases in absolute and relative spleen weights (females only) were observed. A significant increase in absolute liver weight was also observed in the 49 mg/m^3 female rats. Histological alterations were limited to focal or diffuse testicular atrophy in 3/5 male rats exposed to 480 mg/m^3 in the absence of statistically significant changes in testis weight; no testicular effects were observed in the 49 mg/m^3 (testes examined in four rats from this group) or control groups. This study identified a NOAEL of 49 mg/m^3 and LOAEL of 480 mg/m^3 (6 hours/day, 5 days/week) for clinical signs of toxicity (persistent ataxia and hypoactivity, ptosis, ocular discharge), decreased body weight gain, and histopathological evidence of testicular atrophy. The increased absolute liver weight observed in the 49 mg/m^3 female rats was not considered adverse because no histological alterations were observed at the 49 or 480 mg/m^3 concentrations.

Bättig et al. (1958) exposed 8 male rats (strain not reported) to air concentrations of 1700 ppm of Fleet-X DV 99 solvent for 4 months (8 hours/day, 5 days/week). Other rats (sex, strain,

and number not specified) were exposed to 500 ppm for 70 days (8 hours/day, 5 days/week). As described earlier, Fleet-X DV 99 is a solvent containing 97.5% aromatic hydrocarbons (>50% 1,2,4-trimethylbenzene and >30% 1,3,5-trimethylbenzene) and 2.5% of paraffinic and naphthenic hydrocarbons. The 500- and 1700-ppm concentrations would be approximately 2523 and 8155 mg/m^3, respectively, if the aromatic hydrocarbon fraction of the vapors were comprised exclusively of trimethylbenzenes. Within 2 weeks of exposure, 4 of the 8 rats exposed to 1700 ppm died and were replaced, while none of the animals in the 500-ppm group died. Histopathologic examinations, performed only on 1700-ppm animals that died, revealed cloudy swelling and fatty infiltration in the kidneys, peripheral fatty infiltration in the liver, an increase in secondary nodules in the spleen and marked congestion of the pulmonary capillaries with alveolar wall thickening. Alterations in differential white blood cell counts (increase in the percentage of segmented neutrophilic granulocytes and a decrease in the percentage of lymphocytes) were reported at 500 ppm. Increases in drinking water consumption (43-45% higher than in the control group) were observed in the 1700-ppm group. The authors reported that during the exposure period, the 1700-ppm animals were initially "highly excited and aggressive" followed by a period of narcosis and ataxia. Because histopathology was only performed on the animals that died, no histopathology data are available on the 500-ppm rats. Due to the limited scope of the study, a NOAEL or LOAEL cannot be identified. The high concentration of 1700 ppm (8155 mg/m^3) is a FEL for mortality.

Bernshtein (1972) exposed rats (number, sex and strain not specified) to 1000 mg/m^3 (200 ppm) of a mixture of trimethylbenzenes for 6 months (4 hours/day, 6 days/week). An inhibition of phagocytic activity of the leukocytes was reported. This study was summarized by Sandmeyer (1981) and further experimental details were not provided.

Korsak et al. (1997) examined the effect of acute exposures (6 min) to the trimethylbenzene isomers, 1,2,3-trimethylbenzene (90-95% pure), 1,3,5-trimethylbenzene (99% pure) and 1,2,4-trimethylbenzene (97% pure) on the respiratory rate of Balb/C male mice (8-10/group) at concentrations ranging from 253 to 1591 ppm (1926-9453 mg/m^3). The concentration depressing mouse respiratory rate by 50% (RD_{50}) was calculated by least squares regression and the Kruskall-Wallis test was applied for evaluation of protein and enzyme levels in the BAL fluid. All three trimethylbenzene isomers showed irritating effects on the respiratory tract and caused concentration-dependent decreases in respiratory rate. The concentration depressing the respiratory rate in mice to 50% was 519 ppm (2547 mg/m^3) for 1,2,4-trimethylbenzene.

The developmental toxicity of 1,2,4-trimethylbenzene was assessed by Saillenfait et al. (2005). Groups of mated (sperm-positive) Sprague-Dawley rats (24/group) were exposed (whole body) to 1,2,4-trimethylbenzene (97% pure) at vapor concentrations of 0, 100, 300, 600 or 900 ppm (0, 491, 1475, 2950 or 4425 mg/m^3) for 6 hours/day on gestation days 6 through 20. Maternal food consumption was recorded for the intervals of gestation days 6-13 and 13-21. Maternal body weights were recorded weekly during gestation. At necropsy on gestation day 21, the uterus was weighed and numbers of corpora lutea, implantation sites, resorptions and dead and live fetuses were recorded. Live fetuses were weighed, sexed and examined for external anomalies. Half of the live fetuses from each litter were prepared for visceral examination, the others were subjected to skeletal examination.

All dams survived to scheduled necropsy (Saillenfait et al., 2005). No clinical signs of 1,2,4-trimethylbenzene-induced toxicity were observed. Maternal food consumption was significantly ($p<0.01$) depressed in the 600- and 900-ppm groups (approximately 12-14% and 15-19%, respectively, relative to controls). The 900-ppm dams exhibited significantly reduced mean body weight gain (22-52% lower than controls) throughout the exposure period. Significantly ($p<0.01$) reduced body weight gain (30% lower than controls) was observed in the 600-ppm group, but only during the first week of 1,2,4-trimethylbenzene exposure. At necropsy on gestation day 21, mean body weight gain (corrected for gravid uterine weight) was significantly depressed in both 600- and 900-ppm dams (approximately 50% lower than controls). Mean fetal body weight was significantly lower in both 600- and 900-ppm exposure groups (approximately 5 and 11% lower, respectively, than controls). There were no other significant indications of maternal or fetal toxicity. This study identified a NOAEL of 300 ppm (1475 mg/m^3) and a LOAEL of 600 ppm (2950 mg/m^3, 6 hours/day on gestation days 6 through 20) for maternal and fetal body weight effects. However, the observed fetal toxicity was likely secondary to maternal toxicity because the decreased fetal body weight was noted only at exposure levels resulting in significantly depressed maternal body weight gain.

Other Studies

Limited genotoxicity data suggest that 1,2,4-trimethylbenzene is not mutagenic. 1,2,4-trimethylbenzene produced negative results in the Ames test with *Salmonella typhimurium* strains TA97a, TA98, TA100 and TA102 both in the presence and absence of rat liver S9 metabolic activation (Janik-Spiechowicz et al., 1998). 1,2,4-Trimethylbenzene was not cytogenic in the mouse micronucleus test, but elicited a positive response in sister chromatid exchange (SCE) tests with bone marrow cells of Imp:Balb/c mice treated *in vivo* (Janik-Spiechowicz et al., 1998).

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC RfDs FOR 1,2,4-TRIMETHYLBENZENE

Limited information is available regarding the oral toxicity of 1,2,4-trimethylbenzene in humans and animals. The nephrotoxicity study by Borriston Laboratories (1984) is too limited in scope to be used to identify a NOAEL or LOAEL for 1,2,4-trimethylbenzene, although the 2000 mg/kg dose (1429 mg/kg-day) is clearly a FEL for increased mortality. The study of Maltoni et al. (1997) is also unsuitable for derivation of an RfD, as only one dose level was employed, decreased survival occurred at this dose level and reporting of the results was inadequate. Thus, the database for 1,2,4-trimethylbenzene is inadequate to derive a provisional RfD.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC RfCs FOR 1,2,4-TRIMETHYLBENZENE

Several studies have examined the inhalation toxicity of mixtures predominantly containing one or more trimethylbenzene isomers, or pure 1,2,4-trimethylbenzene. Significant

increases in the incidence of CNS toxicity (vertigo, dizziness, headaches) and non-significant increases in the incidences of respiratory effects (bronchitis) and hematological effects (hyperchromic anemia and blood clotting alterations) have been observed in workers exposed to 10-60 ppm (49-295 mg/m^3) of a solvent containing >80% trimethylbenzene isomers (Bättig et al., 1958). Many of these effects reported in humans have been observed in experimental animals repeatedly exposed to 1,2,4-trimethylbenzene or other trimethylbenzene isomers or trimethylbenzene mixtures. For example, hematological effects have been reported in experimental animals exposed to a trimethylbenzene mixture (Bernshtein, 1972) or 1,2,4-trimethylbenzene (Korsak et al., 2000). Signs of adverse CNS effects have been observed in animals exposed to mixtures containing 1,2,4-trimethylbenzene (Bättig et al., 1958; IBT, 1981) or 1,2,4-trimethylbenzene alone (Gralewicz and Wiaderna, 2001; Gralewicz et al., 1997a, 1997b; Korsak and Rydzyński, 1996). Results of other animal studies provide evidence of 1,2,4-trimethylbenzene-induced respiratory effects (Korsak et al., 1997, 2000). Other effects observed in animal studies include testicular atrophy in rats exposed to 480 mg/m^3 (98 ppm) of a mixture containing 75% 1,2,4-trimethylbenzene for 4 weeks (6 hours/day, 5 days/week) (IBT, 1981) and lung, liver, kidney and spleen effects in rats exposed to 1700 ppm (8155 mg/m^3) of a solvent containing >80% trimethylbenzene isomers for 4 months (8 hours/day, 5 days/week) (Bättig et al.,1958).

The lowest estimated level of occupational exposure to the solvent Fleet-X DV 99 (>80% 1,2,4- and 1,3,5-trimethylbenzene) in the study of Bättig et al. (1958) was 10 ppm (49 mg/m^3). Assuming that the solvent exclusively contained trimethylbenzene isomers, the 49 mg/m^3 exposure concentration can be considered to represent a LOAEL. Although the Bättig et al. (1958) report provides the lowest inhalation LOAEL (49 mg/m^3) of any study, it may be an inappropriate study for consideration as the principal study for a number of reasons. Importantly, Bättig et al. (1958) identified spectrophotographically the presence of various aromatic hydrocarbons, to include naphthenic and paraffenic compounds, in addition to 1,2,4-trimethylbenzene in the solvent mixture. While 1,2,4-trimethylbenzene comprised up to 50% of the Fleet-X DV 99 mixture, it is virtually impossible to confidently attribute human toxicities solely to 1,2,4-trimethylbenzene (i.e. the study LOAEL is for the mixture not the individual compound). Additional concerns that warrant exclusion of the Bättig et al. (1958) human study from consideration include inappropriate selection of a human control population [e.g. nutritional status (Vit. C deficient)], and the fact that average Fleet-X DV 99 solvent exposure duration, for the 27 exposed workers examined, was not reported.

An advantage of some of the animal models of 1,2,4-trimethylbenzene inhalation exposure over the Bättig et al. (1958) human study is that controlled atmospheres involved the compound of interest at relatively high purities (e.g. 97% 1,2,4-trimetylbenzene in the Korsak et al., 2000 study). However, available repeated exposure inhalation studies in animals are limited to subchronic exposure duration (4 weeks to 3 months) in which the lowest identified LOAEL for 1,2,4-trimethylbenzene was 491 mg/m^3 (Gralewicz and Wiaderna, 2001; Gralewicz et al., 1997a; Korsak and Rydzyński, 1996); furthermore, many of the effects observed in these rodent studies are of unclear toxicological significance and/or have concentration-responses that are difficult to interpret.

Provisional RfCs may be derived based on adverse pulmonary or hematological effects reported in male or female rats, respectively, exposed to 1,2,4-trimethylbenzene (97% pure) for 3 months (Korsak et al., 2000). The selection of the Korsak et al. (2000) study as the basis for deriving RfCs is supported by previous observations in rats (Korsak et al., 1997) and humans (Bättig et al., 1958) exposed to pure 1,2,4-trimethylbenzene or a mixture of trimethylbenzenes, respectively, for ≥ 90 days. Indeed, pulmonary lesions and hematological abnormalities in rats exposed to pure 1,2,4-trimethylbenzene for 3 months (Korsak et al., 2000) are consistent with observations in humans following presumably longer duration exposure to a mixture containing 1,2,4-trimethylbenzene (Bättig et al., 1958).

Subchronic p-RfC

The subchronic p-RfC for 1,2,4-trimethylbenzene is derived from the NOAEL of 25 ppm (123 mg/m^3) identified in the Korsak et al. (2000) rat subchronic inhalation study. Two different toxic effects (pulmonary or hematological) were identified in male or female rats, respectively, in this study at the same LOAEL/NOAEL. As such, two separate subchronic p-RfC derivations are presented below to identify the most sensitive endpoint. Under an assumption of category 3 for decreased clotting time in female Imp:WIST rats, an adjusted experimental NOAEL can be derived using the NOAEL of 123 mg/m^3 and the exposure duration data from Korsak et al. (2000) as follows:

$$NOAEL_{[ADJ]}\ (mg/m^3) = \text{rat NOAEL}\ (mg/m^3) \times 6hr/24hr \times 5\ days/7\ days$$
$$= 123\ mg/m^3 \times 0.25 \times 0.71$$
$$= 21.8\ mg/m^3$$

According to equation (4-48) for extrarespiratory effects [Methods for Derivation of Inhalation Reference Concentrations and Application of Inhalation Dosimetry (EPA/600/8-90/066F October 1994)], a human equivalent concentration ($NOAEL_{[HEC]}$) can be calculated as follows:

$$NOAEL_{[HEC]}\ (mg/m^3) = NOAEL_{[ADJ]}\ (mg/m^3) \times (H_{b/g})_A/(H_{b/g})_H$$

*blood:gas (b/g) partition coefficients for 1,2,4-trimethylbenzene could not be located, therefore a default value of 1 is used for the term $(H_{b/g})_A/(H_{b/g})_H$. The human $NOAEL_{[HEC]}$ is equivalent to the duration adjusted rat NOAEL of 21.8 mg/m^3. A **subchronic p-RfC of 7E-2 mg/m^3** based on a hematological effect is derived by dividing the $NOAEL_{[HEC]}$ of 21.8 mg/m^3 by a composite UF of 300, as follows:

UF (animal to human) = 3
UF (interindividual variability) = 10
UF (database deficiencies) = 10

$$\text{Subchronic p-RfC} = NOAEL_{[HEC]} / UF$$
$$= 21.8\ mg/m^3 / 300$$
$$= 0.07\ mg/m^3 \text{ or } 7E\text{-}2\ mg/m^3$$

Under an assumption of category 1 for pulmonary toxicity in male rats, the same duration adjusted rat NOAEL of 21.8 mg/m^3 is obtained as shown above. Histopathological observations in lung tissue of male Imp:WIST rats exposed to 1,2,4-trimethylbenzene for 3 months indicated inflammatory lesions primarily in the bronchiolar region. Therefore, according to equation 4-22 for Category 1 tracheobronchial effects [Methods for Derivation of Inhalation Reference Concentrations and Application of Inhalation Dosimetry (EPA/600/8-90/066F October 1994)], a $NOAEL_{[HEC]}$ can be calculated as follows:

$$\begin{aligned} NOAEL_{[HEC]}\ (mg/m^{3)} &= NOAEL_{[ADJ]}\ (mg/m^3) \times RGDR_{TB}{}^{\dagger} \\ &= 21.8\ mg/m^3 \times 1.6 \\ &= 34.9\ mg/m^3 \end{aligned}$$

† Derivation of the $RGDR_{TB}$ can be found in Appendix 1

A **subchronic p-RfC of 1E-1 mg/m^3** based on pulmonary effects is derived by dividing the $NOAEL_{[HEC]}$ of 34.9 mg/m^3 by the same composite UF of 300 identified above:

$$\begin{aligned} \text{Subchronic p-RfC} &= NOAEL_{[HEC]} / UF \\ &= 34.9\ mg/m^3 / 300 \\ &= 0.1\ mg/m^3 \text{ or } 1E\text{-}1\ mg/m^3 \end{aligned}$$

The composite UF includes a factor of 3 for extrapolation from animal to human, 10 for interindividual variability, and 10 for database deficiencies. The reduced uncertainty of 3 for animal to human extrapolation is due in part to both the conversion of the rat NOAEL to a human equivalent concentration as well as the consistency of hematological and pulmonary toxicity between rats and humans exposed to 1,2,4-trimethylbenzene. The database deficiencies include lack of developmental toxicity studies in a second species, multigeneration reproductive toxicity studies, and a lack of confidence in the large majority of available animal studies reporting effects of undetermined toxicological significance with concentration-responses that are difficult to interpret. The derivations shown above clearly indicate that decreased clotting time in female rats due to subchronic inhalation exposure to 1,2,4-trimethlybenzene is the more sensitive or health protective endpoint under consideration.

Chronic p-RfC

The **chronic p-RfC of 7E-3 mg/m^3** based on decreased clotting time in female rats (Korsak et al., 2000) is derived by dividing the $NOAEL_{[HEC]}$ of 21.8 mg/m^3 by a composite UF of 3000, as follows:

$$\begin{aligned} \text{Chronic p-RfC} &= NOAEL_{[HEC]} / UF \\ &= 21.8\ mg/m^3 / 3000 \\ &= 0.007 \text{ or } 7E\text{-}3\ mg/m^3 \end{aligned}$$

As for the chronic RfC, the composite UF includes a factor of 10 for extrapolation from subchronic to chronic exposure, 3 for extrapolation from animal to human, 10 for interindividual variability, and 10 for database deficiencies.

Confidence in the principal study (Korsak et al., 2000) is low. While it is remarkable that hematological and pulmonary effects are apparently conserved from rats (Korsak et al., 2000) to humans (Bättig et al., 1958), the concentration-response for either compartment in rats (particularly male rats) is difficult to interpret. Specifically, the low inhalation concentration (123 mg/m^3) in female rats from the Korsak et al. (2000) study was clearly a NOAEL for decreased clotting time (hematological compartment); this NOAEL was also identified for pulmonary effects (e.g. proliferation of peribronchial lymphatic tissue, interstitial lymphocytic infiltration of parenchyma, bronchitis and bronchopneumonia) in male rats. Interestingly, female rats seemed slightly more resistant to these pulmonary effects. However, the overall commutative score, following statistical trend analysis, of all pulmonary lesions suggested that the lungs of male and female Imp:WIST rats are significantly affected by inhalation exposure to 1,2,4-trimethylbenzene at the mid dose of 492 mg/m^3 (Korsak et al., 2000). However, paradoxically, in male rats of the high dose group the pulmonary effects decreased compared to animals in the mid dose group. This counter-intuitive concentration-response relationship might suggest a concentration-dependent transition in mode of action for pulmonary toxicity (note the increase in absolute lung weight of male Imp:WIST rats at the mid concentration of 492 mg/m^3, which is the concentration at which inflammatory foci were identified in lung tissue, and yet in the high concentration group lung weight decreased back to control levels (Korsak et al., 2000); more work would be required to verify.).

According to the derivations provided above it appears that the hematological endpoint (i.e. decreased clotting time in female rats) may be a more appropriate endpoint to consider for inhalation exposure to 1,2,4-trimethylbenzene. Further work in this area is certainly warranted. The human occupational report from Bättig et al. (1958) identified a lower inhalation effect level (e.g. LOAEL = 49 mg/m^3) compared to any of the available animal data. However, the utility of this study in derivation of RfCs is limited by poor reporting of results, undetermined exposure levels, the lack of statistical analysis of results, the lack of information on the exposed and control groups (e.g., age, education level, length of employment), small group sizes and possibly a poorly matched control group (as evidenced by increased incidence of vitamin C deficiency in controls). Also, the controls worked in adjacent rooms and the possibility that they also may have been exposed to trimethylbenzene cannot be excluded. Confidence in the database is low because the database is lacking developmental toxicity data in a second species and reproductive toxicity studies. Reflecting low confidence in the principal study and database, confidence in the provisional subchronic and chronic RfC values is low.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR 1,2,4-TRIMETHYLBENZENE

Weight-of-evidence Classification

No information was located regarding the carcinogenicity of 1,2,4-trimethylbenzene or mixtures of trimethylbenzene isomers in humans. The database of information regarding the carcinogenicity of trimethylbenzene in animals is limited to a single carcinogenicity study in which male and female Sprague-Dawley rats (50/sex/group) were administered 1,2,4-trimethylbenzene via oral gavage at doses of 0 or 800 mg/kg for 104 weeks (Maltoni et al.,

1997). Although quantitative survival data were not included in the study report, the authors noted "intermediate" and "slight" reduction in the survival of 1,2,4-trimethylbenzene treated male and female rats, respectively. Under the conditions of the study, oral exposure to 1,2,4-trimethylbenzene did not cause a statistically significant increase in the incidence of animals bearing either malignant tumors or benign and malignant tumors (combined) or in the incidence of neuroesthesioepitheliomas. The study of Maltoni et al. (1997) included a single animal species (rat) and a single 1,2,4-trimethylbenzene dose level (800 mg/kg). Based on limitations in study design and reporting of results and the lack of additional carcinogenicity data in animals, the database of information for 1,2,4-trimethylbenzene is inadequate to establish the potential carcinogenicity of 1,2,4-trimethylbenzene. Limited genotoxicity data demonstrated that 1,2,4-trimethylbenzene was not mutagenic in several strains of *Salmonella typhimurium*, and did not elicit cytogenicity in the mouse micronucleus test, but did elicit a positive response in sister chromatid exchange (SCE) tests with bone marrow cells of Imp:Balb/c mice treated *in vivo* (Janik-Spiechowicz et al., 1998). These data provide inadequate evidence for genotoxic activity.

Collectively, the available carcinogenicity and genotoxicity data do not adequately assess the carcinogenic potential of 1,2,4-trimethylbenzene in humans or animals. Under the current U.S. EPA (2005) cancer guidelines, the human and animal data are inadequate for a determination of the human carcinogenic potential of 1,2,4-trimethylbenzene.

Quantitative Estimates of Carcinogenic Risk

There are no appropriate human or animal data from which to derive an oral slope factor or inhalation unit risk for 1,2,4-trimethylbenzene.

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APPENDIX 1

According to equation 4-22 for Category 1 tracheobronchial effects [Methods for Derivation of Inhalation Reference Concentrations and Application of Inhalation Dosimetry (EPA/600/8-90/066F October 1994)], a $NOAEL_{[HEC]}$ is calculated using the duration adjusted animal NOAEL and a dosimetric adjustment factor (DAF). In this case the DAF is the RGDR for the tracheobronchial region of the lung ($RGDR_{TB}$). The $RGDR_{TB}$ is calculated as follows:

$$RGDR_{TB} = (RGD_{TB})_A/(RGD_{TB})_H = \frac{(V_E/SA_{TB})_A}{(V_E/SA_{TB})_H} \quad \frac{(e^{-SA_{ET}/V_E})_A}{(e^{-SA_{ET}/V_E})_H}$$

where,

Rat

V_E = 160.07 ml/min or 0.16 L/min (derived using equation 4-4, default body wt. for Wistar rats, and the default intercept and coefficient values provided in Table 4-6)

SA_{TB} = 22.5 cm^2 (Table 4-4)

SA_{ET} = 15.0 cm^2 (Table 4-4)

Human

V_E = 13.8 L/min (default value based on human body weight of 70 kg)

SA_{TB} = 3,200 cm^2 (Table 4-4)

SA_{ET} = 200.0 cm^2 (Table 4-4)

$$= \frac{(0.16 \text{ L/min} / 22.5 \text{ cm}^2)_A}{(13.8 \text{ L/min} / 3{,}200 \text{ cm}^2)_H} \quad \frac{(e^{-15.0 \text{ cm2}/ 0.16 \text{ L/min}})_A}{(e^{-200.0 \text{ cm2}/ 13.8 \text{ L/min}})_H} \ ^*$$

* the exponential portion of the equation is much smaller than 1; thus this half of the equation is negligible.

$$= 0.007 / 0.0043$$

$$RGDR_{TB} = 1.6$$

10-31-2002

Provisional Peer Reviewed Toxicity Values for

1,2-Dichloroethane (Ethylene dichloride)
(CASRN 107-06-2)

Derivation of a Chronic Oral RfD

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit

NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
ì g	microgram
ì mol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 1,2-DICHLOROETHANE (ETHYLENE DICHLORIDE) (CASRN 107-06-2) Derivation of a Chronic Oral RfD

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

IRIS (U.S. EPA, 2002) reports that an RfD for 1,2-dichloroethane (1,2-DCA) is not available at this time. In addition, no RfD for 1,2-DCA was listed in the HEAST (U.S. EPA, 1997). U.S. EPA (1984, 1985a) reviewed chronic and subchronic oral studies (Alumot et al., 1976; Lane et al., 1982; Munson et al., 1982; NCI, 1978) but did not attempt to derive an oral RfD because 1,2-DCA is carcinogenic. U.S. EPA (1985b) presented interim RfD derivations based on the oral multigeneration study by Lane et al. (1982) and on inhalation data, but U.S. EPA (1987) concluded that no appropriate data were available for determining an RfD, and therefore, did not estimate a lifetime health advisory for this chemical. However, the NCI (1978) study was considered only for carcinogenic effects in the analysis by U.S. EPA (1987). Therefore, lacking any further update, no RfD for 1,2-DCA appears in the Drinking Water and Health Advisories List (U.S. EPA, 2000). No other EPA documents pertinent to derivation of an RfD for 1,2-DCA were located in the CARA lists (U.S. EPA, 1991, 1994).

ATSDR (1994, 2001) derived an intermediate-duration oral MRL of 0.2 mg/kg-day from a 13-week dosed-water study in rats (NTP, 1991) in which a LOAEL of 58 mg/kg-day for increased kidney weight was identified. Uncertainty factors used in the MRL derivation included 3 for use of a minimal LOAEL, 10 for interspecies extrapolation, and 10 for human variability.

Other resources consulted included the NTP (2001) Management Status Report, the IARC monograph series (IARC, 1979, 1999), WHO (1995), and Patty's Toxicology (Reid, 2001). Literature searches of the following databases were conducted from 1993 to April 2001 for relevant studies: TOXLINE, MEDLINE, TSCATS, GENETOX, HSDB, CANCERLIT, CCRIS, EMIC/EMICBACK, DART/ETICBACK, and RTECS.

REVIEW OF THE PERTINENT LITERATURE

Human Studies

The most recent reviews (ATSDR, 1994, 2001; U.S. EPA, 1984, 1985a,b; IARC, 1999; WHO, 1995) reported that information concerning the toxic effects of ingested 1,2-DCA in humans comes primarily from case reports of individuals who accidentally or intentionally ingested 1,2-DCA. Only crude estimates of ingested dose are available, limiting the value of the data. Symptoms of 1,2-DCA intoxication include cardiac arrhythmia, bronchitis, hemorrhagic gastritis and colitis, hepatocellular damage, renal tubular necrosis and calcification, and central nervous system depression. Although an association between 1,2-DCA in drinking water and major birth defects was found in epidemiological studies, concurrent mixed chemical exposures indicate that the results are only suggestive, do not establish a cause-and-effect relationship, and should be interpreted with caution. Primary routes of exposure in these epidemiological studies may have been both oral and inhalation (volatilized from household water). No studies were located regarding immunological, reproductive, or developmental effects in humans exposed solely to 1,2-DCA by ingestion. The literature search identified no new studies examining the toxicity of 1,2-DCA in humans following oral exposure.

Animal Studies

In an NCI (1978) carcinogenicity study, Osborne-Mendel rats (50/sex/group) were treated with 1,2-DCA in corn oil by gavage at TWA doses of 47 or 95 mg/kg-day, 5 days/week for 78 weeks. B6C3F1 mice (50/sex/group) were also treated for 78 weeks with 97 or 195 mg/kg-day (male mice) and 149 or 299 mg/kg-day (female mice), 5 days/week. Untreated and vehicle controls (20/sex/group) were maintained concurrently. Signs of toxicity, body weight, and food consumption were evaluated throughout the study. Observation continued for 13 weeks after the dosing period. Comprehensive gross and histological examinations were performed upon moribund condition, death, or sacrifice at the end of the bioassay. Hematological and clinical chemistry determinations were not conducted.

In rats, there was no effect on body weight gain, but mortality was significantly ($p<0.001$) increased in 95 mg/kg-day treated male and female rats compared with controls. Survival of male and female rats treated with 95 mg/kg-day was 50% at weeks 55 and 57, respectively. For rats treated with 47 mg/kg-day, survival was reported as 52% at 82 weeks for male rats and 50% at 85 weeks in female rats. Of the vehicle controls, 50% of male and female rats survived at least 72 and 88 weeks, respectively, while 50 and 60% of untreated male and female control rats survived until the end of the study. The study authors attributed the high mortality in the rats to toxic effects and bronchopneumonia, rather than to cancer. Several rats (number not reported) in both the 47 and 95 mg/kg-day dose groups had a hunched appearance and transient labored breathing beginning during the 6th week of treatment. Although one or two control rats (untreated or vehicle not specified) started to show these signs, the incidence was substantially higher in the treated groups than in the control groups. The only treatment-related nonneoplastic lesion found upon microscopic examination was spleen hematopoiesis in female rats which occurred in 1/20 (5%) vehicle controls, 0/50 low dose, and 16/50 (32%) of 95 mg/kg-day dosed animals. A LOAEL of 47 mg/kg-day (TWA = 34 mg/kg-day), the lowest dose tested, for serious clinical signs of labored breathing and hunched appearance is identified in both sexes of rats. However, this study was limited by dosage adjustments and poor survival.

Female mice treated with 195 mg/kg-day also had significantly increased mortality, possibly related to cancer, but mortality was not affected in the other groups of mice. For female mice, mortality (36/50, 72%) was significant in the 195 mg/kg-day group; these deaths may have been tumor-related as 25/36 (69%) had one or more tumors. For male mice, there was no statistically significant association between 1,2-DCA dosage and mortality. Clinical signs in treated groups were unremarkable compared with controls. Body weight was not affected by treatment in male mice or low-dose female mice. Body weight in high-dose female mice became significantly depressed around 30 weeks and was reduced by >45% of control weight at 90 weeks. The incidence of chronic murine pneumonia was dose-related in mice; present in 0/17 untreated control, 0/19 vehicle control, 5/46 (11%) low dose, and 11/47 (23%) high dose males, and in 0/19 untreated control, 0/20 vehicle control, 1/50 (2%) low dose and 6/48 (13%) high dose females. However, only the incidence in high dose males is statistically significant (Fisher's Exact test by SRC $p<0.05$). No other treatment-related nonneoplastic lesions were found in mice. A NOAEL and LOAEL of 149 (TWA = 106 mg/kg-day) and 299 mg/kg-day (TWA = 214 mg/kg-day), respectively, the only two doses tested in female mice, are identified for reduced body weight in female mice. A NOAEL and LOAEL of 97 (TWA = 69 mg/kg-day) and 195 mg/kg-day (TWA = 139 mg/kg-day), respectively, the only two doses tested in male mice, are identified for significant dose-related incidence of chronic murine pneumonia in male mice.

Groups of F344/N rats, Sprague-Dawley rats, Osborne-Mendel rats, and B6C3F1 mice (10 animals/sex) were exposed to drinking water containing 0, 500, 1000, 2000, 4000, or 8000 ppm of 1,2-DCA for 13 weeks (NTP, 1991). The high concentration was close to the solubility limit for 1,2-DCA in water. The authors estimated daily doses based on drinking water consumption and average body weights as follows:

Concentration in Water (ppm)	Doses in mg/kg-day in Rats					
	F344/N		Sprague-Dawley		Osborne-Mendel	
	Male	Female	Male	Female	Male	Female
500	49	58	60	76	54	82
1000	86	102	99	106	88	126
2000	147	182	165	172	146	213
4000	259	320	276	311	266	428
8000	515	601	518	531	492	727

Concentration in Water (ppm)	Doses in mg/kg-day Mice	
	Male	Female
500	249	244
1000	448	647
2000	781	1182
4000	2710	2478
8000	4207	4926

Additional groups of F344/N rats (10/sex) were administered 1,2-DCA by gavage on 5 days/week for 13 weeks to compare toxicity resulting from bolus administration with that of the continuous exposure in drinking water. Gavage doses were 0, 30, 60, 120, 240, or 480 mg/kg-day in the male rats and 0, 18, 37, 75, 150, or 300 mg/kg-day in the female rats. Signs of toxicity, body weight, food and water consumption, hematology and serum chemistry (in control and $\geq$2000 ppm male rat groups only) were evaluated throughout the study, and comprehensive gross and histological examinations were performed at the end of the exposure period.

Rat drinking water studies: None of the rats given 1,2-DCA in drinking water died. No treatment-related clinical signs were observed. Significantly (Dunn's test or Shirley's test) decreased mean body weights were seen in male F344/N rats at 4000 ($p<0.01$) and 8000 ppm ($p<0.01$) (259 and 515 mg/kg-day), in male Sprague-Dawley rats at 8000 ppm (518 mg/kg-day) ($p<0.05$), and in male Osborne-Mendel rats at 8000 ppm (492 mg/kg-day) ($p<0.05$). There were no significant reductions in body weight gain in female rats of any strain. Dose-related decreased water consumption occurred in all treated groups; 4-44% in F334/N males, 5-42% in F334/N females, 14-56% in male Sprague-Dawley males, 25-70% in Sprague-Dawley females, 17-60% in Osborne-Mendel male rats, and 21-58% in Osborne-Mendel female rats. Increases in erythrocyte counts and mild decreases in mean cell volume, measured in males, were attributed by the authors to dehydration. Alkaline phosphatase activity was significantly decreased on

selected test days at ≥2000 ppm in F344/N (≥147 mg/kg-day) and Sprague-Dawley (≥165 mg/kg-day) males, but was unaffected in Osborne-Mendel males. Alanine aminotransferase activity was significantly decreased on selected test days at ≥4000 ppm in F344/N (≥259 mg/kg-day) and Osborne-Mendel (≥266 mg/kg-day) males, at 8000 ppm (492 mg/kg-day) in Sprague-Dawley males. Blood urea nitrogen (BUN) levels were significantly increased in F344/N males at ≥2000 ppm (≥147 mg/kg-day) on days 7 and 14, and on day 3 at 4000 ppm. In Sprague-Dawley males, BUN levels were significantly increased at 2000 ppm (165 mg/kg-day) on days 7 and 45, at 4000 ppm (276 mg/kg-day) on days 7 and 45, and at 8000 ppm (518 mg/kg-day) on days 3, 7, and 45. BUN levels were significantly increased in male Osborne-Mendel rats at ≥4000 ppm (≥266 mg/kg-day) on day 3. Creatine kinase activity was unaffected in male rats of all three strains. Sorbitol dehydrogenase activity was significantly increased at 8000 ppm (515 mg/kg-day) on days 14 and 45 in F344/N males and at 8000 ppm (518 mg/kg-day) on day 14 in Sprague-Dawley males. Sorbitol dehydrogenase activity were unaffected in Osborne-Mendel males. Absolute kidney weights were significantly (Dunn's test or Shirley's test $p<0.05$ or <0.01) increased at >500 ppm in female F344/N (≥58 mg/kg-day), Sprague-Dawley (≥76 mg/kg-day) and Osborne-Mendel rats (≥82 mg/kg-day), at ≥1000 ppm (≥86 mg/kg-day) in male F344/N rats, and at 1000 ppm (≥88 mg/kg-day) in male Osborne-Mendel rats. Absolute kidney weight changes were not significant in male Sprague-Dawley rats. Relative kidney weights were significantly increased at ≥500 ppm in Sprague-Dawley (≥76 mg/kg-day) and Osborne-Mendel (≥82 mg/kg-day) females, and at ≥1000 ppm (≥102 mg/kg-day) F344/N females. Relative kidney weights were significantly increased at ≥1000 ppm (≥86 mg/kg-day) in F344/N males, at ≥4000 ppm (≥266 mg/kg-day) in Osborne-Mendel males, and at 1000, 4000, and 8000 ppm (99, 276, and 518 mg/kg-day) in Sprague-Dawley males. Absolute liver weights were significantly increased at 2000 ppm (147 mg/kg-day) in male F344/N rats, at 1000 (102 mg/kg-day) and 4000 ppm (320 mg/kg-day) in female F344/N rats and at 1000 ppm (88 mg/kg-day) in male Osborne-Mendel rats. Absolute liver weight changes were not significant in male and female Sprague-Dawley rats and in female Osborne-Mendel rats. Relative liver weights were significantly increased at ≥2000 ppm (≥147 mg/kg-day) in F344/N males, at ≥4000 ppm (≥320 mg/kg-day) in F344/N female rats, at ≥500 ppm (≥60 mg/kg-day) in Sprague-Dawley male rats, at 8000 ppm (531 mg/kg-day) in Sprague-Dawley female rats, at 1000 and 2000 ppm (88 and 146 mg/kg-day) in Osborne-Mendel male rats. Relative liver weight changes were not significant in Osborne-Mendel females. No lesions attributable to 1,2-DCA were observed in the liver. The only histopathological finding was minimal to mild renal tubular regeneration, which was found in all groups of treated and control F344/N male rats, Sprague-Dawley male and female rats, and Osborne-Mendel male and female rats at similar incidence and severity. Minimal to mild renal tubular regeneration at similar incidence and severity was found in all groups of treated and control F344/N male and female rats, Osborne-Mendel male and female rats, and Sprague Dawley male and female rats. Kidney and liver weights were increased in dosed rats of all three strains. No compound-related lesions were observed except for a dose-related incidence of renal tubular regeneration in female F344/N rats: 0/10 in controls, 0/10 at 58 mg/kg-day, 1/10 at 102 mg/kg-day, 2/10 at 182 mg/kg-day, 3/10 at 320 mg/kg-day and 9/10 at 601 mg/kg-day. Statistical analyses of the lesion incidence were not reported, but only the incidence at the high dose (601 mg/kg-day) is statistically significant according to Fisher's Exact Test performed for this assessment. However,

support for potentially associated renal functional deficits from serum chemistry measurements was lacking, as serum chemistry analyses were only performed in males. This lesion was of minimal severity in all affected rats. A minimal LOAEL of 58 mg/kg-day, the lowest dose tested, is identified for increased kidney weight in female F344/N rats. The increased kidney weight, without changes in body weight at this dose, is considered to be an early stage adverse effect because dose-related incidence of renal histopathology (tubular regeneration, indicative of previous tubular injury with subsequent repair) also developed at higher doses in the same strain of rats.

Mouse drinking water study: Before the end of the study deaths occurred only in 8000 ppm treated females (90%). No treatment-related clinical signs were observed. Body weight gain was significantly reduced (Dunn's test or Shirley's test $p<0.01$) in high-dose males. Hematological and serum chemical analyses were not performed. Increased liver weight and/or liver:body weight ratio was significant at $\geq$500 ppm ($\geq$249 mg/kg-day) in males and $\geq$1000 ppm ($\geq$647 mg/kg-day) in females. Increased kidney weight and/or kidney:body weight ratio was significant at $\geq$1000 ppm ($\geq$448 mg/kg-day) in males and $\geq$500 ppm ($\geq$244 mg/kg-day) in females. A dose-related increased incidence of tubular regeneration (minimal to moderate) occurred in males; 0/10 in controls, 1/10 at 500 ppm (249 mg/kg-day), 2/10 at 1000 ppm (448 mg/kg-day), 2/10 at 2000 ppm (781 mg/kg-day), 8/10 ($p<0.01$) at 4000 ppm (2710 mg/kg-day) and 9/10 ($p<0.01$) at 8000 ppm (4207 mg/kg-day). Other renal lesions, including karyomegaly (10/10), dilatation (5/10), protein casts (8/10), and mineralization (5/10), occurred significantly in males at the highest dose. Tubular regeneration was observed in 1/10 females at 4000 ppm (2478 mg/kg-day); no other renal lesions were reported in females. Treatment-related lesions were not reported in other organs. Significantly increased absolute and relative kidney weights occurred in male mice at $\geq$249 mg/kg-day. In addition, a dose-related increased incidence of tubular regeneration, achieving statistical significance at $\geq$2710 mg/kg-day, occurred in males. A NOAEL and minimal LOAEL of 249 and 448 mg/kg-day, respectively, are identified for increased kidney weight in male mice. The increased kidney weight is considered to be an early stage adverse effect because dose-related incidence of renal histopathology developed at higher doses in male mice.

Rat gavage study: Additional groups of F344/N rats (10/sex) were administered 1,2-DCA by gavage on 5 days/week for 13 weeks to compare toxicity resulting from bolus administration with that of the continuous exposure in drinking water. Gavage doses were 0, 30, 60, 120, 240, or 480 mg/kg-day in the male rats and 0, 18, 37, 75, 150, or 300 mg/kg-day in the female rats. Signs of toxicity, body weight, food and water consumption, hematology and serum chemistry (in control, 120 and 240 mg/kg-day male rat groups only) were evaluated throughout the study, and comprehensive gross and histological examinations were performed at the end of the exposure period. Deaths occurred in all males before the end of the study at $\geq$240 mg/kg-day and 90% of females at 300 mg/kg-day; clinical signs preceding death included tremors, salivation, and emaciation. Pathology in moribund/dead animals included necrosis in the thymus and cerebellum. No deaths occurred at other doses. Small but significant changes in various hematological parameters occurred in higher dose groups and were considered to be indicative of

dehydration and attributed to significantly reduced water consumption (60% compared to controls). There were no effects on growth at sublethal doses. Other effects included minimal to mild hyperplasia and inflammation of the forestomach epithelium (sometimes with foci of necrosis and mineralization); 0/10 in controls of each sex, 1/10 males at 120 mg/kg-day, 5/10 males at 240 mg/kg-day, 3/10 males at 480 mg/kg-day, and 3/10 females at 300 mg/kg-day (histological examinations were not performed on low dose animals). Liver weight and liver:body weight ratio significantly increased in males at 120 mg/kg-day (no data from higher doses due to mortality) and females at all doses. Kidney weight and/or kidney:body weight ratio significantly increased in males at $\geq$30 mg/kg-day and $\geq$75 mg/kg-day in females. No liver lesions were reported and incidence of renal tubular regeneration in dosed groups was comparable to vehicle control. Small, but significant, changes in various hematological and serum chemistry parameters, compared with controls, were measured in males dosed at 120 and 240 mg/kg-day; however, these measurements were not conducted in other male treatment groups. These changes were considered to be indicative of dehydration and attributed to significantly reduced water consumption (60% compared with controls). These experiments identify an FEL of 240 mg/kg-day for significant mortality in male F344/N rats. It is difficult to discern a LOAEL in this study, as organ weight changes were not accompanied by histological alterations. The NOAEL is 120 mg/kg-day. Based on significant organ weight changes in rats treated by gavage or drinking water, the liver and kidney appear to be target organs for 1,2-dichloroethane.

WHO (1995) briefly reviewed a study by Van Esch et al. (1977), whereby rats of both sexes (number and strain not specified) were treated by gavage with 1,2-DCA at 0, 10, 30 or 90 mg/kg-day for 5 days/week for 90 days. Six rats were dosed with 300 mg/kg-day for 5 days and all rats died. Decreased weight gain was observed at the two highest doses. Increased relative kidney weight occurred in both sexes at 90 mg/kg-day, but increased relative liver and brain weight was seen only in the females at 90 mg/kg-day. Clinical chemistry parameters were normal, and there were no treatment-related histopathological lesions. Sporadic hematological changes were seen, but not in a dose-related manner. The histology on the six rats that died after receiving 300 mg/kg-day 1,2-DCA for 5 days revealed fatty degeneration of the liver and an increase in liver triglycerides. A NOAEL and LOAEL of 90 and 300 mg/kg-day, respectively, are identified for fatty liver with increased triglycerides.

Sprague-Dawley rats (10/sex/dose) received 0 (vehicle control), 37.5, 75, or 150 mg/kg-day of 1,2-DCA in corn oil by gavage for 90 consecutive days (Daniel et al., 1994). Signs of toxicity, body weight, and food consumption were evaluated throughout the study. Ophthalmoscopic examinations were performed prior to treatment and during the last week of the study. Blood and urine chemistry analyses were performed during the last week of the study. Comprehensive gross examinations were performed at necropsy. There were no treatment-related deaths or clinical signs of toxicity. Body weight gain and food consumption were significantly decreased at 150 mg/kg-day in males, but comparable to control in all other groups. In males, relative brain, kidney, and liver weights were significantly increased at $\geq$75 mg/kg-day. In females, relative kidney weight was increased at $\geq$75 mg/kg-day and relative liver weight at

150 mg/kg-day. No significant ocular changes were observed. In females, red blood cells, lymphocytes, hemoglobin, and hematocrit were significantly decreased while platelets, white blood cells, neutrophils and monocytes were significantly increased at the highest dose. In males, hemoglobin and hematocrit were significantly decreased at the two highest doses while platelets were increased only in the high dose group. In females, potassium levels were increased and albumin levels decreased in the two highest dose groups, while in males, alkaline phosphatase was increased at these same doses (data not presented). Urinalysis data were unremarkable. None of the few gross or microscopic lesions observed were considered to be of toxicological significance (no further details reported). A NOAEL and LOAEL of 37.5 and 75 mg/kg-day, respectively, for hematological changes are identified.

Bred female Sprague Dawley rats (25-26/group) were given 0 (vehicle control), 1.2, 1.6, 2.0 or 2.4 mmol/kg-day 1,2-DCA dissolved in corn oil (0, 119, 158, 198 or 238 mg/kg-day) by oral gavage on gestation days 6-20 (15 days) (Payan et al., 1995). No maternal deaths occurred. A dose-related reduction in maternal weight body gain during pregnancy occurred, with statistical significance achieved at the two highest doses (>30% reduction). Pregnancy rates were similar in all groups. No significant effect of 1,2-DCA was noted on the mean number of implantation sites and live fetuses, fetal sex ratio, and male and female fetal weights. There was a slight but significant trend for increase in the mean percentages of nonsurviving implants and resorptions relative to control animals with statistically significant differences only at 198 mg/kg-day. Incidences of visceral and skeletal variations and malformations of the fetus were similar in all groups. A NOAEL and LOAEL of 158 and 198 mg/kg-day, respectively, are identified for increases in nonsurviving implants and resorptions.

In a study to determine the possible immunotoxicity of 1,2-DCA, male CD-1 mice (32/group) were treated with drinking water containing 0, 20, 200 or 2000 ppm 1,2-DCA (0, 3, 24 or 189 mg/kg-day, as calculated by the authors) for 90 days (Munson et al., 1982). Reduced water consumption was seen at 24 and 189 mg/kg-day, and an appreciable decrease in growth was seen in the high-dose group. No significant effects were seen on organ weights, hematological parameters, or immunological function. Since this study was mainly concerned with immunological end points, histological examination of organs and tissues was not conducted. This study identifies a NOAEL of 189 mg/kg-day, the highest dose tested, for immunological effects in mice.

In a 2-year study, groups of rats (18/sex/dose) of unspecified strain were fed a feed mash fumigated with 1,2-DCA that resulted in concentrations of 0, 250, or 500 ppm (equivalent to ≈0, 12, or 25 mg/kg-day) (Alumot et al., 1976). No effects were found on mortality, growth, food consumption, or liver or kidney function as determined by analysis of serum chemistry indices, but histological examinations were not performed. No differences were found in the percentage of females bearing litters, litter size, mortality, and body weights of pups. In a preliminary study, in which rats were fed a dietary level of 1600 ppm (≈80 mg/kg-day) for 7 weeks, hepatic biochemical changes consisting of a significant 15% increase in fat accumulation and 75% increase in total triglycerides were observed, although liver weight was unchanged. Histological

examinations were not performed. A NOAEL of 25 mg/kg-day for changes in serum chemistry is identified. A NOAEL and LOAEL of 25 and 80 mg/kg-day, respectively, are identified for biochemical changes in the liver indicating an increase in fat and triglyceride storage. However, this study is limited by inadequacies in the conduct and reporting (U.S. EPA, 1985b).

In a multigeneration reproduction study, male and female ICR Swiss mice were given drinking water containing 0, 30, 90, or 290 ppm of 1,2-DCA, giving nominal daily doses of 0, 5, 15, or 50 mg/kg-day (Lane et al., 1982). No parental treatment-related effects were observed in F0 and F1B generations as judged by mortality rates, fluid intake, body weight gain, and gross pathology. No significant increase in gross, visceral or skeletal anomalies or any fetotoxic effects were observed. Furthermore, there were no significant differences between treated and control groups for number of pregnant females, weight gain, implants/litter, resorptions, live fetuses and 4- and 21-day survival. There was also no evidence of dominant lethality in treated males mated to untreated females. This study identifies a NOAEL of 50 mg/kg-day, the highest dose tested, for parental and fetal toxicity.

DERIVATION OF A PROVISIONAL ORAL RfD FOR 1,2-DICHLOROETHANE

Cardiac arrhythmia, bronchitis, central nervous system depression, and injury to the liver, kidneys, and gastrointestinal tract have occurred in humans following ingestion of 1,2-DCA (ATSDR, 1994, 2001; IARC, 1999; U.S. EPA, 1984, 1985a,b; WHO, 1995); however, no human studies are suitable for derivation of an RfD for 1,2-DCA. One- and two-generation reproduction studies found no chemical-related effects on fertility indices in long-term feed or drinking water studies in mice and rats (Alumot et al., 1976; Lane et al., 1982), but exposure to a higher oral gavage dose of 198 mg/kg-day caused increases in nonsurviving implants and resorptions in rats that also experienced maternal toxicity (>30% decreased body weight gain) (Payan et al., 1995). While reproductive performance was not evaluated, histological examinations showed no changes in male or female reproductive tissues in rats administered $\leq$480 mg/kg-day by gavage for $\leq$90 days (Daniel et al., 1994; NTP, 1991; Van Esch et al., 1977), in rats and mice exposed to $\leq$492 and $\leq$4,210 mg/kg-day, respectively, in drinking water for $\leq$13 weeks (NTP, 1991), or in rats and mice exposed to $\leq$95 and $\leq$299 mg/kg-day, respectively, by gavage for $\leq$78 weeks (NCI, 1978).

Clinical signs of toxicity have only been observed in the gavage studies; tremors, salivation, and emaciation at $\geq$240 mg/kg-day (NTP, 1991) and hunched appearance and labored breathing at $\geq$47 mg/kg-day (NCI, 1978) in rats. However, in another gavage study no clinical signs of toxicity were observed at $\leq$150 mg/kg-day (Daniel et al., 1994). In drinking water studies, clinical signs of toxicity were not observed at $\leq$727 mg/kg-day in rats and $\leq$4,926 mg/kg-day in mice (NTP, 1991).

Increased organ weights in animal oral studies (Daniel et al., 1994; NTP, 1991; Van Esch et al., 1977) at ≥18 mg/kg-day, and clinical chemistry results in an oral study (Daniel et al., 1994) at ≥75 mg/kg-day, support the kidney and liver as target organs for 1,2-DCA toxicity. While animals studies point to the kidney and liver as target organs of 1,2-DCA toxicity, the database indicates that the dose-relation for toxic effects, including kidney and liver effects, following gavage or dosed drinking water exposure differ. Dose-related organ histopathology was observed in drinking water studies, but not in gavage studies. While kidney and liver weights increased following dosed water administration of 1,2-DCA, accompanying dose-related histopathology was only observed in the kidney. Therefore, the kidney is selected as the target organ for chronic toxicity effects of 1,2-DCA.

Renal effects reported in animals include increases in kidney weight and minimal-to-moderate histopathological changes after longer-term exposures. Relative kidney weight was increased without altered histology in rats that were treated with 75-90 mg/kg-day by gavage for 90 days (Daniel et al,. 1994; Van Esch et al., 1977). An NTP (1991) 13-week gavage study in rats found significant dose-related increases in kidney weight and kidney-to-body-weight ratio at 30-120 mg/kg-day in males and 75-150 mg/kg-day in females (kidney weight was not measured in higher-dose animals because of mortality). Exposure to 1,2-DCA in the drinking water for 13 weeks caused significant dose-related increases in kidney weight and kidney-to-body-weight ratio in rats at ≥58 mg/kg-day and mice at ≥244 mg/kg-day (NTP, 1991). Histopathological examination of the animals in drinking water studies showed dose-related increased incidences of minimal-to-moderate renal regeneration in female rats at ≥102 mg/kg-day and in male mice at ≥249 mg/kg-day (NTP, 1991). These changes are indicative of previous tubular injury with subsequent repair. More severe renal effects including karyomegaly, dilation, protein casts, and mineralization occurred in male mice exposed to 4,207 mg/kg-day of 1,2-DCA (NTP, 1991). However, there were no changes in kidney weight in mice after exposure to189 mg/kg-day in drinking water for 90 days (Munson et al., 1982), and kidney function, as measured by changes in serum levels of urea and uric acid, was normal in rats exposed to 25 mg/kg-day in food for 2 years (Alumot et al., 1976). Histological examination of the kidney was not performed in either of these studies. No histological changes were observed in the kidneys of rats and mice that were administered ≤95 and ≤299 mg/kg-day, respectively, by gavage for ≤78 weeks (NCI, 1978), or in the kidneys of rats that were administered ≤480 mg/kg-day by gavage for 13 weeks (NTP, 1991).

It is more appropriate to base an RfD on an effect level from a drinking water study rather than from a gavage study due to toxicokinetic considerations. Bolus administration may cause saturation of the detoxification/ excretion mechanism resulting in higher blood levels and apparent adverse effects at lower gavage doses. The lowest dose in female rats, 58 mg/kg-day, a minimal LOAEL for increased kidney weight (NTP, 1991) is selected as the basis of the RfD. The increased kidney weight is considered to be an early-stage adverse effect because a dose-related increase in the incidence of renal tubular regeneration developed at doses greater than the minimal LOAEL in the same strain (F344/N) of rats. Increased kidney weights at

≥448 mg/kg-day, accompanied by renal tubular regeneration at higher doses, were also observed in another drinking water study in male mice (NTP, 1991).

With a modifying factor of unity, dividing the minimal LOAEL of 58 mg/kg-day by an uncertainty factor of 3,000 (3 for use of a LOAEL, 10 for extrapolation to chronic duration, 10 for interspecies extrapolation, and 10 for human variability) results in the provisional RfD of **0.02 mg/kg-day.**

p-RfD = LOAEL ÷ (UF x MF)
= 58 mg/kg-day ÷ (3,000 x 1)
= **0.02 mg/kg-day**

STATEMENT OF CONFIDENCE

Confidence in the principal study (NTP, 1991) is medium. The study used adequate numbers of mice and three strains of rats and administered the test chemical in an extensive range of doses by gavage or dosed-drinking water for comparison of bolus and continuous exposure. Sufficient detail was provided for both methods and results. Confidence in the database is medium. Although it describes a range of dose-related effects in subchronic and developmental toxicity studies, the single chronic study indicates serious effects at the lowest level, which have not been confirmed in other studies, and the test chemical was administered by gavage. Medium confidence in the RfD for 1,2-DCA results.

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11-30-2003

Provisional Peer Reviewed Toxicity Values for

1,2-Dichloropropane

(CASRN 78-87-5)

Derivation of a Carcinogenicity Assessment

Superfund Health Risk Technical Support Center
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Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
ì g	microgram
ì mol	micromoles
VOC	volatile organic compound

11-30-2003

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 1,2-DICHLOROPROPANE (CASRN 78-87-5) Derivation of a Carcinogenicity Assessment

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

An inhalation unit risk for 1,2-dichloropropane is not available on IRIS (U.S. EPA, 2003) or in the HEAST (U.S. EPA, 1997). Relevant documents in the CARA list (U.S. EPA, 1991, 1994) include a Health Effects Assessment (U.S. EPA, 1987a), a Drinking Water Criteria Document (U.S. EPA, 1987b), and a Health and Environmental Effects Profile (U.S. EPA, 1985). An inhalation unit risk was not derived in any of these documents due to the absence of adequate inhalation cancer data. CAL/EPA (1997, 2001) derived an inhalation unit risk of 1.8E-05 (ì g/m^3)$^{-1}$ by route-to-route extrapolation from an oral slope factor of 3.6E-02 (mg/kg-day)$^{-1}$. Available reviews by IARC (1986, 1999), ATSDR (1989), IPCS (1993) and Reid (2001), and the NTP (2001) status report, were consulted to identify relevant studies. Literature searches of the following databases were conducted from 1984 to October 2001: TOXLINE, MEDLINE,

TSCATS, GENETOX, HSDB, CANCERLIT, CCRIS, EMIC/EMICBACK, DART/ETICBACK and RTECS.

REVIEW OF THE PERTINENT LITERATURE

Human Studies

An epidemiological study of 71 Italian florists, who were found to have used an average of 162 kg/year of 1,2-dichloropropane (as well as other fumigants, insecticides and fungicides), showed that the mean frequency of peripheral lymphocyte micronuclei for the florists was higher than the mean for 75 controls (Bolognesi et al., 1995). However, due to the confounding exposure to other chemicals, it is not clear that this finding was attributable to 1,2-dichloropropane exposure.

Animal Studies

The available reviews identified a single study regarding the carcinogenicity of 1,2-dichloropropane in animals by inhalation exposure (U.S. EPA, 1987a,b). Heppel et al. (1948) briefly described an experiment in which 80 C3H mice were exposed a total of 37 times to 400 ppm of 1,2-dichloropropane, 4 to 7 hours per exposure, and observed for 7 months. Only 3/80 mice survived; multiple hepatomas were seen in all 3 survivors. The early mortality was associated with severe necrotic liver lesions. No additional inhalation cancer studies were located in the literature search.

An oral cancer bioassay conducted in rats and mice by NTP (1986) concluded that there was *some evidence of carcinogenicity* in both male and female mice based on increased incidences of liver tumors (primarily adenomas), *equivocal evidence of carcinogenicity* in female rats based on mammary gland adenocarcinomas, and *no evidence of carcinogenicity* in male rats.

Other Studies

1,2-Dichloropropane has produced generally positive results in a variety of genotoxicity assays (ATSDR, 1989; IARC, 1999; U.S. EPA, 1987a,b). In bacteria, 1,2-dichloropropane induced reverse mutations in *Salmonella* with and without activation in a number of studies, but was not mutagenic in *Streptomyces*. 1,2-Dichloropropane weakly induced mutations in the fungus *Aspergillus*, but did not produce chromosomal effects in this species. In mammalian cells, results were positive for mutation in mouse lymphoma cells when tested with activation, but not without. With or without activation, results were positive for sister chromatid exchange and chromosomal aberrations in Chinese hamster ovary cells. *In vivo* studies found that 1,2-

dichloropropane did not induce sex-linked recessive lethal mutations in *Drosophila* or dominant lethal mutations in mice, but did produce chromosomal aberrations in rat bone marrow.

FEASIBILITY OF DERIVING A PROVISIONAL INHALATION UNIT RISK FOR 1,2-DICHLOROPROPANE

The only relevant inhalation study (Heppel et al., 1948) was inadequate to evaluate the carcinogenicity of 1,2-dichloropropane. On the basis of the available information, it is not feasible to derive a provisional inhalation unit risk for 1,2-dichloropropane.

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7-30-2007

Provisional Peer Reviewed Toxicity Values for

2,4-Dichlorophenol
(CASRN 120-83-2)

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Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor

p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2,4-DICHLOROPHENOL (CASRN 120-83-2)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and

circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

A chronic reference dose (RfD) for 2,4-dichlorophenol (2,4-DCP) is available on IRIS (U.S. EPA, 2007). The RfD of 0.003 mg/kg-day is based on decreased delayed hypersensitivity response in a rat study (Exon and Koller, 1985). Rats were exposed during gestation, through lactation and in drinking water for 15 weeks and a NOEL of 0.3 mg/kg-day was identified (Exon and Koller, 1985). Uncertainty factors of 10 each for interspecies extrapolation and protection of sensitive humans were applied to the NOEL to derive the RfD. The source document was a U.S. EPA (1985) Drinking Water Criteria Document (DWCD). The Drinking Water Standards and Health Advisories list (U.S. EPA, 2006) includes the same chronic RfD of 0.003 mg/kg-day as reported on IRIS. The HEAST (U.S. EPA, 1997) reports a subchronic RfD of 0.003 mg/kg-day for 2,4-DCP, adopting the chronic RfD from IRIS as the subchronic RfD. ATSDR (1999) has prepared a toxicological profile for chlorophenols. An intermediate-duration oral Minimal Risk Level (MRL) of 0.003 mg/kg-day was derived for 2,4-DCP by ATSDR (1999). The MRL is based on the same study, endpoint, and uncertainty factors as the IRIS chronic RfD. The World Health Organization (WHO, 1989, 2003) evaluated the toxicity of 2,4-DCP. WHO (2003) declined to derive health-based guideline values, citing limitations in the toxicity database. Because a chronic RfD is available on IRIS, the present document does not include a chronic provisional-RfD (p-RfD); however, a subchronic p-RfD is included.

An RfC for 2,4-DCP is not available on IRIS (U.S. EPA, 2007) or in the HEAST (U.S. EPA, 1997). ATSDR (1999) did not derive any inhalation MRLs for 2,4-DCP, as there were no inhalation toxicity studies of this compound. The CARA list (U.S. EPA, 1991, 1994) includes a Health and Environmental Assessment (HEA) for 2,4-DCP (U.S. EPA, 1987a) and a Health and

Environmental Effects Document (HEED) for Chlorinated Phenols (U.S. EPA, 1987b), in addition to the DWCD (U.S. EPA, 1985) cited above, but none of these documents reported pertinent data regarding subchronic or chronic inhalation toxicity. The American Conference of Governmental Industrial Hygienist (ACGIH, 2006), Occupational Safety and Health Administration (OSHA, 2006) and National Institute for Occupational Safety and Health (NIOSH, 2006) have not established occupational health standards for 2,4-DCP.

A carcinogenicity assessment for 2,4-DCP is not available on IRIS (U.S. EPA, 2007) or in the HEAST (U.S. EPA, 1997). The Drinking Water Standards and Health Advisories document classifies the carcinogenicity of 2,4-DCP in category E, evidence of noncarcinogenicity for humans (U.S. EPA, 2006). The International Agency for Research on Cancer (IARC, 1999) concluded that there was *evidence suggesting lack of carcinogenicity* for 2,4-DCP in experimental animals based on an oral study in mice and two oral studies in rats (NTP, 1989; Exon and Koller, 1985). 2,4-DCP is not included in the National Toxicology Program's (NTP) 11th Report on Carcinogens (NTP, 2006). Patty's Toxicology (Gingell et al., 2001) was also consulted for relevant information.

To identify toxicological information pertinent to the derivation of provisional toxicity values for 2,4-DCP, searches were conducted in August, 2006 for literature dating from the 1960s to 2006 using the following databases: MEDLINE , TOXLINE, BIOSIS, TSCATS CCRIS, Current Contents, DART/ETIC, GENETOX, HSDB and RTECS.

REVIEW OF PERTINENT DATA

Human Studies

Studies exist regarding the toxicity of chlorophenol mixtures in humans, but neither the literature search nor available reviews (U.S. EPA, 1987a,b; ATSDR, 1999; IARC, 1986, 1999; WHO, 1989) identified any studies regarding the toxicity of 2,4-DCP as a single agent in humans. Among workers in a 2,4-DCP and 2,4,5-trichlorophenol manufacturing plant, chloracne and porphyria were detected (Bleiberg et al., 1964). Elevated serum transaminase levels and evidence of liver damage (regeneration and hemofuscin deposition) were detected by liver biopsy in two cases. Poland et al. (1971) examined employees from the same plant 6 years after the report of Bleiberg et al. (1964). Of the 73 male workers examined, 48 (66%) had some degree of acne, and chloracne was found in 13 workers (18%); no cases of clinical porphyria were documented and only one worker had uroporphyrinuria. The severity of the chloracne was not correlated with job location within the plant or duration of employment. A causal relationship between these effects and exposure to 2,4-DCP in these workers cannot be assumed due to concurrent exposure to a variety of chlorinated compounds.

The literature search did not identify any studies regarding carcinogenicity of 2,4-DCP as a single agent in humans. There are several case-control (Eriksson et al., 1981; Hardell, 1981; Hardell et al., 1981, 1982; Hardell and Sandstrom, 1979) and cohort studies (Axelson et al., 1980, Bueno de Mesquita et al., 1993; Hogsted and Westerlund, 1980; Kogevinas et al., 1992, 1993; Saracci et al., 1991; Lynge, 1987; Riihimaki et al., 1982, 1983; U.S. Air Force, 1983;

Vena et al., 1998) of workers involved in the manufacture of phenoxy herbicides based on 2,4-DCP. In these studies, workers were exposed to a mixture of chemicals including 2,4-DCP and it was not possible to link mortality or tumor incidence to any particular chemical exposure in any of these studies. A follow up of a cohort study to investigate the potential carcinogenic effect of phenoxy herbicides (e.g., 2,4-dichlorophenol) in Danish workers (Lynge, 1985) reported soft tissue sarcomas in male workers. However, the total cancer risk among persons employed in the manufacturing and packaging of phenoxy herbicides was equivalent to the cancer risk in the Danish population. Furthermore, this study had several potential biases, such as exposure to mixtures of other chemicals. Therefore, observed cancer incidences cannot be linked to 2,4-dichlorophenol.

Morbidity and Mortality Weekly Report (MMWR, 2000) reported 5 human fatalities associated with acute exposure to 2,4-DCP in occupational settings. In each of these cases, dermal exposure was significant and chemical burns were common. Inhalation exposure was possible in several of the cases, but the proportion of dose attributable to inhalation exposure could not be determined (MMWR, 2000). Kintz et al. (1992) also reported a fatality associated with dermal exposure to 2,4-DCP. After spilling the pure compound on his right thigh and arm, a 33-year old man experienced seizures and died. His blood level of 2,4-DCP was measured to be 24.3 mg/L.

Animal Studies

Oral Exposure

Subchronic Exposure — In a subchronic study using CD-1 mice, Borzelleca et al. (1985a) administered 2,4-DCP (99% pure) in drinking water to groups of 20 male and 20 female mice for 90 days. Concentrations of 0.2, 0.6 or 2.0 mg/L in 10% Emulphor were added to the drinking water of treated animals; two control groups received either vehicle or deionized water. Water was provided *ad libitum* and intake was measured twice weekly. Clinical observations were made twice daily and body weights were measured weekly. At study termination, surviving mice were sacrificed and necropsied. Blood was collected for hematology (erythrocyte count, leukocyte count [total and differential], platelet count, hematocrit, hemoglobin [Hb], prothrombin and thromboplastin times, plasma fibrinogen) and clinical chemistry (aspartate aminotransferase [AST], alanine aminotransferase [ALT], lactate dehydrogenase [LDH], alkaline phosphatase [ALP], blood urea nitrogen [BUN], glucose, bilirubin, albumin, total protein, cholesterol, creatinine, phosphorus, calcium, globulin, albumin/globulin ratio and electrolytes). Hepatic microsomal enzyme activities (ethoxycoumarin O-deethylase, testosterone hydroxylation, cytochrome p-450 reductase) were also measured. Brain, liver, spleen, lung, thymus and kidney weights were recorded. No tissues were examined histologically.

Based on measured water consumption and body weights, the authors estimated doses of 0, 40, 114 and 383 mg/kg-day for male mice and 0, 50, 143 and 491 mg/kg-day for female mice (Borzelleca et al., 1985a). Treatment with 2,4-DCP did not result in significant differences in body weight, absolute or relative organ weights or microsomal enzyme activity when compared with the vehicle control; however, the vehicle itself (Emulphor) apparently increased body weight and altered some organ weights compared with the naïve controls. Among male rats

treated at the high dose, there was a significant increase in leukocytes (35% higher than vehicle control, $p \leq 0.05$). In females at the high dose, a significant increase in ALP was observed (1.7-fold higher, $p \leq 0.05$). The significance of these changes is uncertain in the absence of toxicological correlates. No other changes in hematology or clinical chemistry were dose-related. Effect levels cannot be identified from these data due to the confounding effect of the vehicle and the absence of histopathological evaluation.

The NTP sponsored a 13-week study to evaluate the toxic effects of subchronic oral exposure to 2,4-DCP and to determine the appropriate doses to be used in a 2-year study (NTP, 1989). F344/N rats and B6C3F1 mice (10/sex) were given 2,4-DCP (>99% pure) in the diet at concentrations of 0, 2500, 5000, 10,000, 20,000 or 40,000 ppm. Clinical observations were performed twice daily; body weight and food consumption were measured twice during the study. After 13 weeks, all animals were subjected to necropsy and histological examination of a comprehensive list of tissues (>40) was conducted on the control and high-dose animals. In the 10,000 ppm and 20,000 ppm rats, the bone marrow, colon, heart, jejunum, stomach and urinary bladder were evaluated histologically; the femoral bone marrow was also examined in 2500 ppm and 5000 ppm female rats. Histologic examination of the liver was performed in 2500, 5000 and 10,000 ppm mice of both sexes.

Using limited data on food consumption and body weight from the report (NTP, 1989), doses in rats can be estimated as 160, 310, 675, 1373 and 2703 mg/kg-day in males and 182, 338, 750, 1376 and 2795 mg/kg-day in females. All rats survived to study termination. Body weights decreased in a dose-related fashion in both sexes. Terminal body weight was significantly lower than controls in males exposed to 10,000 ppm and higher ($p<0.01$ in t-test performed for this review). Terminal body weight was lower than controls by 5%, 20% and 40% at 10,000, 20,000, and 40,000 ppm, respectively. In females, terminal body weight was significantly below control values at concentrations of 20,000 and 40,000 ppm (11% and 21% lower). Average food consumption (measured on weeks 7 and 13) was decreased to 77% and 81% of control values in males and females exposed to 40,000 ppm. Statistical comparison of the food consumption rates was not reported. Rats exposed to 40,000 ppm exhibited hunched posture and rough hair coats. At necropsy, histopathology evaluations revealed bone marrow atrophy in all animals of both sexes exposed to the two highest concentrations and in females (6/10) of the 10,000 ppm group. The incidence of bone marrow atrophy in controls and lower dose groups, if any, was not reported. No other histopathology findings were reported. This study identifies a LOAEL of 10,000 ppm (750 mg/kg-day) for bone marrow atrophy in females. Male rats treated at this concentration also had slight reductions in body weight (5%). The 5000 ppm concentration (338 mg/kg-day) represents a NOAEL.

Based on limited data on food consumption and body weight from the report (NTP, 1989), doses in mice[1] can be estimated as 782, 1533, 1627, 2960 and 6805 mg/kg-day in males and 973, 2438, 3305, 3913 and 8911 mg/kg-day in females. Among high-dose mice, mortality was 100% within the first 3 weeks on study; survival was not different from controls in other

[1] Two measurements of body weight and food consumption were available for all but the high-dose group; due to the mortality in this group, only the initial body weight was available. Food consumption for this group was assumed to be equal to the intake measured in the next lower dose group (20,000 ppm group) for the purpose of these calculations.

dose groups of either sex. There was some evidence for an effect of 2,4-DCP treatment on body weight. In male mice exposed to 20,000 ppm, terminal body weight was 12% below that of controls ($p<0.01$ based on t-test conducted for this review). In females at this concentration, body weights were reduced by about 10-15% from control values during most of the study, but there was no difference from controls in terminal body weight due to a 10% decline in control weights during the final week; the authors did not suggest a cause for this decrease in control weights. Average food consumption (measured at weeks 7 and 13) was 67 to 77% of control values in mice of both sexes exposed to 10,000 ppm, and 44 to 57% of controls at 20,000 ppm; statistical comparison of the consumption rates was not presented. At 10,000 ppm and higher concentrations, mice of both sexes exhibited rough hair coats; the incidences were not reported. Histologic examination of the liver showed hepatocellular necrosis in male mice at all dose levels (0/10, 4/10, 4/10, 6/10, 10/10 at 0, 2500, 5000, 10,000, and 20,000 ppm). The increase was statistically significant ($p<0.05$) at all treatment levels; however, the severity was characterized as minimal at concentrations below 20,000 ppm. Syncytial alterations (multinucleated hepatocytes) were observed in all male mice exposed to 10,000 and 20,000 ppm 2,4-DCP, but not in exposed females, controls of either sex, or males exposed to 2500 or 5000 ppm. NTP (1989) noted renal tubular epithelial necrosis in eight male and three female mice at 40,000 ppm; all of these animals died in the first three weeks on study. The 2500 ppm concentration (782 mg/kg-day) is considered a minimal LOAEL based on mild hepatocellular necrosis in male mice; no NOAEL can be identified.

Exon et al. (1984; Exon and Koller, 1985) evaluated the immunotoxicity of 2,4-DCP in male and female Sprague-Dawley rats exposed prenatally or both pre- and postnatally. All animals were offspring (10/group) of dams exposed via drinking water to concentrations of 0, 3, 30 or 300 ppm 2,4-DCP (99% pure) from 3 weeks of age through breeding (at 90 days) and parturition (these were the same rats used in the reproductive study reported in the same publication; see below). Upon weaning, the prenatal-only groups were maintained untreated until 6 weeks of age, when immunocompetence was assessed. Dams of the pre- and postnatal groups were treated throughout the lactation period and, after weaning, offspring were given the treatment compound in the drinking water at the same concentrations until 13 weeks of age. Based on reported body weight and default water consumption values (U.S. EPA, 1988), the postnatal exposure concentrations correspond to doses of approximately 0.3, 3.0 and 30 mg/kg-day. The animals were weighed biweekly and observed daily for clinical signs. At 6 weeks and 13 weeks of age, respectively, the immunocompetence of groups treated prenatally and both pre- and postnatally was evaluated. Humoral and cell-mediated immune responses and macrophage function were assessed. Humoral immunity was quantified using ELISA assays for IgG antibodies to bovine serum albumin (BSA) or keyhole limpet hemocyanin (KLH). Cell-mediated immunity was measured using delayed-type hypersensitivity response to oxazolone (ear application) or BSA (footpad injection). Finally, macrophage function was assessed *in vitro*. Body and organ weights (liver, spleen and thymus) were recorded at sacrifice; complete necropsies were performed, as well as histopathologic evaluation of the liver, spleen and thymus.

Among the rats treated prenatally (and not postnatally), there was no effect on body weight when measured at 6 weeks of age; however, absolute spleen weights were significantly increased (29%, $p<0.05$) in rats treated at 300 ppm. Prenatal exposure alone did not significantly

alter any of the immune parameters assessed, and there were no significant histopathology findings.

Among rats treated at 300 ppm both pre- and postnatally, there was a significant increase (35%, $p \leq 0.05$) in anti-KLH antibody production compared with controls. Delayed-type hypersensitivity response, measured as the mean footpad swelling, was significantly reduced at both 30 and 300 ppm (40% and 43%, $p \leq 0.05$) (See Table 1). Absolute spleen and liver weights were significantly increased at the highest concentration (almost 2-fold higher spleen weight and 19% higher liver weight; $p \leq 0.05$); body and thymus weights were not affected. There were no histopathological differences among the groups. The LOAEL from this study is 30 ppm (3 mg/kg-day) based on decreased cell-mediated immunity (delayed-type hypersensitivity response); the NOAEL is 3 ppm or 0.3 mg/kg-day.

Table 1. Significant effects of prenatal and postnatal exposure to 2,4-DCP on immune parameters

2,4-DCP (ppm)	Anti-KLH antibody production (mean ± SE absorbance at 405 nm)	Delayed-type hypersensitivity (mean ± SE mm footpad swelling)
0	1.24 ± 0.10	1.10 ± 0.13
3	1.30 ± 0.10	0.85 ± 0.11
30	1.39 ± 0.10	0.67 ± 0.11 [a]
300	1.68 ± 0.08 [a]	0.63 ± 0.11 [a]

[a] Significantly different by analysis of variance and least-square means comparison.

Source: Exon et al., 1984; Exon and Koller, 1985.

Chronic Exposure — In the chronic NTP studies, F344/N rats and B6C3F1 mice (50 animals/sex/dose) were administered 2,4-DCP (>99% pure) in feed for 103 weeks (NTP, 1989). Dietary concentrations of 0, 5000 or 10,000 ppm were given to male rats and mice of both sexes; female rats were given concentrations of 0, 2500 or 5000 ppm. The authors estimated the doses of 2,4-DCP to be 210 or 440 mg/kg-day for male rats, 120 or 250 mg/kg-day for female rats, 800 or 1300 mg/kg-day for male mice and 430 or 820 mg/kg-day for female mice. Clinical observations were conducted twice daily, while body weight was measured weekly through week 13 and then monthly thereafter. Food consumption was measured monthly. After 103 weeks of dosing, all animals were sacrificed and necropsied. Histopathology of a comprehensive set of tissues (>40) was evaluated in control and high-dose animals; histopathology of low-dose animals was limited to the liver, nose, pituitary and thyroid of male rats; adrenal glands, lymph nodes, pancreas and spleen of female rats; liver, prostate, spleen and tarsal joints for male mice; and uterus for female mice.

Survival was not affected by treatment in rats of either sex, and there were no clinical signs of toxicity (NTP, 1989). Mean body weights in high-dose male and female rats were generally lower than those of controls (5-12%) beginning in week 3 (males) or week 31 (females), but statistical comparisons were not reported, nor were estimates of variability or individual body weight data that would permit statistical comparisons. Food consumption was significantly lower than controls (5-6%, $p<0.05$ based on t-tests conducted for this review) in males of both treatment groups and in high-dose females. Reductions in body weight predated differences in food consumption, indicating a toxic, rather than an organoleptic effect. The only nonneoplastic lesion that was significantly increased over controls was multifocal degeneration

of the nasal epithelium in male rats (25/45, 38/48, 42/46); the increases were significant at both doses ($p<0.05$). This study identifies a LOAEL of 210 mg/kg-day for nasal lesions in male rats; no NOAEL was identified.

There were no compound-related increases in the incidence of any neoplastic lesions in rats (NTP, 1989). The incidence of mononuclear cell leukemia was significantly decreased in dosed male rats relative to that in controls (control, 31/50; low dose, 17/50; high dose, 17/50).

In mice, treatment did not affect survival, nor were there any clinical signs of toxicity (NTP, 1989). Mean body weights of high-dose male mice and both dosed groups of female mice were generally lower than those of controls, although statistical comparisons were not provided. In high-dose males, body weight decrements occurred between weeks 25 and 86 and ranged from 3-9% in magnitude. In low-dose females, body weight decrements began in week 34 and ranged from 5-11%; in high-dose females, the reduction from control values increased over the course of the study and the mean terminal body weight was 17% below controls. Average food consumption was significantly lower than controls in high dose mice of both sexes (22% and 15%, for males and females, respectively; $p<0.05$ based on t-tests conducted for this review). However, body weight decrements preceded reductions in food consumption temporally, indicating that palatability of the diet was not an issue. A dose-related increase in the incidence of syncytial alteration of hepatocytes was observed in dosed male mice (11/50; 33/49; 42/48; $p<0.01$ at both doses based on Fisher's exact tests conducted for this review). This effect was also observed in the subchronic toxicity study with male mice, in which other evidence of liver toxicity (hepatocellular necrosis) was also observed. A LOAEL of 800 mg/kg-day was identified based on liver lesions (syncytial alteration of hepatocytes) in male mice and no NOAEL was identified.

As with rats, treatment did not result in a significantly increased incidence of any neoplastic lesion in mice (NTP, 1989). There was a marginally significant dose-related trend ($p=0.037$) in the incidence of squamous papilloma or carcinoma of the forestomach in male mice (0/50, 0/50, 3/50), but pairwise comparison did not indicate a significant increase at the high dose ($p=0.121$). The authors did not consider this increase to be treatment-related, as there was a negative trend for female mice and 2,4-DCP treatment did not increase the incidence of forestomach hyperplasia in the male mice. The incidence of malignant lymphomas was decreased in high-dose female mice (4/50) relative to controls (12/50). Under the conditions of these 2-year feeding studies, there was no evidence of carcinogenic activity for rats and mice fed 2,4-DCP.

In an oral carcinogenicity study, groups of Sprague-Dawley rats received both pre-and postnatal exposure to 2,4-DCP (99% pure) at concentrations of 0, 3, 30 or 300 ppm in drinking water (0, 0.45, 4.5 or 45 mg/kg-day[2]) for up to 24 months (Exon and Koller, 1985). Groups of 13 female rats were exposed from weaning through breeding at 90 days of age and until parturition. Offspring (groups of about 24/sex) were then given the test compound in drinking water from weaning until death or 24 months of age. Daily clinical observations were conducted, body weights of offspring were measured monthly and blood samples for hematology

[2] Based on default values for body weight and water consumption (U.S. EPA, 1988).

(erythrocyte and leukocyte counts, Hb, mean corpuscular volume [MCV] and packed-cell volume) were collected bimonthly. Necropsies were performed on tumor-bearing or moribund animals (and, presumably, survivors sacrificed at study termination), including histologic examination of the lung, heart, liver, spleen, kidney, adrenal, intestine, stomach, urinary bladder, brain, spinal cord, muscle and any tumors. The authors did not report any information on body weights or clinical signs of toxicity for the carcinogenicity study. When data from males and females exposed to 300 ppm 2,4-DCP for 14 months were combined, both erythrocyte count and Hb content were significantly increased (9% and 16%, respectively; $p \leq 0.05$). No other hematology data were reported or discussed. The toxicological significance of this finding is uncertain in the absence of data from other exposure levels and/or time periods; however, more pronounced hematological effects (bone marrow atrophy) were observed in female rats exposed to higher doses (750 mg/kg-day, NTP, 1989). Because this study was aimed at assessing the carcinogenicity of 2,4-DCP and no data on nonneoplastic findings (other than the single hematology measurements) were reported, effect levels were not derived for this study.

2,4-DCP administration had no effect on the incidence, latency or types of tumors relative to untreated controls (Exon and Koller, 1985). In a cocarcinogenicity study conducted simultaneously, tumor incidences in rats treated prenatally with the carcinogen ethylnitrosourea (ENU) and exposed to 2,4-DCP (either prenatally, postnatally or both) were not different from ENU-only treated rats. However, the authors noted that the group treated only with ENU had an unusually low incidence of tumors, potentially confounding the results of the cocarcinogenicity study with 2,4-DCP.

Kobayashi et al. (1972) evaluated the toxicity of 2,4-DCP in ICR mice fed the compound in the diet for 6 months. The study was published in Japanese and was not translated for this review; the summary contained herein is based on the English abstract and tables. The purity of the compound was not specified in the abstract. Groups of seven mice were fed concentrations of 0, 0.02%, 0.05%, 0.1% or 0.2% 2,4-DCP in the diet. From the available data, it appears that the high concentration group began treatment approximately 3 weeks later than the other groups; this is not discussed in the abstract. While the abstract does not specify the toxicological endpoints examined, the tables indicate that hematology (erythrocyte and leukocyte count), liver function (AST or ALT) and organ weights (liver, kidney, spleen and heart) were assessed in all treatment groups and histopathology evaluations (liver, kidney, spleen, heart and adrenal glands) were performed on controls and animals in the 0.1% and 0.2% groups.

Reuber (1983) reviewed all available studies related to the carcinogenicity of the phenoxy herbicide 2,4-dichlorophenoxy acetic acid (2,4-D) and its primary metabolite, 2,4-dichlorophenol (2,4-DCP). This report indicated that while 2,4-D was carcinogenic to both male and female rats, 2,4-DCP only demonstrated promoter activity in mouse skin cancer studies.

Based on measured body weights and food consumption rates, the authors estimated the doses to be 0, 45, 100 and 230 mg/kg-day. The authors reported that there were no effects on behavior. Both the abstract and the tabulated data on body weight, food consumption, hematology, liver function and organ weights (liver, kidney) indicated no effect of 2,4-DCP treatment. The authors reported that the histologic examinations showed “slight unfavorable” effects on the liver (the table reports these as “small round cell infiltration, swelling of hepatic

cells, unequal size of hepatic cells and dark cells") at the highest dose; however, the numbers of affected animals were small (1 or 2 in a group of 7), so the toxicological significance is difficult to assess. The authors considered the 100 mg/kg-day dose to be a NOEL in mice. However, due to the small numbers of animals used in this study and the lack of a full translation, it was not considered appropriate to assign effect levels based on these data.

Reproductive/Developmental Studies — Aoyama et al. (2005) conducted a two-generation reproductive toxicity study in Wistar-Hannover rats exposed to 2,4-DCP via the diet. Groups of 24 rats/sex/group (aged 5 weeks) were given 2,4-DCP (99.7% pure) at concentrations of 0, 500, 2000 or 8000 ppm for 10 premating weeks and during mating, gestation and lactation. Pregnant dams were allowed to give birth and on postnatal day (PND) 4, the litters were culled to 8 pups (4/sex when possible). On PND 21, groups of 24 male and female weanlings (1 male and 1 female from each litter) were selected to become F1 parents. F0 parents and any weanlings not selected to be F1 parents were necropsied at this time. F1 parents were treated in the same manner as the F0 parents with dietary 2,4-DCP during 10 premating weeks and through lactation of the F2 pups. Upon weaning of the F2 generation, F1 parents and F2 pups were sacrificed and necropsied.

Clinical observations of parental animals were conducted daily and body weights and food consumption measured weekly (Aoyama et al., 2005). Female estrous cyclicity was evaluated by vaginal smear for 2 weeks prior to mating. Upon parturition, fertility and gestation parameters were recorded and the number and sex of live pups noted. Pups were weighed on PND 0, 4, 7, 14 and 21. Developmental milestones (pinna unfolding, tooth eruption, eye opening) were recorded in both generations. In addition, age at preputial or vaginal opening was evaluated in F1 pups selected to be parents, while anogenital distance on PND 4 was recorded in F2 pups. At necropsy (after weaning of pups for parental animals and at weaning for F2 pups), the number of uterine implantation sites was noted in female parents and sperm count and motility were recorded in male parents. The following organs were examined histologically in parental animals: liver, kidneys, pituitary, reproductive organs of both sexes and mammary glands. In F2 pups, the brain, thymus, spleen and uterus were weighed, but not examined histologically. Levels of pituitary and ovarian hormones (FSH, LH, prolactin, 17ß-estradiol and progesterone) were measured in F1 parent females upon necropsy.

Using mean body weight and food consumption values, the authors estimated doses of 33.4, 134 and 543 mg/kg-day for males and 49.1, 194 and 768 mg/kg for females (Aoyama et al., 2005). Clinical signs of toxicity (soiled fur in the abdominal/genital regions) were apparent in the highest dose group. At the highest dose, food consumption and body weight were significantly ($p \leq 0.01$) lower in both males and females of the F0 generation and in parental females of the F1 generation throughout most of premating, gestation and lactation (data presented graphically). Females exposed at 2000 ppm also exhibited occasional statistically significant (p-value and data not reported) reductions in food consumption and/or body weight (during premating in the F0 generation and during gestation in the F1 generation).

The mean number of implantation sites was slightly decreased in a dose-dependent fashion in both F0 and F1 parents, but was statistically significant ($p \leq 0.05$) only at the high dose in the F1 generation (10.2 vs. 12.7 in controls; Aoyama et al., 2005). In addition, the number of

live pups appeared to decrease with dose in both generations, but there were no statistically significant reductions. The age at preputial separation was significantly ($p \leq 0.05$) longer (42.2 days vs. 41.2 days in controls) in high-dose parental males of the F1 generation; however, the authors attributed this effect to reduced body weight. In contrast, despite lower body weight in high-dose females (F1), the age at vaginal opening was accelerated, albeit nonsignificantly (31.5 days vs. 32.2 days in controls). Neither sperm parameters nor female hormone concentrations were affected by treatment. Among high-dose parents, significant increases in relative organ weight (kidneys, testes) occurred in the absence of absolute organ weight changes and were attributable to decreased body weight. No other organ weight changes occurred in a dose-dependent manner and/or across generations.

Birth weight of pups was not affected by treatment (Aoyama et al., 2005). Pups of high-dose parents of both generations had reduced body weights (compared with controls) beginning on PND 7 and continuing through weaning. As dams treated at this dose (both generations) had significantly reduced food consumption and body weight, the reductions in pup weight are not unexpected. At the highest dose, eye opening was significantly ($p \leq 0.01$) delayed in pups of both generations and both sexes (50.5 to 65.3% of pups with eyes open on PND 14 vs. 89.1 to 94.6% of controls). Other developmental parameters were not affected by treatment. Upon necropsy of weanlings, there were significant reductions in absolute weights of brain, thymus and spleen in the high-dose group; however, these were attributable to reduced body weight. In contrast, the uterus weight of both F1 and F2 females was significantly increased at the high dose (42% and 20%, respectively; $p \leq 0.01$) and at the mid-dose in F1 females (25%, $p \leq 0.05$). Histologic examination of selected uteri of high-dose weanlings in the F2 generation indicated increased epithelial cell height (7/10 vs. 1/10 controls).

The authors indicated that the NOAEL for parental toxicity was 500 ppm and called the 2000 ppm concentration the “minimum toxic dose” based on reduced food consumption and body weight in parental females. Palatability of the treatment diet was not likely the cause of reduced weight. There were no reductions in food consumption or body weight in F0 males, indicating that this group consumed the treatment compound readily. Further, body weight reductions in high-dose F1 females preceded reductions in food consumption, indicating a toxic effect rather than an organoleptic effect. Body weight reductions have been reported in other studies (NTP, 1989), including a gavage study (Rodwell et al., 1989). Thus, the 2000 ppm concentration (194 mg/kg-day in females) is considered a minimal LOAEL based on reduced body weight and the 500 ppm concentration (49.1 mg/kg-day in females) is the NOAEL for parental toxicity.

For reproductive endpoints, the authors identified the 8000 ppm concentration (768 mg/kg-day in females) as a toxic dose based on reduced number of implantation sites in F1 parental females, increased uterine weight in F1 and F2 weanlings and accelerated sexual maturation of F1 females. In addition, eye opening was significantly delayed at this dose. The 2000 ppm concentration (194 mg/kg-day in females) is a NOAEL for reproductive effects.

Exon et al. (1984; Exon and Koller, 1985) evaluated a limited number of reproductive parameters in a study using female Sprague-Dawley rats exposed to 2,4-DCP (99% pure) from 3 weeks of age, through breeding with untreated males and until parturition. This information was

collected in conjunction with the immunotoxicity study on the progeny of exposed rats (see above). Groups of 13 rats were exposed via drinking water to concentrations of 3, 30 or 300 ppm 2,4-DCP (estimated to result in doses of 0.45, 4.5 and 45 mg/kg-day[3]). Percent conception, litter size, percent stillborn, birth and weaning weight and survival to weaning were evaluated. The authors reported that there were no treatment-related effects on the dams. Although the text indicated that the percent stillborn tended to be greater in the treatment groups, the increases were not statistically significant (2% in the high- and mid-concentration groups, 1% in the low concentration group and 0 in controls). The average litter size was smaller in the high-concentration group (6.3±1.6) compared with controls (9.8±1.3), but the difference was not statistically significant[4]. Other parameters were not affected by treatment. Due to the limited number of parameters assessed in this study, effect levels were not identified.

A two-generation rat reproductive study was conducted to investigate potential endocrine-mediated effects. One of the herbicides, 2,4-dichlorophenol, was administered at 0, 500, 2000 and 8000 ppm in the diet. Increased uterine weights were observed in both F1 and F2 females. A reduced number of implantation sites and reduced live births in F1 parental animals were observed at 2000 ppm and higher exposure levels (Yamasaki et el., 2005).

To understand the structural basis for estrogenic activity, Tarasaka et al. (2006) performed DNA-micro array assay of several structurally similar chemicals, including 2,4-dichlorophenol. This assay demonstrated the estrogenic activity of 2,4-dichlorophenol by down regulating enzymes and signaling pathway compared to chemicals with high levels of estrogenic activity.

Using prostate cancer cell lines, Kim et al. (2005) evaluated the endocrine disrupting activity of 2,4-dichlorophenoxyacetic acid and 2,4-dichlorophenol. These chemicals did not show any androgenic activity. However, co-exposure with 5alpha-dihydroxytestosterone synergistic androgenic activity was demonstrated in this assay.

Rodwell et al. (1989; Dow Chemical Co., 1983) evaluated the developmental toxicity of 2,4-DCP in F344 rats. Groups of 34 sperm-positive female rats were given 2,4-DCP (99.2% pure, in corn oil) via gavage on gestation days (GD) 6-15. Doses of 0, 200, 375 or 750 mg/kg-day were administered. Maternal body weights were recorded on GD 0, 6, 10, 12, 15 and 20. On GD 20, dams were sacrificed by carbon dioxide and subjected to caesarean section. The uterus was weighed and examined for number and location of viable and nonviable fetuses and early and late resorptions. Number and location of *corpora lutea* were recorded. Fetuses were weighed, measured, sexed and examined externally; half were then prepared for soft tissue examination and the remainder prepared for skeletal examination.

Four dams in the high-dose group died during treatment (Rodwell et al., 1989; Dow Chemical Co., 1983). Clinical observations in the high-dose group included red staining around the eyes, nares and mouth; abdominal alopecia; and respiratory rales. While incidences were not

[3] Based on default values for body weight and water consumption (U.S. EPA, 1988).
[4] Exon and Koller (1985) reported that the decrease in litter size was statistically significant at $p \leq 0.10$; Exon et al. (1984) reported that it was not statistically significant. The latter interpretation was accepted here given the relatively high critical value (0.10) used to assess significance in the 1985 paper.

reported, the authors indicated that these were observed in a majority of animals at this dose and in some animals exposed to 375 mg/kg-day. A few high-dose rats also displayed ataxia, prostration and reduced activity. In addition, yellow staining of fur in the urogenital area occurred in all treated groups (incidence not provided, but reported to increase with dose). Maternal body weight gain during treatment was significantly ($p<0.05$) lower than control weight gain in all dose groups (82%, 77%, and 32% of controls during GD 6-15 at the low, mid-, and high doses); further, the body weight decrements persisted after exposure ceased, although the decrease was statistically significant only at the high dose. There were no significant differences in reproductive or teratogenic parameters. Significantly ($p<0.05$) increased incidences of unossified sternebrae (4/22 litters vs. 0/27 litters in controls) and delayed ossification of vertebral arches (6/22 litters vs. 0/27 litters in controls) were observed in the high-dose group. The high dose in this study was a Frank Effect Level (FEL) due to 4 maternal deaths. The LOAEL for maternal toxicity was 200 mg/kg-day, based on clinical signs and decreased body weight gain during treatment; no NOAEL can be identified for maternal toxicity. Developmental effects (increased skeletal variations) were observed at the maternal FEL of 750 mg/kg-day, but not at lower doses; thus, the NOAEL for developmental toxicity was 375 mg/kg-day.

Inhalation Exposure

The literature search identified no studies regarding toxicity of 2,4-DCP in animals following inhalation exposure. Similarly, the available reviews (U.S. EPA, 1987a,b; ATSDR, 1999; IARC, 1986, 1999; WHO, 1989) did not identify any inhalation toxicity studies of this compound.

Other Studies

Acute Toxicity — Borzelleca et al. (1985a,b) reported oral LD50 values of 1276 mg/kg and 1352 mg/kg for male and female CD1-ICR mice observed for up to 14 days. Kobiyashi et al. (1972) calculated oral LD50 values of 1600 mg/kg in ICR mice (same value for males and females) and 3670 and 4500 mg/kg in male and female Sprague-Dawley rats (respectively) observed for up to 10 days.

Dermal Carcinogenicity Studies — Boutwell and Bosch (1959) examined the ability of 2,4-DCP to act as a complete carcinogen on the skin of mice and to promote skin tumors following a single initiating dose of dimethylbenzanthracene (DMBA). In the study for complete carcinogenesis, a group of 23 female Sutter mice (2-3 months of age) was treated with a topical application of 25 μL of 20% 2,4-DCP in benzene applied twice weekly to the back of each mouse for 24 weeks. Of the 23 mice, 16 (70%) survived to 24 weeks, at which time 75% of the survivors (12 mice) had papillomas and 6% (1 mouse) had a carcinoma. The average number of papillomas per mouse was 1.62. At 39 weeks, 62% of surviving mice (number not reported) had carcinomas. There was no control group maintained concurrently in this experiment. The absence of a similarly-treated concurrent control group, along with the significant mortality (30%) in this short-duration study, limits the usefulness of these data.

In the promotion experiment, a group of 33 female Sutter mice was treated with an initial topical application of 75 µL of 0.3% DMBA in benzene, followed by 25 µL of 20% 2,4-DCP in benzene applied twice weekly to the back of each mouse for 15 weeks (Boutwell and Bosch, 1959). At 15 weeks, 27 of 33 (82%) 2,4-DCP-treated mice survived, compared to 15 of 20 (75%) in the control group. Based on information in the publication, the control group was treated with an initiating dose of DMBA; it is not clear whether the controls received applications of vehicle (benzene) on the promotion schedule[5]. At the end of treatment, the incidence of papillomas was significantly increased ($p<0.01$) in 2,4-DCP-treated surviving mice (13/27), compared with controls (1/15). The average number of papillomas per mouse was 1.07 vs. 0.07 in controls. Three of 27 (11%) 2,4-DCP-treated survivors had carcinomas, compared to no carcinomas in the initiator only group; however this difference was not statistically significant ($p>0.05$).

U.S. EPA (1980) criticized several aspects of this study, including the failure to histologically confirm tumor types and the use of creosote-coated wooden cages to house the animals. The use of creosote-treated cages could not be confirmed; the publication indicates that "screen-bottomed metal cages" were used. In addition, U.S. EPA (1980) noted that the high concentration of 2,4-DCP (20% in benzene) applied to the skin may have caused physical abrasion of the skin. 2,4-DCP is known to be corrosive to the skin (HSDB, 2006) and this irritant property may have enhanced the papillomatous response in both studies. It is also important to note that there was significant mortality in the control group of the promotion study (25%) despite the short duration of the study (15 weeks). The reason for this high rate of mortality or that of the 2,4-DCP treated group in the complete carcinogenicity study (30%), was not discussed by the authors.

Genotoxicity — Genotoxicity testing of 2,4-DCP has generally given negative results. Positive results in clastogenicity testing have often been associated with cell toxicity. 2,4-DCP produced no increases in revertant colonies in *Salmonella typhimurium* strains TA98, TA100 or TA1537 with or without exogenous metabolic activation (Haworth et al., 1983; Rasanen et al., 1977). The mutagenic effect of 2,4-DCP in *Salmonella typhimurium* strain TA1535 was initially considered to be equivocal in the presence of hamster liver S9 metabolic activation (Haworth et al., 1983). However, a reevaluation of the data resulted in a determination that the response was negative (Zeiger, 1990). 2,4-DCP significantly increased trifluorothymidine (Tft) resistance in the mouse L5178Y assay at concentrations of 30-60 µg/mL when tested without metabolic activation (Myhr et al., 1990). 2,4-DCP was cytotoxic to V79 Chinese hamster cells, but did not induce 6-thioguanine-resistant mutants when tested at concentrations up to 50 µg/mL without exogenous metabolic activation (Jansson and Jansson, 1986). In a cell-mediated test (wherein metabolic activation was provided by co-cultured cells), 2,4-DCP was weakly mutagenic at concentrations that were also cytotoxic to V79 cells (cell survival 41-54% of controls; Fiskesjo, 1988).

In cultured CHO cells, 2,4-DCP did not induce chromosomal aberrations at concentrations up to 75 µg/mL (0.51 mM) without S9 (8-hour treatment) and at up to 150 µg/mL

[5] In other experiments using DMBA followed by promotion testing of agents dissolved in benzene, the control is reported as a "benzene control"; in this experiment, it is not.

(1.02 mM) with S9 (2-hour treatment) (Anderson et al., 1990). In another CHO cell assay, chromosomal aberrations developed in a significant percentage of cells both with and without activation (Hilliard et al., 1998). Aberrations were observed in 14% of cells following a 3-hour treatment at 1.4 mM without S9 and in 14.5% cells treated at 0.6 mM with S9, compared with 1.5% of control cells (Hilliard et al., 1998). Cell survival was reduced in both of these cases (27% and 54% of controls, respectively), raising the possibility that the aberrations were related to toxicity (Hilliard et al., 1998). Testing of human TK6 lymphoblasts for chromosomal aberrations resulted in an equivocal (nonsignificant) increase (5% of cells with aberrations, compared with 0% in controls) for 2,4-DCP at 0.8 mM, a concentration that gave 59% survival compared with controls. 2,4-DCP increased the frequency of sister chromatid exchanges (SCEs) both in the presence and absence of S9 (Anderson et al., 1990).

The cytogenic effect of 2,4-dichlorophenol was studied in bone marrow, germ cells and spermhead abnormalities in mice treated intraperitoneally at 1/10, 1/5, ½ dose levels (Amer and Aly, 2001). This report demonstrated weaker genotoxic effects as indicated by lower percentage of induced chromosomal aberrations and spermhead abnormalities.

2,4-DCP induced error-prone DNA repair (*umu*-test) in *S. typhimurium* cells when tested without metabolic activation (Ono et al., 1992). In an *in vitro* alkaline elution/rat hepatocyte genotoxicity assay, 2,4-DCP produced evidence of DNA damage; however, cytotoxicity tests showed significant toxicity at concentrations resulting in DNA damage and the authors suggested that DNA effects likely resulted from activation of degradative endonucleases in dead or dying cells (Storer et al., 1996). 2,4-DCP did not induce unscheduled DNA synthesis in primary cultures of rat hepatocytes at a concentration of 50 nmol/mL (Probst et al., 1981). In a prophage-induction assay, 2,4-DCP did not induce DNA damage in *E. coli* at doses up to 480 μmol (DeMarini et al., 1990). 2,4-DCP produced negative results in an *in vivo-in vitro* mouse hepatocyte replicative DNA synthesis (RDS) test (Miyagawa et al., 1995).

Genotoxicity testing of 2,4-DCP is complicated by the fact that this compound uncouples oxidative phosphorylation, leading to depletion of cellular energy supplies. Mitsuda et al. (1963) reported that a concentration of 42 μM 2,4-DCP caused 50% inhibition of ATP production in rat liver mitochondria *in vitro*; in fact, 2,4-DCP was the most potent of the mono- and dichlorophenols tested in this study. Disturbances in energy production may be responsible for the cellular toxicity observed in genotoxicity assays, many of which were conducted at high concentrations. Cell toxicity can lead to false-positive findings, especially in assays for clastogenicity, because DNA damage commonly occurs in apoptotic and necrotic cells (Storer et al., 1996; Hilliard et al., 1998).

DERIVATION OF A PROVISIONAL SUBCHRONIC ORAL RfD VALUE FOR 2,4-DICHLOROPHENOL

A chronic oral RfD of 0.003 mg/kg-day based on an immunotoxicity study (Exon et al., 1984) is available on IRIS. Several oral toxicity studies, including the immunotoxicity study, are available for use in deriving a provisional subchronic oral RfD for 2,4-DCP. Table 2 summarizes the findings of those studies in which a NOAEL and/or LOAEL was identified. As

Table 2. Summary of Oral Noncancer Dose-Response Information

Species	Sex	Doses (mg/kg-day)	Exposure Duration	NOAEL (mg/kg-day)	LOAEL (mg/kg-day)	Responses	Comments	Reference
Chronic Studies								
Rats	M/F	0, 210, 440 (M) 0, 120, 250 (F)	103 weeks	NA	210	Multifocal degeneration of nasal epithelium		NTP, 1989
Mice	M/F	0, 800, 1300 (M) 0, 430, 820 (F)	103 weeks	NA	800	Syncytial alteration of hepatocytes in males		NTP, 1989
Subchronic Studies								
Rats	M/F	0, 160, 310, 675, 1373 (M) 0, 182, 338, 750, 1376, 2795 (F)	13 weeks	338	750	Bone marrow atrophy in females		NTP, 1989
Mice	M/F	0, 782, 1533, 1627, 2960, 6805 (M) 0, 973, 2438, 3305, 3913, 8911 (F)	13 weeks	NA	782	Mild hepatocellular necrosis		NTP, 1989
Rats	M/F	0, 0.3, 3, 30	Pre- and postnatal	0.3	3	Decreased cell-mediated immunity	Immunotoxicity study. Exposure prenatally, through lactation and via drinking water from weaning until 13 weeks of age	Exon and Koller, 1985
Reproductive/Developmental Studies								
Rats	F	0, 200, 375, 750	GD 6-15	NA (maternal) 375 (develop-mental)	200 (maternal) 750 (develop-mental)	Maternal toxicity: clinical signs, reduced body weight gain Developmental effects: increased incidence of skeletal variations		Rodwell et al., 1989; Dow Chemical Co., 1983

Table 2. Summary of Oral Noncancer Dose-Response Information

Species	Sex	Doses (mg/kg-day)	Exposure Duration	NOAEL (mg/kg-day)	LOAEL (mg/kg-day)	Responses	Comments	Reference
Rats	M/F	0, 33.4, 134, 543 (M) 0, 49.1, 194, 768 (F)	10 weeks premating, through gestation and lactation	49.1 (parental) 194 (reproductive)	194 (parental) 768 (reproductive)	Parental toxicity: transient reductions in body weight of dams Reproductive effects: reduced number implantation sites (F1 dams), delayed eye opening and effects on uterus in offspring	Two-generation reproductive toxicity study	Aoyama et al., 2005

the table indicates, the LOAEL for immunotoxicity (3 mg/kg-day; Exon et al., 1984) is much lower (almost 2 orders of magnitude) than LOAELs for other endpoints. This study was thus selected as the basis for the subchronic p-RfD. The critical effect in this study is a decrease in cell-mediated immunity, as measured by decreased footpad swelling. The data selected for modeling are shown in Table 3. Models for continuous variables in U.S. EPA's Benchmark Dose Software (BMDS) were fit to the cell-mediated immunity data in accordance with U.S. EPA (2000) methodology. A default benchmark response (BMR) of one standard deviation from the control mean was used. Appendix A contains details of the modeling and a plot of the best fitting model.

Table 3. Cell-mediated Immunity Data as Modeled

2,4-DCP (ppm)	2,4-DCP (mg/kg-day)	No. of rats	Delayed-type hypersensitivity (mm footpad swelling)		
			Mean	SE	SD
0	0	10	1.10	0.13	0.41
3	0.3	10	0.85	0.11	0.35
30	3.0	10	0.67	0.11	0.35
300	30	10	0.63	0.11	0.35

Source: Exon et al. (1984; Exon and Koller, 1985)

The test for homogenous variance indicated that the homogenous variance model provided adequate fit to the variance data. Using the homogenous variance model, the linear model did not provide adequate fit to the means, so the remaining models were applied; however, none provided adequate fit. In order to try to achieve model fit, the high dose group was dropped from the analysis. Using the reduced data set, the homogenous variance model again provided adequate fit to the variance data, and the linear model provided adequate fit to the means. BMD and BMDL predictions from the modeling of the reduced data set were 3.21 and 1.84 mg/kg-day, respectively. The BMDL from this study (2 mg/kg-day) was thus selected as the point-of-departure (POD) for derivation of the subchronic p-RfD.

The **subchronic p-RfD of 0.02 mg/kg-day** is calculated as the BMDL of 2 mg/kg-day divided by an uncertainty factor of 100, as shown below:

Subchronic p-RfD = BMDL/UF
= 2 mg/kg-d / 100
= 0.02 mg/kg-day

An interspecies uncertainty factor of 10 was applied and another 10-fold uncertainty factor was used for protection of sensitive individuals. A factor of 1 for duration was applied, as the exposure included prenatal and lactational exposure, followed by exposure via drinking water to 13 weeks of age. Since a BMDL was used as the POD, no adjustment for use of a LOAEL was necessary. No database uncertainty factor was used; the toxicological database for 2,4-DCP contains chronic studies in two species, several subchronic studies in rats and mice, two developmental toxicity studies in rats, and a multigeneration reproductive toxicity study in rats. The database lacks a neurotoxicity study; however, existing studies suggest that neurotoxic effects occur only at high doses.

Confidence in the principal study (Exon et al., 1984) is medium because, despite the investigation of sensitive endpoints, the sample sizes were relatively small (10 per dose). Confidence in the database is high because the database includes well-conducted chronic studies in two species, several subchronic studies in rats and mice, two developmental toxicity studies in rats, and a multigeneration reproductive toxicity study in rats. Medium to high confidence in the subchronic p-RfD follows.

FEASIBILITY OF DERIVING PROVISIONAL SUBCHRONIC AND CHRONIC INHALATION p-RfC VALUES FOR 2,4-DICHLOROPHENOL

There are no inhalation studies available for use in developing subchronic and/or chronic provisional RfCs (p-RfC) for 2,4-DCP.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR 2,4-DICHLOROPHENOL

Weight-of-Evidence Classification

Under the 2005 Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005), 2,4-DCP is *not likely to be carcinogenic to humans via oral exposure.* There is *inadequate information to assess the carcinogenic potential* of 2,4-DCP to humans via inhalation exposure. There are no human data addressing the potential carcinogenicity of 2,4-DCP alone, either via oral or inhalation exposure. 2,4-DCP tested negative in adequate 2-year NTP dietary bioassays using both rats and mice. In addition, a second adequate chronic study in rats found no increase in tumor formation with chronic 2,4-DCP exposure (Exon and Koller, 1985). 2,4-DCP has not been tested for carcinogenicity via inhalation exposure. In an old publication where dermally-applied 2,4-DCP was tested both for complete carcinogenicity and as a promoter, an increased incidence of papillomas was observed (Boutwell and Bosch, 1959); however, there are a number of limitations that call into question these results, including: lack of control in the complete carcinogenicity study, high mortality in the control group for the promotion study and use of a potentially corrosive concentration of 2,4-DCP in the skin applications. Genotoxicity testing of 2,4-DCP has largely given negative responses; instances where positive responses were reported have often been associated with cytotoxicity.

Quantitative Estimates of Carcinogenic Risk

There are no appropriate human or animal data from which to derive an oral slope factor or inhalation unit risk for 2,4-DCP.

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APPENDIX A. BENCHMARK DOSE MODELING OF CELL-MEDIATED IMMUNITY (MEAN FOOTPAD SWELLING) (EXON ET AL., 1984; EXON AND KOLLER, 1985)

The model fitting procedure for continuous data is as follows. The simplest model (linear) is first applied to the data while assuming constant variance. If the data are consistent with the assumption of constant variance ($p \geq 0.1$), then the fit of the linear model to the means is evaluated. If the linear model adequately fits the means ($p \geq 0.1$), then it is selected as the model for BMD derivation. If the linear model does not adequately fit the means, then the more complex models are fit to the data while assuming constant variance. Among the models providing adequate fit to the means ($p \geq 0.1$), the one with the lowest AIC for the fitted model is selected for BMD derivation. If the test for constant variance is negative, the linear model is run again while applying the power model integrated into the BMDS to account for nonhomogenous variance. If the nonhomogenous variance model provides an adequate fit ($p \geq 0.1$) to the variance data, then the fit of the linear model to the means is evaluated. If the linear model does not provide adequate fit to the means while the nonhomogenous variance model is applied, then the polynomial, power and Hill models are fit to the data and evaluated while the variance model is applied. Among those providing adequate fit to the means ($p \geq 0.1$), the one with the lowest AIC for the fitted model is selected for BMD derivation. If the test for constant variance is negative and the nonhomogenous variance model does not provide an adequate fit to the variance data, then the data set is considered unsuitable for modeling.

Following the above procedure, continuous-variable models in the EPA BMDS (version 1.3.2) were fit to the data shown in Table 3 (page 23) for decreased cell-mediated immunity (as measured by mean footpad swelling) in rats. Using these data, the constant variance model provided adequate fit to the variance data. With the homogeneous variance model applied, the linear model did not provide an adequate fit to the means, as shown in Table A-1. Further, none of the remaining models provided adequate fit to the data (there were not enough dose groups to apply the Hill model). In order to achieve model fit, the high dose group was dropped from the analysis. With the reduced data set, the homogenous variance model again fit the variance data adequately. With the homogenous variance model applied, the linear model provided adequate fit to the means (Figure A-1). The BMDs and the 95% lower confidence limits (BMDLs) associated with a change of 1 standard deviation (SD) from the control were calculated using the linear model with homogenous variance model applied.

Table A-1. Model Predictions for Footpad Swelling in Rats Exposed to 2,4-DCP (Exon et al. 1984; Exon and Koller, 1985)

Model	Variance *p*-value[a]	Means *p*-value[a]	BMD_{1sd} (mg/kg-day)	$BMDL_{1sd}$ (mg/kg-day)
All dose groups				
Linear (constant variance)	0.9413	0.04207	40.30	21.74
Polynomial (constant variance)[b]	0.9413	0.01183	40.30	21.74
Power (constant variance)[c]	0.9413	0.01183	40.30	21.74
Hill (constant variance)[c]	NA[d]			
Without high dose group				
Linear (constant variance)	0.8418	0.1747	3.21	1.84

[a]Values <0.10 fail to meet conventional goodness-of-fit criteria
[b]Coefficients restricted to be negative; no adequate fit with any degree polynomial; 2-degree polynomial shown
[c]Power restricted to ≥ 1
[d]NA = not applicable (insufficient degrees of freedom available to fit this model)

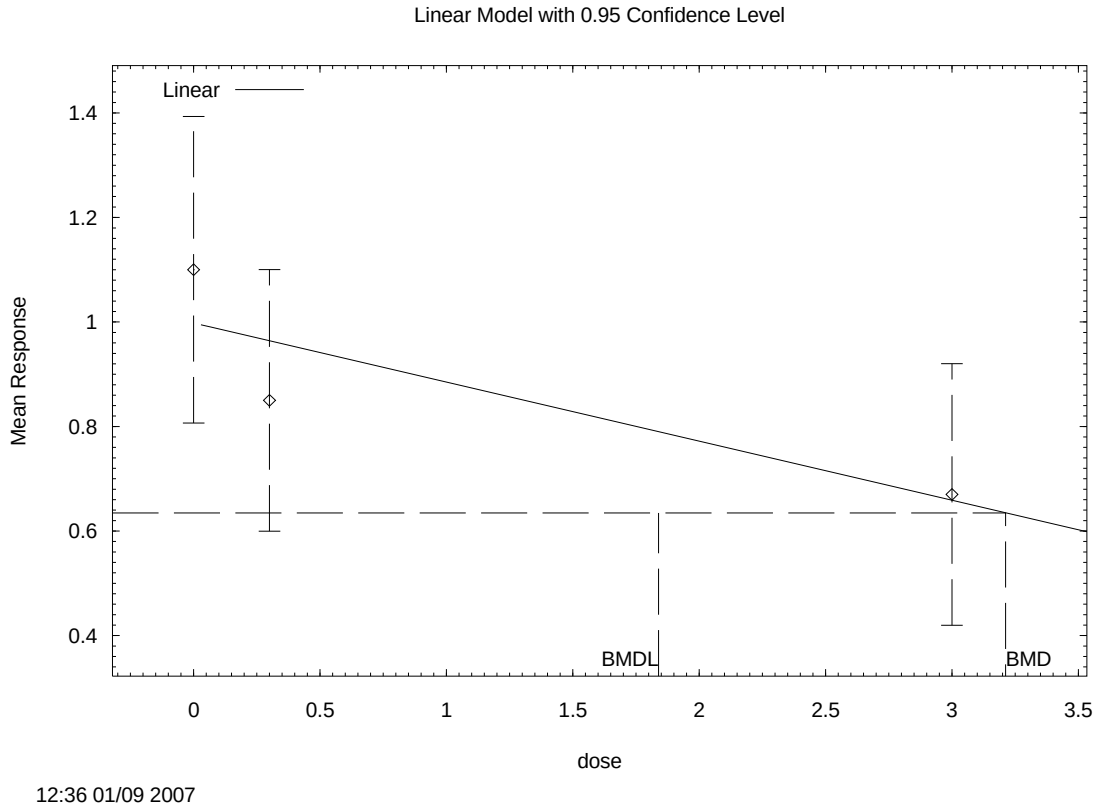


Figure A-1. Mean Footpad Swelling (mm) in Rats Exposed to 2,4-DCP (Reduced dataset) (Exon et al., 1984; Exon and Koller, 1985)

BMDs and BMDLs indicated are associated with a change of 1 SD from the control, and are in units of mg/kg-day.

From: <Nunes.Robert@epamail.epa.gov>
To: <txsmith@gw.dec.state.ny.us>
CC: <Allen.Burton@earthtech.com>, "Mike Spera" <Michael.Spera@earthtech.com>...
Date: 3/17/2008 9:43 AM
Subject: Fw: Toxicity Value Request for the Onondaga Lake Site in NY
Attachments: pic01523.jpg; Onondaga Lake 1 - Sivak.pdf

Tracy - Can you please pass this on to OB&G? They can contact us if they have any questions.

Bob Nunes
New York Remediation Branch
Emergency and Remedial Response Division
US EPA Region II
290 Broadway, 20th Floor
New York, NY 10007-1866
Tel: (212) 637-4254
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Email: nunes.robert@epa.gov
----- Forwarded by Robert Nunes/R2/USEPA/US on 03/17/2008 09:36 AM -----

Michael Sivak/R2/USEPA/US
03/14/2008 07:02 PM

To: Robert Nunes/R2/USEPA/US@EPA
cc: Chloe Metz/R2/USEPA/US@EPA
Subject: Fw: Toxicity Value Request for the Onondaga Lake Site in NY

Bob,

Here's the first installment. I also sent a note to STSC to ask specifically about naphthalene. I will also ask for an estimate of when the PPRTVs that are in development will be completed. I'll let you know what I find out.

Michael Sivak
Technical Support Team
Program Support Branch

EPA Region 2 Superfund Program
sivak.michael@epa.gov
tel: 212.637.4310
fax: 212.637.3083

----- Forwarded by Michael Sivak/R2/USEPA/US on 03/14/2008 07:00 PM -----

SUPERFUND STSC
Sent by: Teresa Shannon
03/14/2008 10:52 AM

To: Michael Sivak/R2/USEPA/US@EPA
cc:
Subject: Re: Toxicity Value Request for the Onondaga Lake Site in NY (Document link: Michael Sivak)

(Embedded image moved to file: pic01523.jpg)

Hey Michael,

I am sending your response in pieces like you requested. Here is the first piece:

1,1,2,2-tetrachloroethane - PPRTV in development, can be sent upon completion
1,1,2-trichloroethane - Current PPRTV attached below, contains no values
1,1'-biphenyl - No information available
1,2,3-trichlorobenzene - PPRTV in development, can be sent upon completion
1,2,4-trichlorobenzene - OSF on Cal EPA; PPRTV in development, can be sent upon completion
1,2,4-trimethylbenzene - Current PPRTV attached below, contains no values
1,2-dichlorobenzene - RfC in '97 HEAST; PPRTV in development, can be sent upon completion
1,2-dichloroethane - RfD in Current PPRTV attached below; ATSDR has RfC
1,2-dichloropropane - ATSDR has RfD; Cal EPA and HEAST have OSF; Cal EPA

has IUR and we have a current PPRTV that contains no values
1,3,5-trimethylbenzene - PPRTV in development, can be sent upon completion
1,3-dichlorobenzene - PPRTV in development, can be sent upon completion
1,4-dichlorobenzene - no RfD info found; Cal EPA has OSF and IUR
1-phenyl-1-(2,4-dimethylphenyl)ethane - No information available
1-phenyl-1-(4-methylphenyl)ethane - No information available
2,4,6-trichlorophenol - IUR on IRIS; no RfC info found
2,4-dichlorophenol - Current PPRTV attached below, contains no values

If you have any questions about the first portion of our response, please feel free to contact the Center. I'll keep the pieces coming!

Thanks and have a good weekend!

Teresa Shannon
STSC

(See attached file: Onondaga Lake 1 - Sivak.pdf)

Michael Sivak/R2/USEPA/US
03/06/2008 12:05 PM

To: SUPERFUND STSC@EPA
cc: Robert Nunes/R2/USEPA/US@EPA
Subject: Toxicity Value Request for the Onondaga Lake Site in NY

Hi there!

I'm back! And with a super long list of chemicals for you. I didn't really know how to organize them, so I grouped them by the type of toxicity factor. I hope that's not too horrible. Please let me know if you'd like me to reorganize the list.

Thanks in advance for your help...

RfD (chronic unless otherwise noted): cobalt, mercury (subchronic), 4,4'-DDD, a-BHC, d-BHC, toxaphene, 1-phenyl-1-(2,4-dimethylphenyl)ethane, 1-phenyl-1-(4-methylphenyl)ethane, 2,6-dinitrotoluene, 2-nitroaniline, 2-nitrophenol, 3&4 methylphenol, 3,3'-dichlorobenzidine, 3-nitroaniline, 4,6-dinitro-2-methylphenol, 4-bromophenyl phenyl ether, 4-chloro-3-methylphenol, 4-chlorophenyl phenol ether, 4-methylphenol, 4-nitroaniline, 4-nitrophenol, acenaphthylene, benzo(ghi)perylene, carbazole, dibenzofuran, hexachlorobutadiene, N-nitro-di-N-propylamine, phenanthrene, 1,1,2,2-tetrachloroethane, 1,2,3-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dichloroethane, 1,2-dichloropropane, 1,3,5-trimethylbenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2-hexanone, chloroethane, tetrachloroethene, trichloroethene, p-isopropyltoluene, t-1,3-dichloropropene, ammonia, chloride, dodecane, sec-butylbenzene, sulfate.

RfC: antimony, barium, cadmium, cobalt, copper, cyanide, iron, nickel, selenium, thallium, vanadium, zinc, PCBs, 4,4'-DDD, 4,4'-DDT, aldrin, a-BHC, d-BHC, atrazine, dieldrin, endosulfan, endrin, heptachlor epoxide, toxaphene, 1-phenyl-1-(2,4-dimethylphenyl)ethane, 1-phenyl-1-(4-methylphenyl)ethane, 2,4,6-trichlorophenol, 2,4-dichlorophenol, 2,4-dimethylphenol, 2,4-dinitrophenol, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 2-chlorophenol, 2 methylnaphthalene, 2-nitroaniline, 2-nitrophenol, 3&4 methylphenol, 3,3'-dichlorobenzidine, 3-nitroaniline, 4,6-dinitro-2-methylphenol, 4-bromophenyl phenyl ether, 4-chloro-3-methylphenol, 4-chlorophenyl phenol ether, 4-methylphenol, 4-nitroaniline, 4-nitrophenol, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, bis(2-chloroethoxy)methane, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, carbazole, chrysene, dibenz(ah)anthracene, dibenzofuran, fluoranthene, fluorene, hexachlorobenzene, hexachlorobutadiene, hexachloroethane, indeno(123-cd)pyrene, nitrobenzene, N-nitro-di-N-propylamine, pentachlorophenol, phenanthrene, phenol, pyrene, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,2-dichloroethane, 1,3,5-trimethylbenzene, 1,3-dichlorobenzene, 2-hexanone, acetone, bromodichloromethane, carbon tetrachloride, chlorobenzene, chlorodibromomethane, chloroform, methylene chloride, p-isopropyltoluene, tetrachloroethene, trichloroethene, t-1,3-dichloropropene, 1,1'-biphenyl, ammonia, chloride, chlorine, dodecane, sec-butylbenzene, sulfate.

SForal: aluminum, cobalt, iron, nickel, vanadium, atrazine, endosulfan, endrin aldehyde, endrin ketone, 1-phenyl-1-(2,4-dimethylphenyl)ethane, 1-phenyl-1-(4-methylphenyl)ethane, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 2-nitroaniline, 2-nitrophenol, 3-nitroaniline, 4,6-dinitro-2-methylphenol, 4-chloro-3-methylphenol, 4-chlorophenyl phenyl ether, 4-nitroaniline, carbazole, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dichloropropane,

1,3,5-trimethylbenzene, 1,4-dichlorobenzene, p-isopropyltoluene,
chlorine, dodecane, nitrogen, sec-butylbenzene, sulfate

SFinhalation: aluminum, beryllium, cobalt, iron, nickel, vanadium,
atrazine, endosulfan, endrin aldehyde, endrin ketone,
1-phenyl-1-(2,4-dimethylphenyl)ethane,
1-phenyl-1-(4-methylphenyl)ethane, 2,4,6-trichlorophenol,
2,4-dichlorophenol, 2,4-dimethylphenol, 2,4-dinitrophenol,
2,6-dinitrotoluene, 2-chlorophenol, 2-nitrophenol, 3&4 methylphenol,
3,3'-dichlorobenzidine, 3-nitroaniline, 4,6-dinitro-2-methylphenol,
4-chloro-3-methylphenol, 4-chlorophenyl phenol ether, 4-methylphenol,
4-nitroaniline, 4-nitrophenol, acenaphthene, benzo(a)anthracene,
benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene,
bis(2-chloroethoxy)methane, bis(2-chloroethyl)ether,
bis(2-ethylhexyl)phthalate, carbazole, chrysene, dibenz(ah)anthracene,
indeno(123-cd)pyrene, naphthalene, 1,2,3-trichlorobenzene,
1,2,4-trimethylbenzene, 1,2-dichloropropane, 1,3,5-trimethylbenzene,
1,4-dichlorobenzene, 2-hexanone, bromodichloromethane, carbon disulfide,
chlorodibromomethane, xylenes, p-isopropyltoluene, toluene,
t-1,3-dichloropropene, 1,1'-biphenyl, ammonia, chloride, chlorine,
dodecane, sec-butylbenzene, sulfate

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To: Robert Nunes/R2/USEPA/US@EPA
From: Michael Sivak/R2/USEPA/US
Date: 03/19/2008 12:00PM
cc: Chloe Metz/R2/USEPA/US@EPA
Subject: Fw: Toxicity Value Request for the Onondaga Lake Site in NY

Bob,

Please see the note below. The CalEPA IUR is recommended for naphthalene, which will influence how inhalation exposures are screening and evaluated. Please forward this to DEC and along to OBG and Honeywell. They will need to include this in the HHRA for HB/WBB and other sites.

Please let me know if you or anyone has any questions. Thanks!

Michael Sivak
Technical Support Team
Program Support Branch
EPA Region 2 Superfund Program
sivak.michael@epa.gov
tel: 212.637.4310
fax: 212.637.3083

Hi Michael,

This is the response that the chemical manager provided regarding the naphthalene IUR:

Inform the client that the best value available now is the CalEPA IUR. The client should use that value until the IRIS file is on line Thanks.

If you need anything else, please let me know. I am working on the second set of files to send to you. Thanks for your patience!

Teresa Shannon
STSC

Michael Sivak/R2/USEPA/US

SUPERFUND STSC

Hey Michael!

I received your request and have started researching your list of chemicals. I will be in touch as soon as I have a response put together for you.

Thanks!

Teresa Shannon
STSC

Michael Sivak/R2/USEPA/US

Hi there!

I'm back! And with a super long list of chemicals for you. I didn't really know how to organize them, so I grouped them by the type of toxicity factor. I hope that's not too horrible. Please let me know if you'd like me to reorganize the list.

Thanks in advance for your help...

RfD (chronic unless otherwise noted): cobalt, mercury (subchronic), 4,4'-DDD, a-BHC, d-BHC, toxaphene, 1-phenyl-1-(2,4-dimethylphenyl)ethane, 1-phenyl-1-(4-methylphenyl)ethane, 2,6-dinitrotoluene, 2-nitroaniline, 2-nitrophenol, 3&4 methylphenol, 3,3'-dichlorobenzidine, 3-nitroaniline, 4,6-dinitro-2-methylphenol, 4-bromophenyl phenyl ether, 4-chloro-3-methylphenol, 4-chlorophenyl phenol ether, 4-methylphenol, 4-nitroaniline, 4-nitrophenol, acenaphthylene, benzo(ghi)perylene, carbazole, dibenzofuran, hexachlorobutadiene, N-nitro-di-N-propylamine, phenanthrene, 1,1,2,2-tetrachloroethane, 1,2,3-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dichloroethane, 1,2-dichloropropane, 1,3,5-trimethylbenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2-hexanone, chloroethane, tetrachloroethene, trichloroethene, p-isopropyltoluene, t-1,3-dichloropropene, ammonia, chloride, dodecane, sec-butylbenzene, sulfate.

RfC: antimony, barium, cadmium, cobalt, copper, cyanide, iron, nickel, selenium, thallium, vanadium, zinc, PCBs, 4,4'-DDD, 4,4'-DDT, aldrin, a-BHC, d-BHC, atrazine, dieldrin, endosulfan, endrin, heptachlor epoxide, toxaphene, 1-phenyl-1-(2,4-dimethylphenyl)ethane, 1-phenyl-1-(4-methylphenyl)ethane, 2,4,6-trichlorophenol, 2,4-dichlorophenol, 2,4-dimethylphenol, 2,4-dinitrophenol, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 2-chlorophenol, 2 methylnaphthalene, 2-nitroaniline, 2-nitrophenol, 3&4 methylphenol, 3,3'-dichlorobenzidine, 3-nitroaniline, 4,6-dinitro-2-methylphenol, 4-bromophenyl phenyl ether, 4-chloro-3-methylphenol, 4-chlorophenyl phenol ether, 4-methylphenol, 4-nitroaniline, 4-nitrophenol, acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(ghi)perylene, bis(2-chloroethoxy)methane, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, carbazole, chrysene, dibenz(ah)anthracene, dibenzofuran, fluoranthene, fluorene, hexachlorobenzene, hexachlorobutadiene, hexachloroethane, indeno(123-cd)pyrene, nitrobenzene, N-nitro-di-N-propylamine, pentachlorophenol, phenanthrene, phenol, pyrene, 1,1,2,2-tetrachloroethane, 1,1,2-trichloroethane, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,2-dichlorobenzene, 1,2-dichloroethane, 1,3,5-trimethylbenzene, 1,3-dichlorobenzene, 2-hexanone, acetone, bromodichloromethane, carbon tetrachloride, chlorobenzene, chlorodibromomethane, chloroform, methylene chloride, p-isopropyltoluene, tetrachloroethene, trichloroethene, t-1,3-dichloropropene, 1,1'-biphenyl, ammonia, chloride, chlorine, dodecane, sec-butylbenzene, sulfate.

SForal: aluminum, cobalt, iron, nickel, vanadium, atrazine, endosulfan, endrin aldehyde, endrin ketone, 1-phenyl-1-(2,4-dimethylphenyl)ethane, 1-phenyl-1-(4-methylphenyl)ethane, 2,4-dinitrotoluene, 2,6-dinitrotoluene, 2-nitroaniline, 2-nitrophenol, 3-nitroaniline, 4,6-dinitro-2-methylphenol, 4-chloro-3-methylphenol, 4-chlorophenyl phenyl ether, 4-nitroaniline, carbazole, 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dichloropropane, 1,3,5-trimethylbenzene, 1,4-dichlorobenzene, p-isopropyltoluene, chlorine, dodecane, nitrogen, sec-butylbenzene, sulfate

SFinhalation : aluminum, beryllium, cobalt, iron, nickel, vanadium, atrazine, endosulfan, endrin aldehyde, endrin ketone, 1-phenyl-1-(2,4-dimethylphenyl)ethane, 1-phenyl-1-(4-methylphenyl)ethane, 2,4,6-trichlorophenol, 2,4-dichlorophenol, 2,4-dimethylphenol, 2,4-dinitrophenol, 2,6-dinitrotoluene, 2-chlorophenol, 2-nitrophenol, 3&4 methylphenol, 3,3'-dichlorobenzidine, 3-nitroaniline, 4,6-dinitro-2-methylphenol, 4-chloro-3-methylphenol, 4-chlorophenyl phenol ether, 4-methylphenol, 4-nitroaniline, 4-nitrophenol, acenaphthene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-chloroethoxy)methane, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, carbazole, chrysene, dibenz(ah)anthracene, indeno(123-cd)pyrene, naphthalene, 1,2,3-trichlorobenzene, 1,2,4-trimethylbenzene, 1,2-dichloropropane, 1,3,5-trimethylbenzene, 1,4-dichlorobenzene, 2-hexanone, bromodichloromethane, carbon disulfide, chlorodibromomethane, xylenes, p-isopropyltoluene, toluene, t-1,3-dichloropropene, 1,1'-biphenyl, ammonia, chloride, chlorine, dodecane, sec-butylbenzene, sulfate

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March 24, 2008

Chloe Metz, Region 2
Onondaga Lake

ASSISTANCE REQUESTED: Toxicity values for approximately 50 chemicals

ENCLOSED INFORMATION:

Attachment 1: PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 1,2,4-TRIMETHYLBENZENE (CASRN 95-63-6)

Attachment 2: PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2-CHLOROPHENOL (CASRN 95-57-8)

Attachment 3: PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2-NITROPHENOL (CASRN 88-75-5)

Attachment 4: PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ALUMINUM (CASRN 7429-90-5)

BE ADVISED: *Unless specifically indicated to have been peer reviewed, it is to be noted that the attached Provisional Toxicity Value Paper(s) have not been through the U.S. EPA's formal review process; therefore, they do not represent a U.S. EPA verified assessment.*

If you have any questions regarding this transmission, please contact the STSC at (513) 569-7300.

Attachments (4)

cc: STSC files

Supported by ECFlex, Incorporated, under
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6-11-2007

Provisional Peer Reviewed Toxicity Values for

1,2,4-Trimethylbenzene
(CASRN 95-63-6)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 1,2,4-TRIMETHYLBENZENE (CASRN 95-63-6)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and

circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

Neither a reference dose (RfD) nor a reference concentration (RfC) are available for 1,2,4-trimethylbenzene in the Integrated Risk Information System (IRIS) database (U.S. EPA, 2007) or the Health Effects Assessment Summary Tables (HEAST) (U.S. EPA, 1997). There is no Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile on 1,2,4-trimethylbenzene, other trimethylbenzene isomers, or mixtures of trimethylbenzene isomers (ATSDR, 2006). The Chemical Assessments and Related Activities (CARA) list (U.S. EPA, 1991, 1994a) and the HEAST (U.S. EPA, 1997) list a Health and Environmental Assessment (HEA) for trimethylbenzenes (U.S. EPA, 1987a); however, the available toxicity data were considered inadequate for quantitative risk assessment (U.S. EPA, 1997). The CARA (U.S. EPA, 1991, 1994a) lists a Drinking Water Health Advisory for 1,2,4-trimethylbenzene (U.S. EPA, 1987b). Because available human and animal toxicity data were considered inadequate for longer-term and lifetime quantitative risk assessment, the U.S. EPA (1987b) derived an RfD of 0.64 mg/kg-day for 1,2,4-trimethylbenzene based on assumptions that the Threshold Limit Value (TLV) of 25 ppm (125 mg/cu.m) for mixed trimethylbenzenes recommended by the American Conference of Governmental Industrial Hygienists (ACGIH, 2001, 2005) represents a NOAEL for 1,2,4-trimethylbenzene and that exposure results in 50% absorption. The National Institute of Occupational Safety and Health (NIOSH) adopted a recommended exposure limit (REL) time-weighted average (TWA) of 25 ppm (123 mg/m^3) for 1,2,4-trimethylbenzene (NIOSH, 2006). The Occupational Safety and Health Administration (OSHA) has not adopted a permissible exposure limit (PEL) for 1,2,4-trimethylbenzene (OSHA, 2006). Health assessments for 1,2,4-trimethylbenzene are not available from other major sources, including CalEPA (2006), the

National Toxicology Program (NTP, 2006), the World Health Organization (WHO, 2006), and the International Agency for Research on Cancer (IARC, 2006).

A Group D (not classifiable as to human carcinogenicity) cancer classification is included in the Drinking Water Standards and Health Advisories list (U.S. EPA, 2004). A cancer assessment for 1,2,4-trimethylbenzene is not available on IRIS (U.S. EPA, 2007) or the HEAST (U.S. EPA, 1997). A cancer assessment for 1,2,4-trimethylbenzene is not available from CalEPA (2006), the National Toxicology Program (NTP, 2006), the World Health Organization (WHO, 2006), or the International Agency for Research on Cancer (IARC, 2006). Occupational exposure limits for 1,2,4-trimethylbenzene listed by NIOSH (2006) include no cancer notation.

Literature searches were performed to identify relevant information for 1,2,4-trimethylbenzene for the years 1986-1998 in the databases HSDB, RTECS, TSCATS, MEDLINE, and TOXLINE. Update literature searches were conducted in TOXLINE, MEDLINE (plus PubMed cancer subset), and DART/ETICBACK for the time period including January, 1998 to December, 2005. Update search of the TOXCENTER database was performed for the time period of August, 2000 to December, 2005. Databases searched without date limitations in December, 2005, included TSCATS, RTECS, GENETOX, HSDB and CCRIS. Search of Current Contents encompassed July to December, 2005.

REVIEW OF PERTINENT DATA

Human Studies

Oral Exposure

No data were located regarding the oral toxicity or carcinogenicity of 1,2,4-trimethylbenzene in humans.

Inhalation Exposure

Data regarding the inhalation toxicity of 1,2,4-trimethylbenzene in humans come from an occupational exposure study in which workers were exposed to a mixture of trimethylbenzene isomers. Bättig et al. (1958) examined 27 workers exposed to Fleet-X DV 99 solvent in the painting shop of a Swiss transportation plant. The solvent was analyzed spectrographically and was found to consist primarily of aromatic hydrocarbons (97.5%) and paraffinic and naphthenic hydrocarbons (2.5%). The aromatic hydrocarbon portion was composed of 1,2,4-trimethylbenzene (>50%), 1,3,5-trimethylbenzene (>30%), and possibly included 1,2,3-trimethylbenzene, 1-methyl-2-ethyl benzene, 1-methyl-3-ethyl benzene, and 1-methyl-4-ethyl benzene. Based on analysis of air samples collected from the plant, the concentration of the solvent was roughly estimated at 10-60 ppm (49-295 mg/m^3). The control group consisted of 10 unskilled workers employed in a different section of the plant. Although the authors stated that the Fleet-X DV 99 solvent was used for "a period of some ten years," the average exposure duration of the workers was not reported. The workers reported CNS symptoms (vertigo, headaches and drowsiness) more often than the control group (70% versus 30% in the controls).

Chronic asthma-like bronchitis (30% of workers versus 10% of controls), anemia [defined as < 4.5 million erythrocytes/mm^3 and usually combined with normal hemoglobin] (52% versus 20%) and alterations in blood clotting (30% versus 10%) were also observed in the exposed workers. The incidence of CNS symptoms was statistically significantly higher in the exposed workers than in the control group (Fisher's exact test conducted for this assessment; $p<0.05$). For the other effects, the incidences did not significantly differ between the groups. A higher incidence of vitamin C deficiency was observed in the control group, suggesting that the two groups may not have been matched for socioeconomic status. If the assumption is made that the solvent exclusively contained trimethylbenzene isomers, then this study identifies a LOAEL in the range of 10-60 ppm (49-295 mg/m^3) for signs of neurotoxicity.

Animal Studies

Oral Exposure

The database of repeated oral exposure studies in animals for 1,2,4-trimethylbenzene is limited to a 4-week study (Borriston Laboratories, 1984) and a chronic exposure carcinogenicity study (Maltoni et al., 1997). No oral developmental or reproductive toxicity studies were located for 1,2,4-trimethylbenzene.

The primary focus of the Borriston Laboratories (1984) study was the ability of 1,2,4-trimethylbenzene to induce nephrotoxicity. In this study, groups of 10 male Fischer-344 rats were administered doses of 0.5 or 2.0 g/kg neat 1,2,4-trimethylbenzene by gavage 5 days/week for 4 weeks; the duration-adjusted doses were 357 and 1429 mg/kg-day, respectively. A group of rats serving as controls were gavaged with saline. Gross necropsy was conducted in all rats, but only the kidneys underwent histopathologic examination. Mortality rates during treatment in the control, low-, and high-dose groups were 0/10, 1/10, and 10/10, respectively. Deaths in the high-dose group occurred as early as the third day of treatment. Final body weight and absolute kidney weight of low-dose rats were not significantly different than controls. Gross necropsy findings in low-dose animals included speckled cortical surfaces in the kidneys and white gelatinous material inside the urinary bladders. High-dose rats exhibited mottled and red thymus, spotty kidney and liver surfaces, enlarged adrenals, gas filled and yellow intestines and lung congestion. The presence or absence of hydrocarbon nephropathy was determined by examining the incidence of hyaline droplet changes, regenerative epithelium and tubular dilation with granular material. Treatment with 1,2,4-trimethylbenzene did not significantly increase the incidence or severity of nephropathy relative to controls; however, according to the authors, it is possible that high-dose rats died before nephropathy could develop. A NOAEL or LOAEL could not be determined due to the limited scope of the study, although the high dose of 1429 mg/kg-day was clearly a frank effects level (FEL) for mortality.

Maltoni et al. (1997) investigated the carcinogenicity of 1,2,4-trimethylbenzene (99% pure) in a long-term oral exposure experiment. Male and female Sprague-Dawley rats (50/sex/group) received doses of either 0 or 800 mg/kg (4 days/week) of 1,2,4-trimethylbenzene by gavage in 1 ml olive oil for 104 weeks. Food and water consumption and body weights were recorded throughout the experiment. Upon death or terminal sacrifice at 123 weeks, the animals were subjected to systemic necropsy. Histopathology was performed on brain, pituitary gland,

Zymbal glands, salivary glands, Harderian glands, head, tongue, thymus, mediastinal lymph nodes, lung, heart, diaphragm, liver, spleen, pancreas, kidneys, adrenal glands, esophagus, stomach, intestine (four levels), bladder, prostrate, uterus, vagina, gonads, interscapular fat pad, subcutaneous and mesenteric lymph nodes, sternum, femur, spinal cord and any other organs and tissues with pathological lesions. No statistical analysis of the data was presented.

"Slight" reduction in the survival of the female Sprague-Dawley rats and an "intermediate" reduction in the survival of male rats were reported (Maltoni et al., 1997). However, quantitative survival data were not presented in the report and no statistical analysis of the decreases in survival were presented. Although the study report indicated that food and water consumption and body weight data were recorded, these data were not included in the report. There was no significant increase in the incidence of animals bearing either malignant or benign + malignant tumors (Table 1). Fisher's exact tests conducted for EPA indicated that the differences in total tumors between the exposed and treated animals were not statistically significant ($p<0.05$). Neuroesthesioepitheliomas were observed in the nasal cavity of 3/100 exposed animals (M + F). This tumor was not seen in concurrent controls, and a Fisher's exact test of the data showed that the increase in incidence of neuroesthesioepitheliomas was not statistically significant ($p<0.05$). The authors, however, indicated that these tumors are quite rare in the colony of Sprague-Dawley rats used for these experiments and suggested that this finding presents some evidence for carcinogenicity of 1,2,4-trimethylbenzene.

Table 1. Incidences of Benign and Malignant Tumors in Male and Female Sprague-Dawley Rats after a Long-term (104 week) Oral Exposure to 1,2,4-Trimethylbenzene.[a]

Dose (mg/kg bw)[b]	Animals		Percent of animals with tumors	
	Sex	Number	Benign + Malignant	Malignant
800	M	50	62	26
	F	50	66	24
	M + F	100	64	25
0	M	50	54	24
	F	50	70	22
	M + F	100	62	23

[a]Source: Maltoni et al., 1997
[b]Gavage dose administered 4 days/week for 104 weeks and animals were terminated after 123 weeks.

Inhalation Exposure

Korsak and Rydzyński (1996) examined the neurotoxic effects of acute exposure of male Wistar rats (10/group) to 1,2,4-trimethylbenzene (>97% pure) and other trimethylbenzene isomers, and also examined the neurotoxic effects of subchronic exposure to 1,2,4-trimethylbenzene and 1,2,3-trimethylbenzene. In the acute experiment, rats were exposed to concentrations of 250-2000 ppm (1227-9816 mg/m^3) for 4 hours. Acute exposure to 1,2,4-trimethylbenzene caused concentration-related impairment in a rotarod performance test (EC_{50} = 4693 mg/m^3) and concentration-related decreased pain sensitivity (as measured by increased paw-lick response latency; EC_{50} = 5682 mg/m^3).

In the subchronic experiment, rats were exposed to 1,2,4-trimethylbenzene at concentrations of 0, 25, 100 or 250 ppm (0, 123, 491 or 1227 mg/m^3), 6 hours/day, 5 days/week for 3 months and observed for exposure-related clinical signs and body weight effects (Korsak and Rydzyński, 1996). Rotarod performance and hot-plate behavior were measured as indices of the neurotoxicity of trimethylbenzene isomers. Rotarod performance was tested prior to start of the study, weekly during exposure, and 2 weeks after the termination of the exposure. Hot-plate behavior was tested immediately after termination of the exposure. Fisher's exact test was used for analysis of rotarod performance and the Kruskall-Wallis test used for changes in pain sensitivity (hot plate behavior). Exposures to 1,2,4-trimethylbenzene did not result in any apparent body weight effects or clinical signs of toxicity. However, exposure-related indicators of neurotoxicity were noted. Rotarod performance failure increased in a concentration-related manner in the groups exposed to 1,2,4-trimethylbenzene, but reached the level of statistical significance (40% failure; $p<0.05$) only in the highest (1227 mg/m^3) exposure group following 8 or 13 weeks of exposure. The incidence of rotarod performance failure in control rats was 0% throughout the study period. Although the mean rotarod performance failure rate in the highest exposure group remained at 30% after a 2-week recovery period, the rate was not significantly different from controls. Pain-sensitivity was also decreased in a concentration dependent manner (evidenced by increased latency of the paw-lick response). As shown in Table 2, the increased latency reached the level of statistical significance in the 491- and 1227-mg/m^3 groups. After a 2-week recovery period, the highest (1227 mg/m^3) exposure group no longer exhibited a significant difference in pain sensitivity, relative to controls. This study identified a NOAEL of 123 mg/m^3 and a LOAEL of 491 mg/m^3 (6 hours/day, 5 days/week) for significantly decreased pain sensitivity.

Table 2. Exposure-Related Effect on Latency of the Paw-Lick Response in Rats Exposed to 1,2,4-Trimethylbenzene Vapors 6 Hours/Day, 5 Days/Week for 3 Months.[a]

Number of rats	Exposure level (mg/m^3)	Mean latency of paw-lick response (seconds)
9	0	15.4 ± 5.8[b]
10	123	18.2 ± 5.7
9	491	27.6 ± 3.2[c]
10	1227	30.1 ± 7.9[c]

[a] Source: Korsak and Rydzyński, 1996
[b] The authors did not specify whether standard deviation or standard error of the mean is presented
[c] Statistically significantly different from controls ($p \leq 0.01$)

Gralewicz et al. (1997a) investigated 1,2,4-trimethylbenzene-induced behavioral effects on groups of male Wistar rats (15/group) exposed to vapor concentrations of 0, 50, 100 or 250 ppm (0, 123, 491 or 1227 mg/m^3) for 6 hours/day, 5 days/week for 4 weeks. To assess the effect of exposure on short-term working memory, choice accuracy in a radial arm maze was tested. Effects on spontaneous activity were evaluated with an open field test. Effects on long-term memory and learning ability were assessed on the basis of conditioned passive and active avoidance tests. The hot-plate test was performed to compare the groups with respect to the decrease in responsiveness to a thermal stimulus following a brief intermittent foot shock. Animals were subjected to the following sequence of behavioral testing:

1. radial maze: 2 weeks before exposure and on days 14-18 after exposure,
2. open field activity: day 25 after exposure,
3. passive avoidance: days 35-45 after exposure,
4. hot-plate test: days 50 and 51 after exposure,
5. active avoidance: day 54 after exposure.

The data were analyzed by ANOVA and comparisons among treatments were made using Sheffe's test, or Tukey's test for 2-way ANOVA.

There was no significant effect of 1,2,4-trimethylbenzene exposure on body weight gain during the 4-week exposure. Passive-avoidance learning was significantly ($p<0.001$) retarded in groups exposed to 491 or 1227 mg/m^3 of 1,2,4-trimethylbenzene and tested 35-45 days after the end of the exposure period. Retardation of passive-avoidance learning was more pronounced in the 491 mg/m^3 exposure group than in the 1227 mg/m^3 group. In the hot-plate test following foot shock, evaluation of rats 50 days following termination of exposures to 491 or 1227 mg/m^3 of 1,2,4-trimethylbenzene revealed significantly ($p<0.01$) increased paw-lick latency times, in comparison to unexposed controls. There was no significant change in the active avoidance test, although there was a trend toward decreased avoidance responses with increasing 1,2,4-trimethylbenzene exposure concentration. Short-term working memory did not appear to be adversely affected by 1,2,4-trimethylbenzene exposure. In the open field test there was no significant effect on spontaneous movement or on rearing behavior; however, there was a significant ($p<0.05$) increase in grooming behavior of animals exposed to 1,2,4-trimethylbenzene at 491 mg/m^3. Although grooming behavior also was increased above controls in the 123 and 1227 mg/m^3 groups, the difference was not statistically significant. The results of these experiments suggest that 4-week exposures at concentrations that produced no overt clinical signs of toxicity can produce long-term effects on the functional state of the rat central nervous system. Based on findings of significantly retarded passive avoidance learning and increased paw-lick latency in rats of the 491 and 1227 mg/m^3 exposure groups, the 123 mg/m^3 group represented a NOAEL and the 491 mg/m^3 group represented a LOAEL (6 hours/day, 5 days/week) for persistent neurotoxic effects.

Gralewicz and Wiaderna (2001) employed the same general protocol used by Gralewicz et al. (1997a) in a comparative study of the behavioral effects of repeated inhalation exposure to individual trimethylbenzene isomers or *m*-xylene. The study included a group of 11 adult male Wistar rats exposed to 100 ppm (491 mg/m^3) of 1,2,4-trimethylbenzene (purity not stated) and a control (air only) group of 10 male rats. Exposures were for 6 hours/day, 5 days/week for 4

weeks. The sequence of behavioral testing varied slightly from that employed by Gralewicz et al. (1997a) and included:

1. radial maze: 1 week before exposure and on days 14-18 after exposure,
2. open field activity: day 8 before exposure and day 25 after exposure,
3. passive avoidance: days 39-48 after exposure,
4. hot-plate test: days 50 and 51 after exposure,
5. active avoidance: days 54 and 60 after exposure.

No significant exposure-related effects were seen regarding body weights or short-term working memory (as determined in the radial arm maze test) for any of the trimethylbenzene isomers or *m*-xylene. Acquisition, but not retention, of the two-way active avoidance response was significantly impaired in all solvent-exposed groups. Results of other behavioral tests demonstrated exposure-related effects for each of the solvents. In the case of 1,2,4-trimethylbenzene, significantly increased spontaneous locomotor activity in the open field, impaired passive avoidance learning and significantly longer paw-lick latencies in the hot-plate test 24 hours after foot shock were observed. These results support the findings of the earlier study (Gralewicz et al., 1997a) in which the 491 mg/m^3 (6 hours/day, 5 days/week) exposure level represented a LOAEL for neurotoxic effects in 1,2,4-trimethylbenzene-exposed rats.

Gralewicz et al. (1997b) investigated the effect of a 4-week (6 hours/day, 5 days /week) inhalation exposure to 1,2,4-trimethylbenzene (purity not stated) at concentrations of 0, 25, 100 or 250 ppm (0, 123, 491 or 1227 mg/m^3) on the occurrence of spike-wave discharges (SWD) in the neurocortex of male Wistar rats (9-10/group). Bursts of SWD increase in number and/or duration with advancing age and it was hypothesized that exposure to neurotoxic solvents may accelerate the aging process in the brain. Electrodes were implanted into the fronto-parietal cortex and into the dorsal hippocampus. One-hour EEG recordings were performed immediately before initiation of exposure, at the end of the exposure period, 1 month later and 3 months later. The occurrence of SWD bursts is limited to the state of awake immobility. The number and total duration of SWD bursts were determined from each EEG. The data were analyzed by ANOVA and multiple comparisons among treatments was performed with Tukey's test. The study results included information regarding mean body weights, but the study report did not provide details of body weight data collection.

The study authors (Gralewicz et al., 1997b) indicated that 1,2,4-trimethylbenzene exposure resulted in no statistically significant body weight effects. In the control and lowest (123 mg/m^3) exposure groups, the total duration of SWD showed an increasing trend with time, in comparison to pre-exposure SWD and reached statistical significance ($p<0.05$) at 3 months after exposure. In contrast, the total duration of SWD tended to decline with time in the mid- and high-exposure groups after exposure. The decrease in SWD occurrence, however, was statistically significant only for the measurements performed 1 month after the end of exposure in the mid-exposure (491 mg/m^3) group. A similar trend was seen when the number of SWD bursts per hour was determined. The frequency of SWD bursts increased with age in the control and lowest exposure groups and tended to decline with time in the mid- and high-exposure groups. The data, however, were highly variable and were statistically significantly different from pre-exposure SWD only for the highest exposure level at 3 months after exposure. Thus,

there were no clear 1,2,4-trimethylbenzene induced concentration-related effects on SWD, although the results are suggestive that long-term effects on brain activity may have occurred.

Korsak et al. (2000) exposed groups of male and female rats (10/sex/group; 20/sex/group at the highest exposure concentration) of outbred Imp:WIST to 1,2,4-trimethylbenzene (97% pure) vapors at target concentrations of 0, 123, 492 or 1230 mg/m^3 for 6 hours/day, 5 days/week for 3 months. Animals were observed twice daily for clinical signs of toxicity. Body weights were recorded prior to initiation of exposures and weekly thereafter and food consumption was measured weekly. Blood was drawn for hematological examination prior to initiation of exposures and 1 week prior to exposure termination. Clinical chemistry testing was performed at the end of the 3-month exposure period. Organ weights were determined for lungs, liver, spleen, kidneys, adrenals, heart and gonads. Histopathological examinations were performed on tissues from brain, nose, larynx, trachea, thymus, lungs, heart, liver, spleen, kidney, adrenals, thyroid, pancreas, gonads, urinary bladder, stomach, duodenum, small and large intestines and salivary glands.

Clinical findings were unremarkable (Korsak et al., 2000). No significant exposure-related effects were seen regarding food consumption or body weights. The few differences in some relative or absolute organ weights did not appear to be of toxicological relevance. Significant concentration-related trends ($p<0.01$) for decreased numbers of red blood cells and increased numbers of white blood cells were noted for male (but not female) rats. In the male rats of the highest 1,2,4-trimethylbenzene exposure group (1230 mg/m^3), both red and white blood cell counts were significantly different ($p<0.01$) from those of control males. A significant trend ($p<0.01$) for concentration-related decreased reticulocyte counts was observed in female rats and the difference was significant ($p<0.05$) in the 1230 mg/m^3 group. Hematological testing also revealed a significant trend ($p<0.01$) for decreased clotting time in female (but not male) rats; the decrease reached the level of statistical significance ($p<0.05$) in the 492 and 1230 mg/m^3 groups. Clinical chemistry results were unremarkable, with the exception of significantly increased serum sorbitol dehydrogenase in all 1,2,4-trimethylbenzene-exposed groups of male rats (not concentration related). Histopathological examinations revealed exposure-related significantly increased severity of pulmonary lesions, which included increased proliferation of peribronchial lymphatic tissue in males of the mid- (but not highest) exposure level, increased alveolar macrophages in males of the highest exposure level and increases in interstitial lymphocytic infiltrations in males of the mid- (but not highest) exposure level and females of the highest exposure level. No significant exposure-related changes were seen in the other examined organs and tissues. The mid exposure level of 492 mg/m^3 can be considered a LOAEL for hematological and respiratory effects in this study. The low exposure level of 123 mg/m^3 is a NOAEL.

Korsak et al. (1997) exposed male Wistar rats of IMP:DAK outbreed stock (10/group) to 1,2,4-trimethylbenzene (≥97% pure) at concentrations of 0, 25, 100 or 250 ppm (0, 123, 491 or 1227 mg/m^3) for 90 days (6 hours/day, 5 days/week). Lung lavage fluid was collected 24 hours after termination of the subchronic exposure and centrifuged at 400 g for 10 minutes. Differential counts of bronchoalveolar lavage (BAL) cell smears were determined by light microscopy after staining and the trypan blue test was used to determine cell viability. Total

protein concentration, mucoprotein concentration, lactate dehydrogenase and acid phosphatase activity were determined in the BAL supernatant.

All rats exposed to 1,2,4-trimethylbenzene for 90 days survived the experiment and there were no significant differences in final body weight. Statistically significant increases were observed in total cell and macrophage numbers in BAL of all treated groups after 90 days in comparison to controls. Significant increases were also observed in total protein, lactate dehydrogenase (LDH) and acid phosphatase (AP) in BAL fluid of all treated groups. However, the observed increases in these parameters were either at or near their highest observed response at the lowest exposure concentration, and there was no indication of further concentration-related increases. For the observed effects, the lowest exposure level used (123 mg/m^3) would be a LOAEL; however, the toxicological significance of these effects is not clear.

In a study by IBT (1981), groups of 5 male and 5 female COBS rats were exposed to 49 or 480 mg/m^3 MCS-1809 6 hours/day, 5 days/week for 4 weeks (IBT, 1981). MCS-1809 was identified as a compound containing 75% 1,2,4-trimethylbenzene and 25% C9 aromatics (Monsanto, 1992). The test atmosphere was generated by passing the MCS-1809 through a nebulizer; no information on the particle size distribution was reported. Based on the vapor pressure of 1,2,4-trimethylbenzene, it is likely that the animals were predominantly exposed to 1,2,4-trimethylbenzene vapors rather than a mist. The following parameters were used to assess toxicity: daily observations, weekly body-weight measurements, organ weights (adrenal glands, brain, gonads, heart, kidneys, liver, lungs, spleen and thyroid gland), gross necropsy and histopathological examination of adrenal glands, brain, bronchi, gonads, heart, kidneys, liver, lungs, pancreas, pituitary glands, lymph nodes, spleen, trachea and thyroid gland of the control and 480 mg/m^3 groups (tissues from the 49 mg/m^3 group were examined if significant findings were found in the 480 mg/m^3 group).

Exposure to MCS-1809 did not result in deaths. Clinical signs of toxicity in the 480 mg/m^3 group included ataxia and hypoactivity that persisted between exposures, ptosis, red ocular discharge, and ruffed fur. Less pronounced hypoactivity and ruffed fur were observed in the 49 mg/m^3 group. In the 480 mg/m^3 group, significant decreases in body weight gain (35% lower in the males; no significant alteration in females), increases in absolute (females only) and relative liver weights and decreases in absolute and relative spleen weights (females only) were observed. A significant increase in absolute liver weight was also observed in the 49 mg/m^3 female rats. Histological alterations were limited to focal or diffuse testicular atrophy in 3/5 male rats exposed to 480 mg/m^3 in the absence of statistically significant changes in testis weight; no testicular effects were observed in the 49 mg/m^3 (testes examined in four rats from this group) or control groups. This study identified a NOAEL of 49 mg/m^3 and LOAEL of 480 mg/m^3 (6 hours/day, 5 days/week) for clinical signs of toxicity (persistent ataxia and hypoactivity, ptosis, ocular discharge), decreased body weight gain, and histopathological evidence of testicular atrophy. The increased absolute liver weight observed in the 49 mg/m^3 female rats was not considered adverse because no histological alterations were observed at the 49 or 480 mg/m^3 concentrations.

Bättig et al. (1958) exposed 8 male rats (strain not reported) to air concentrations of 1700 ppm of Fleet-X DV 99 solvent for 4 months (8 hours/day, 5 days/week). Other rats (sex, strain,

and number not specified) were exposed to 500 ppm for 70 days (8 hours/day, 5 days/week). As described earlier, Fleet-X DV 99 is a solvent containing 97.5% aromatic hydrocarbons (>50% 1,2,4-trimethylbenzene and >30% 1,3,5-trimethylbenzene) and 2.5% of paraffinic and naphthenic hydrocarbons. The 500- and 1700-ppm concentrations would be approximately 2523 and 8155 mg/m^3, respectively, if the aromatic hydrocarbon fraction of the vapors were comprised exclusively of trimethylbenzenes. Within 2 weeks of exposure, 4 of the 8 rats exposed to 1700 ppm died and were replaced, while none of the animals in the 500-ppm group died. Histopathologic examinations, performed only on 1700-ppm animals that died, revealed cloudy swelling and fatty infiltration in the kidneys, peripheral fatty infiltration in the liver, an increase in secondary nodules in the spleen and marked congestion of the pulmonary capillaries with alveolar wall thickening. Alterations in differential white blood cell counts (increase in the percentage of segmented neutrophilic granulocytes and a decrease in the percentage of lymphocytes) were reported at 500 ppm. Increases in drinking water consumption (43-45% higher than in the control group) were observed in the 1700-ppm group. The authors reported that during the exposure period, the 1700-ppm animals were initially "highly excited and aggressive" followed by a period of narcosis and ataxia. Because histopathology was only performed on the animals that died, no histopathology data are available on the 500-ppm rats. Due to the limited scope of the study, a NOAEL or LOAEL cannot be identified. The high concentration of 1700 ppm (8155 mg/m^3) is a FEL for mortality.

Bernshtein (1972) exposed rats (number, sex and strain not specified) to 1000 mg/m^3 (200 ppm) of a mixture of trimethylbenzenes for 6 months (4 hours/day, 6 days/week). An inhibition of phagocytic activity of the leukocytes was reported. This study was summarized by Sandmeyer (1981) and further experimental details were not provided.

Korsak et al. (1997) examined the effect of acute exposures (6 min) to the trimethylbenzene isomers, 1,2,3-trimethylbenzene (90-95% pure), 1,3,5-trimethylbenzene (99% pure) and 1,2,4-trimethylbenzene (97% pure) on the respiratory rate of Balb/C male mice (8-10/group) at concentrations ranging from 253 to 1591 ppm (1926-9453 mg/m^3). The concentration depressing mouse respiratory rate by 50% (RD_{50}) was calculated by least squares regression and the Kruskall-Wallis test was applied for evaluation of protein and enzyme levels in the BAL fluid. All three trimethylbenzene isomers showed irritating effects on the respiratory tract and caused concentration-dependent decreases in respiratory rate. The concentration depressing the respiratory rate in mice to 50% was 519 ppm (2547 mg/m^3) for 1,2,4-trimethylbenzene.

The developmental toxicity of 1,2,4-trimethylbenzene was assessed by Saillenfait et al. (2005). Groups of mated (sperm-positive) Sprague-Dawley rats (24/group) were exposed (whole body) to 1,2,4-trimethylbenzene (97% pure) at vapor concentrations of 0, 100, 300, 600 or 900 ppm (0, 491, 1475, 2950 or 4425 mg/m^3) for 6 hours/day on gestation days 6 through 20. Maternal food consumption was recorded for the intervals of gestation days 6-13 and 13-21. Maternal body weights were recorded weekly during gestation. At necropsy on gestation day 21, the uterus was weighed and numbers of corpora lutea, implantation sites, resorptions and dead and live fetuses were recorded. Live fetuses were weighed, sexed and examined for external anomalies. Half of the live fetuses from each litter were prepared for visceral examination, the others were subjected to skeletal examination.

All dams survived to scheduled necropsy (Saillenfait et al., 2005). No clinical signs of 1,2,4-trimethylbenzene-induced toxicity were observed. Maternal food consumption was significantly ($p<0.01$) depressed in the 600- and 900-ppm groups (approximately 12-14% and 15-19%, respectively, relative to controls). The 900-ppm dams exhibited significantly reduced mean body weight gain (22-52% lower than controls) throughout the exposure period. Significantly ($p<0.01$) reduced body weight gain (30% lower than controls) was observed in the 600-ppm group, but only during the first week of 1,2,4-trimethylbenzene exposure. At necropsy on gestation day 21, mean body weight gain (corrected for gravid uterine weight) was significantly depressed in both 600- and 900-ppm dams (approximately 50% lower than controls). Mean fetal body weight was significantly lower in both 600- and 900-ppm exposure groups (approximately 5 and 11% lower, respectively, than controls). There were no other significant indications of maternal or fetal toxicity. This study identified a NOAEL of 300 ppm (1475 mg/m^3) and a LOAEL of 600 ppm (2950 mg/m^3, 6 hours/day on gestation days 6 through 20) for maternal and fetal body weight effects. However, the observed fetal toxicity was likely secondary to maternal toxicity because the decreased fetal body weight was noted only at exposure levels resulting in significantly depressed maternal body weight gain.

Other Studies

Limited genotoxicity data suggest that 1,2,4-trimethylbenzene is not mutagenic. 1,2,4-trimethylbenzene produced negative results in the Ames test with *Salmonella typhimurium* strains TA97a, TA98, TA100 and TA102 both in the presence and absence of rat liver S9 metabolic activation (Janik-Spiechowicz et al., 1998). 1,2,4-Trimethylbenzene was not cytogenic in the mouse micronucleus test, but elicited a positive response in sister chromatid exchange (SCE) tests with bone marrow cells of Imp:Balb/c mice treated *in vivo* (Janik-Spiechowicz et al., 1998).

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC RfDs FOR 1,2,4-TRIMETHYLBENZENE

Limited information is available regarding the oral toxicity of 1,2,4-trimethylbenzene in humans and animals. The nephrotoxicity study by Borriston Laboratories (1984) is too limited in scope to be used to identify a NOAEL or LOAEL for 1,2,4-trimethylbenzene, although the 2000 mg/kg dose (1429 mg/kg-day) is clearly a FEL for increased mortality. The study of Maltoni et al. (1997) is also unsuitable for derivation of an RfD, as only one dose level was employed, decreased survival occurred at this dose level and reporting of the results was inadequate. Thus, the database for 1,2,4-trimethylbenzene is inadequate to derive a provisional RfD.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC RfCs FOR 1,2,4-TRIMETHYLBENZENE

Several studies have examined the inhalation toxicity of mixtures predominantly containing one or more trimethylbenzene isomers, or pure 1,2,4-trimethylbenzene. Significant

increases in the incidence of CNS toxicity (vertigo, dizziness, headaches) and non-significant increases in the incidences of respiratory effects (bronchitis) and hematological effects (hyperchromic anemia and blood clotting alterations) have been observed in workers exposed to 10-60 ppm (49-295 mg/m^3) of a solvent containing >80% trimethylbenzene isomers (Bättig et al., 1958). Many of these effects reported in humans have been observed in experimental animals repeatedly exposed to 1,2,4-trimethylbenzene or other trimethylbenzene isomers or trimethylbenzene mixtures. For example, hematological effects have been reported in experimental animals exposed to a trimethylbenzene mixture (Bernshtein, 1972) or 1,2,4-trimethylbenzene (Korsak et al., 2000). Signs of adverse CNS effects have been observed in animals exposed to mixtures containing 1,2,4-trimethylbenzene (Bättig et al., 1958; IBT, 1981) or 1,2,4-trimethylbenzene alone (Gralewicz and Wiaderna, 2001; Gralewicz et al., 1997a, 1997b; Korsak and Rydzyński, 1996). Results of other animal studies provide evidence of 1,2,4-trimethylbenzene-induced respiratory effects (Korsak et al., 1997, 2000). Other effects observed in animal studies include testicular atrophy in rats exposed to 480 mg/m^3 (98 ppm) of a mixture containing 75% 1,2,4-trimethylbenzene for 4 weeks (6 hours/day, 5 days/week) (IBT, 1981) and lung, liver, kidney and spleen effects in rats exposed to 1700 ppm (8155 mg/m^3) of a solvent containing >80% trimethylbenzene isomers for 4 months (8 hours/day, 5 days/week) (Bättig et al.,1958).

The lowest estimated level of occupational exposure to the solvent Fleet-X DV 99 (>80% 1,2,4- and 1,3,5-trimethylbenzene) in the study of Bättig et al. (1958) was 10 ppm (49 mg/m^3). Assuming that the solvent exclusively contained trimethylbenzene isomers, the 49 mg/m^3 exposure concentration can be considered to represent a LOAEL. Although the Bättig et al. (1958) report provides the lowest inhalation LOAEL (49 mg/m^3) of any study, it may be an inappropriate study for consideration as the principal study for a number of reasons. Importantly, Bättig et al. (1958) identified spectrophotographically the presence of various aromatic hydrocarbons, to include naphthenic and paraffenic compounds, in addition to 1,2,4-trimethylbenzene in the solvent mixture. While 1,2,4-trimethylbenzene comprised up to 50% of the Fleet-X DV 99 mixture, it is virtually impossible to confidently attribute human toxicities solely to 1,2,4-trimethylbenzene (i.e. the study LOAEL is for the mixture not the individual compound). Additional concerns that warrant exclusion of the Bättig et al. (1958) human study from consideration include inappropriate selection of a human control population [e.g. nutritional status (Vit. C deficient)], and the fact that average Fleet-X DV 99 solvent exposure duration, for the 27 exposed workers examined, was not reported.

An advantage of some of the animal models of 1,2,4-trimethylbenzene inhalation exposure over the Bättig et al. (1958) human study is that controlled atmospheres involved the compound of interest at relatively high purities (e.g. 97% 1,2,4-trimetylbenzene in the Korsak et al., 2000 study). However, available repeated exposure inhalation studies in animals are limited to subchronic exposure duration (4 weeks to 3 months) in which the lowest identified LOAEL for 1,2,4-trimethylbenzene was 491 mg/m^3 (Gralewicz and Wiaderna, 2001; Gralewicz et al., 1997a; Korsak and Rydzyński, 1996); furthermore, many of the effects observed in these rodent studies are of unclear toxicological significance and/or have concentration-responses that are difficult to interpret.

Provisional RfCs may be derived based on adverse pulmonary or hematological effects reported in male or female rats, respectively, exposed to 1,2,4-trimethylbenzene (97% pure) for 3 months (Korsak et al., 2000). The selection of the Korsak et al. (2000) study as the basis for deriving RfCs is supported by previous observations in rats (Korsak et al., 1997) and humans (Bättig et al., 1958) exposed to pure 1,2,4-trimethylbenzene or a mixture of trimethylbenzenes, respectively, for ≥ 90 days. Indeed, pulmonary lesions and hematological abnormalities in rats exposed to pure 1,2,4-trimethylbenzene for 3 months (Korsak et al., 2000) are consistent with observations in humans following presumably longer duration exposure to a mixture containing 1,2,4-trimethylbenzene (Bättig et al., 1958).

Subchronic p-RfC

The subchronic p-RfC for 1,2,4-trimethylbenzene is derived from the NOAEL of 25 ppm (123 mg/m^3) identified in the Korsak et al. (2000) rat subchronic inhalation study. Two different toxic effects (pulmonary or hematological) were identified in male or female rats, respectively, in this study at the same LOAEL/NOAEL. As such, two separate subchronic p-RfC derivations are presented below to identify the most sensitive endpoint. Under an assumption of category 3 for decreased clotting time in female Imp:WIST rats, an adjusted experimental NOAEL can be derived using the NOAEL of 123 mg/m^3 and the exposure duration data from Korsak et al. (2000) as follows:

$$NOAEL_{[ADJ]}\ (mg/m^3) = \text{rat NOAEL}\ (mg/m^3) \times 6hr/24hr \times 5\ days/7\ days$$
$$= 123\ mg/m^3 \times 0.25 \times 0.71$$
$$= 21.8\ mg/m^3$$

According to equation (4-48) for extrarespiratory effects [Methods for Derivation of Inhalation Reference Concentrations and Application of Inhalation Dosimetry (EPA/600/8-90/066F October 1994)], a human equivalent concentration ($NOAEL_{[HEC]}$) can be calculated as follows:

$$NOAEL_{[HEC]}\ (mg/m^3) = NOAEL_{[ADJ]}\ (mg/m^3) \times (H_{b/g})_A/(H_{b/g})_H$$

*blood:gas (b/g) partition coefficients for 1,2,4-trimethylbenzene could not be located, therefore a default value of 1 is used for the term $(H_{b/g})_A/(H_{b/g})_H$. The human $NOAEL_{[HEC]}$ is equivalent to the duration adjusted rat NOAEL of 21.8 mg/m^3. A **subchronic p-RfC of 7E-2 mg/m^3** based on a hematological effect is derived by dividing the $NOAEL_{[HEC]}$ of 21.8 mg/m^3 by a composite UF of 300, as follows:

UF (animal to human) = 3
UF (interindividual variability) = 10
UF (database deficiencies) = 10

$$\text{Subchronic p-RfC} = NOAEL_{[HEC]} / UF$$
$$= 21.8\ mg/m^3 / 300$$
$$= 0.07\ mg/m^3 \text{ or } 7E\text{-}2\ mg/m^3$$

Under an assumption of category 1 for pulmonary toxicity in male rats, the same duration adjusted rat NOAEL of 21.8 mg/m^3 is obtained as shown above. Histopathological observations in lung tissue of male Imp:WIST rats exposed to 1,2,4-trimethylbenzene for 3 months indicated inflammatory lesions primarily in the bronchiolar region. Therefore, according to equation 4-22 for Category 1 tracheobronchial effects [Methods for Derivation of Inhalation Reference Concentrations and Application of Inhalation Dosimetry (EPA/600/8-90/066F October 1994)], a $NOAEL_{[HEC]}$ can be calculated as follows:

$$NOAEL_{[HEC]}\ (mg/m^{3)} = NOAEL_{[ADJ]}\ (mg/m^3) \times RGDR_{TB}{}^{\dagger}$$
$$= 21.8\ mg/m^3 \times 1.6$$
$$= 34.9\ mg/m^3$$

† Derivation of the $RGDR_{TB}$ can be found in Appendix 1

A **subchronic p-RfC of 1E-1 mg/m^3** based on pulmonary effects is derived by dividing the $NOAEL_{[HEC]}$ of 34.9 mg/m^3 by the same composite UF of 300 identified above:

$$\text{Subchronic p-RfC} = NOAEL_{[HEC]} / UF$$
$$= 34.9\ mg/m^3 / 300$$
$$= 0.1\ mg/m^3 \text{ or } 1E\text{-}1\ mg/m^3$$

The composite UF includes a factor of 3 for extrapolation from animal to human, 10 for interindividual variability, and 10 for database deficiencies. The reduced uncertainty of 3 for animal to human extrapolation is due in part to both the conversion of the rat NOAEL to a human equivalent concentration as well as the consistency of hematological and pulmonary toxicity between rats and humans exposed to 1,2,4-trimethylbenzene. The database deficiencies include lack of developmental toxicity studies in a second species, multigeneration reproductive toxicity studies, and a lack of confidence in the large majority of available animal studies reporting effects of undetermined toxicological significance with concentration-responses that are difficult to interpret. The derivations shown above clearly indicate that decreased clotting time in female rats due to subchronic inhalation exposure to 1,2,4-trimethlybenzene is the more sensitive or health protective endpoint under consideration.

Chronic p-RfC

The **chronic p-RfC of 7E-3 mg/m^3** based on decreased clotting time in female rats (Korsak et al., 2000) is derived by dividing the $NOAEL_{[HEC]}$ of 21.8 mg/m^3 by a composite UF of 3000, as follows:

$$\text{Chronic p-RfC} = NOAEL_{[HEC]} / UF$$
$$= 21.8\ mg/m^3 / 3000$$
$$= 0.007 \text{ or } 7E\text{-}3\ mg/m^3$$

As for the chronic RfC, the composite UF includes a factor of 10 for extrapolation from subchronic to chronic exposure, 3 for extrapolation from animal to human, 10 for interindividual variability, and 10 for database deficiencies.

Confidence in the principal study (Korsak et al., 2000) is low. While it is remarkable that hematological and pulmonary effects are apparently conserved from rats (Korsak et al., 2000) to humans (Bättig et al., 1958), the concentration-response for either compartment in rats (particularly male rats) is difficult to interpret. Specifically, the low inhalation concentration (123 mg/m^3) in female rats from the Korsak et al. (2000) study was clearly a NOAEL for decreased clotting time (hematological compartment); this NOAEL was also identified for pulmonary effects (e.g. proliferation of peribronchial lymphatic tissue, interstitial lymphocytic infiltration of parenchyma, bronchitis and bronchopneumonia) in male rats. Interestingly, female rats seemed slightly more resistant to these pulmonary effects. However, the overall commutative score, following statistical trend analysis, of all pulmonary lesions suggested that the lungs of male and female Imp:WIST rats are significantly affected by inhalation exposure to 1,2,4-trimethylbenzene at the mid dose of 492 mg/m^3 (Korsak et al., 2000). However, paradoxically, in male rats of the high dose group the pulmonary effects decreased compared to animals in the mid dose group. This counter-intuitive concentration-response relationship might suggest a concentration-dependent transition in mode of action for pulmonary toxicity (note the increase in absolute lung weight of male Imp:WIST rats at the mid concentration of 492 mg/m^3, which is the concentration at which inflammatory foci were identified in lung tissue, and yet in the high concentration group lung weight decreased back to control levels (Korsak et al., 2000); more work would be required to verify.).

According to the derivations provided above it appears that the hematological endpoint (i.e. decreased clotting time in female rats) may be a more appropriate endpoint to consider for inhalation exposure to 1,2,4-trimethylbenzene. Further work in this area is certainly warranted. The human occupational report from Bättig et al. (1958) identified a lower inhalation effect level (e.g. LOAEL = 49 mg/m^3) compared to any of the available animal data. However, the utility of this study in derivation of RfCs is limited by poor reporting of results, undetermined exposure levels, the lack of statistical analysis of results, the lack of information on the exposed and control groups (e.g., age, education level, length of employment), small group sizes and possibly a poorly matched control group (as evidenced by increased incidence of vitamin C deficiency in controls). Also, the controls worked in adjacent rooms and the possibility that they also may have been exposed to trimethylbenzene cannot be excluded. Confidence in the database is low because the database is lacking developmental toxicity data in a second species and reproductive toxicity studies. Reflecting low confidence in the principal study and database, confidence in the provisional subchronic and chronic RfC values is low.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR 1,2,4-TRIMETHYLBENZENE

Weight-of-evidence Classification

No information was located regarding the carcinogenicity of 1,2,4-trimethylbenzene or mixtures of trimethylbenzene isomers in humans. The database of information regarding the carcinogenicity of trimethylbenzene in animals is limited to a single carcinogenicity study in which male and female Sprague-Dawley rats (50/sex/group) were administered 1,2,4-trimethylbenzene via oral gavage at doses of 0 or 800 mg/kg for 104 weeks (Maltoni et al.,

1997). Although quantitative survival data were not included in the study report, the authors noted "intermediate" and "slight" reduction in the survival of 1,2,4-trimethylbenzene treated male and female rats, respectively. Under the conditions of the study, oral exposure to 1,2,4-trimethylbenzene did not cause a statistically significant increase in the incidence of animals bearing either malignant tumors or benign and malignant tumors (combined) or in the incidence of neuroesthesioepitheliomas. The study of Maltoni et al. (1997) included a single animal species (rat) and a single 1,2,4-trimethylbenzene dose level (800 mg/kg). Based on limitations in study design and reporting of results and the lack of additional carcinogenicity data in animals, the database of information for 1,2,4-trimethylbenzene is inadequate to establish the potential carcinogenicity of 1,2,4-trimethylbenzene. Limited genotoxicity data demonstrated that 1,2,4-trimethylbenzene was not mutagenic in several strains of *Salmonella typhimurium*, and did not elicit cytogenicity in the mouse micronucleus test, but did elicit a positive response in sister chromatid exchange (SCE) tests with bone marrow cells of Imp:Balb/c mice treated *in vivo* (Janik-Spiechowicz et al., 1998). These data provide inadequate evidence for genotoxic activity.

Collectively, the available carcinogenicity and genotoxicity data do not adequately assess the carcinogenic potential of 1,2,4-trimethylbenzene in humans or animals. Under the current U.S. EPA (2005) cancer guidelines, the human and animal data are inadequate for a determination of the human carcinogenic potential of 1,2,4-trimethylbenzene.

Quantitative Estimates of Carcinogenic Risk

There are no appropriate human or animal data from which to derive an oral slope factor or inhalation unit risk for 1,2,4-trimethylbenzene.

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APPENDIX 1

According to equation 4-22 for Category 1 tracheobronchial effects [Methods for Derivation of Inhalation Reference Concentrations and Application of Inhalation Dosimetry (EPA/600/8-90/066F October 1994)], a $NOAEL_{[HEC]}$ is calculated using the duration adjusted animal NOAEL and a dosimetric adjustment factor (DAF). In this case the DAF is the RGDR for the tracheobronchial region of the lung ($RGDR_{TB}$). The $RGDR_{TB}$ is calculated as follows:

$$RGDR_{TB} = (RGD_{TB})_A/(RGD_{TB})_H = \frac{(V_E/SA_{TB})_A}{(V_E/SA_{TB})_H} \quad \frac{(e^{-SA_{ET}/V_E})_A}{(e^{-SA_{ET}/V_E})_H}$$

where,

Rat

V_E = 160.07 ml/min or 0.16 L/min (derived using equation 4-4, default body wt. for Wistar rats, and the default intercept and coefficient values provided in Table 4-6)

SA_{TB} = 22.5 cm^2 (Table 4-4)

SA_{ET} = 15.0 cm^2 (Table 4-4)

Human

V_E = 13.8 L/min (default value based on human body weight of 70 kg)

SA_{TB} = 3,200 cm^2 (Table 4-4)

SA_{ET} = 200.0 cm^2 (Table 4-4)

$$= \frac{(0.16 \text{ L/min} / 22.5 \text{ cm}^2)_A}{(13.8 \text{ L/min} / 3{,}200 \text{ cm}^2)_H} \quad \frac{(e^{-15.0 \text{ cm2}/ 0.16 \text{ L/min}})_A}{(e^{-200.0 \text{ cm2}/ 13.8 \text{ L/min}})_H} \ ^*$$

* the exponential portion of the equation is much smaller than 1; thus this half of the equation is negligible.

$$= 0.007 / 0.0043$$

$$RGDR_{TB} = 1.6$$

7-3-2007

Provisional Peer Reviewed Toxicity Values for

2-Chlorophenol
(CASRN 95-57-8)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value

RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2-CHLOROPHENOL (CASRN 95-57-8)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and

circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

A chronic reference dose (RfD) value of 5E-3 mg/kg-day is available for 2-chlorophenol on IRIS (U.S. EPA, 1988a) and in the Drinking Water Standards and Health Advisories list (U.S. EPA, 2004). The HEAST (U.S. EPA, 1997) lists a subchronic RfD for 2-chlorophenol of 5E-2 mg/kg-day. Both RfD values were based on a no-observed-adverse-effect level (NOAEL) of 5 mg/kg-day for reproductive effects in a drinking water study that exposed rats to 2-chlorophenol for 10 weeks prior to mating and during mating, gestation and weaning (Exon and Koller, 1982). Uncertainty factors of 100 and 1000 were used to derive the subchronic and chronic RfDs, respectively. The source documents for the RfD assessments included a Drinking Water Criteria Document (DWCD) (U.S. EPA, 1986a), a Health Effects Assessment (HEA) (U.S. EPA, 1987a), and two Health and Environmental Effects Documents (HEEDs) (U.S. EPA, 1987b, 1990). The Chemical Assessments and Related Activities (CARA) lists (U.S. EPA, 1991, 1994) do not include any additional relevant EPA documents. The Agency for Toxic Substances and Disease Registry (ATSDR, 1999) and the World Health Organization (WHO, 1989) have assessed the health effects of chlorophenols, but did not derive any oral risk assessment values specifically for 2-chlorophenol.

An RfC for 2-chlorophenol is not available on IRIS (U.S. EPA, 1988a) nor in the HEAST (U.S. EPA, 1997). The Agency for Toxic Substances and Disease Registry (ATSDR) and the World Health Organization (WHO) have not derived any inhalation risk assessment values for 2-chlorophenol. Occupational exposure limits for 2-chlorophenol have not been derived by the American Conference for Governmental Industrial Hygienists (ACGIH), the National Institute

for Occupational Safety and Health (NIOSH) or the Occupational Safety and Health Administration (OSHA).

A cancer assessment for 2-chlorophenol is not available on IRIS (U.S. EPA, 1988a). The HEEDs (U.S. EPA, 1987b, 1990) assigned 2-chlorophenol to U.S. EPA (1986b) Cancer Group D (not classifiable as to human carcinogenicity); this classification is also included in the Drinking Water Standards and Health Advisories list (U.S. EPA, 2004). The carcinogenicity of 2-chlorophenol has not been assessed by NTP or IARC.

Literature searches were conducted from the 1960's through August, 2006 for studies relevant to the derivation of provisional toxicity values for 2-chlorophenol. Data bases searched included: TOXLINE/TOXCENTER (including BIOSIS, NTIS and Chemical Abstracts subfiles), MEDLINE (including PubMed cancer subset), TSCATS/TSCATS 2, CCRIS, DART/ETIC, GENETOX, HSDB, RTECS, and Current Contents.

REVIEW OF PERTINENT DATA

Human Studies

Relevant information regarding the toxicity of 2-chlorophenol in humans was not located.

Animal Studies

Oral Exposure. In a 14-day study performed in conjunction with EPA, groups of 12 male and 12 adult female CD-1 ICR mice were administered 2-chlorophenol in corn oil by gavage in doses of 0, 35, 69 or 175 mg/kg-day (Borzelleca, 1983; Borzelleca et al., 1985). The highest dose level was approximately 50% of the acute oral LD_{50} of 347 and 345 mg/kg in male and female CD-1 mice, respectively. Endpoints evaluated during the study included clinical observations, body weight (days 1, 8 and 15), and food and water intake. Endpoints evaluated at the end of the treatment period included hematology [red blood cells (RBC), total and differential white blood cells (WBC), platelets, hematocrit (Hct), hemoglobin (Hgb) and coagulation], serum chemistry [lactate dehydrogenase (LDH), alkaline phosphatase (ALP), aspartate aminotransferase (AST), alanine aminotransferase (ALT), blood urea nitrogen (BUN), bilirubin, protein, glucose, cholesterol, albumin/globulin, phosphorus, potassium, calcium, sodium and chloride], hepatic microsomal activities (cytochrome P_{450}, cytochrome b_5, protein, aminopyrine demethylase, aniline hydroxylase, and arylhydrocarbon hydroxylase), immune response and behavioral measurements. The earlier report of the study (Borzelleca, 1983) implies that the immunology endpoints included cell-mediated response (Delayed-type hypersensitivity (DTH) response to sheep RBC, response to concanavalin A), humoral response [splenic Immunoglobulin mu (IgM) antibody forming cells (AFC) to sheep RBC, serum antibody levels to sheep RBC, lymphocyte response to lipopolysaccharide (LPS)], and reticuloendothelial system (RES) function (vascular clearance and uptake of ^{51}Cr sheep RBC). The Borzelleca (1983) report also implies that the behavioral endpoints included inverted screen test, swimming endurance, locomotor activity, pain sensitivity, olfactory sensitivity, passive avoidance learning, and forepaw grip strength. Other endpoints included sister-chromatid exchange (bone marrow

and/or testes, not otherwise specified), *in vitro* fertilization capability (penetration of ova, fertilization, blastula formation), absolute and relative organ weights, and gross pathology. Histopathological examinations were not performed. The results of this study are qualitatively reported in tabular summaries. Effects included 100% mortality at 175 mg/kg-day, hyperactivity at 35 and 69 mg/kg-day, reduced body weight at 69 mg/kg-day, and reduced brain, liver and spleen weights (effect levels not indicated); additional information on these effects was not reported. No biologically or statistically significant compound-related adverse effects were reported for the other endpoints as indicated by the authors. The 100% mortality in the high-dose animals indicates that 175 mg/kg-day was a FEL for short-term repeated gavage exposures in mice. The authors (Borzelleca et al., 1985) referred to the effects at the lower doses as "slight toxic effects", but apparently concluded that they were not biologically significant, indicating that 69 mg/kg-day was a NOAEL. Results of acute studies reported by Borzelleca et al. (1985) include an ED_{50} of 63 mg/kg for reversible motor impairment in mice exposed to a single oral dose of 2-chlorophenol; additional information was not provided.

Gavage studies (10-day and 90-day) of 2-chlorophenol in Sprague-Dawley rats were conducted by the EPA (Daniel et al., 1993). In the 10-day study, groups of 10 male and 10 female 8-week-old Sprague-Dawley rats were administered 2-chlorophenol in corn oil by daily gavage at doses of 0, 13, 64, 129 or 257 mg/kg-day. The highest dose level was approximately 38% of the reported acute LD_{50} of 670 mg/kg for a rat. Endpoints evaluated during the study included clinical signs (observed for physiological and behavioral responses and mortality), body weight and food and water consumption. Evaluations at the end of the exposure period included hematology [RBC, WBC, Hct, Hgb and mean corpuscular volume (MCV)], serum chemistry (ALP, AST, ALT, LDH, cholesterol, BUN, creatinine, glucose, and calcium), absolute and relative organ weights (brain, liver, spleen, lungs, thymus, kidneys, adrenal glands, heart, and gonads), and gross pathology. Comprehensive histological examinations were performed in the control and high-dose groups; target organs were also histologically evaluated at the lower dose levels. Tissues that were examined included liver, kidneys, urinary bladder, heart, aorta, skin, skeletal muscle, bone, sciatic nerve, spleen, thymus, lymph nodes, respiratory tract (nasal turbinates, trachea, lung with bronchi), gastrointestinal tract (esophagus, stomach, duodenum, jejunum, ileum, cecum, colon, rectum), endocrine system (adrenals, pancreas, pituitary, thyroid/parathyroid), and reproductive system (testes, epididymis, seminal vesicles, prostate, preputial gland, ovaries, uterus, clitoral gland).

There were no treatment-related deaths, significant clinical observations or significant changes in food or water consumption or body weight gain (Daniel et al., 1993). The hematology evaluations found significantly ($p \leq 0.05$) increased RBC count (12% higher than controls) and Hct (28% higher than controls) in the high-dose (257 mg/kg-day) males; these effects were not clearly dose-related and there were no significant changes in hematologic values in females. Serum chemistry changes that were statistically significant included increased glucose levels in females at 129 and 257 mg/kg-day (45 and 42% higher than controls, respectively) and males at 257 mg/kg-day (21% higher than controls); decreased ALP in females at 129 and 257 mg/kg-day (15 and 16% lower than controls); and decreased AST, cholesterol, and LDH in males at 257 mg/kg-day (25, 27 and 55% lower than controls, respectively). Serum LDH values were significantly decreased in females at 64 and 129 mg/kg-day, but not at 257 mg/kg-day. The only serum chemistry changes that appeared to be dose-related were the

increased glucose and decreased ALP in female rats, but the authors reported that these values were within the normal ranges for laboratory rats. Statistically significant organ weight changes consisted of decreases in absolute kidney and heart weights in females at 129 mg/kg-day, but not at other dose levels, and decreases in absolute and relative lung weights in females at all dose levels; quantitative data were not reported. Necropsy findings included enlarged mandibular lymph nodes, reddened lungs and reduced thymus size in all groups of both sexes; these were minimal to mild changes not considered to be treatment-related by the authors. The histological examinations similarly showed lymphoid hyperplasia, mild congestion of the lungs, and mild thymic atrophy in all groups; these effects did not appear to be treatment-related to the authors because they were not significant in severity or incidence (data not reported). Histopathological changes in kidneys, heart, lungs or other tissues were not reported. The lack of any clear treatment-related or biologically significant hematology, clinical chemistry, organ weight or pathological changes indicates that the highest dose level, 257 mg/kg-day, is a NOAEL for 10-day gavage exposure in male and female rats although it is difficult to ascertain the significance of the reported effects due to a lack of data reporting.

In the 90-day study, groups of 10 male and 10 female 8-week-old Sprague-Dawley rats were administered 2-chlorophenol in corn oil by daily gavage at doses of 0, 17, 50, or 150 mg/kg-day (Daniel et al., 1993). Study endpoints were the same as in the 10-day study summarized above; evaluations included clinical signs, body weight, food and water consumption, hematology, serum chemistry (with the addition of triglycerides, total protein, albumin and globulin), organ weights and gross pathology in all groups, and histopathology in the control and high-dose groups. There were no clinical signs of toxicity, unscheduled deaths, or significant changes in food or water consumption or body weight gain. Hematology changes that were statistically significant included increased RBC count in females at 17 and 150 mg/kg-day (3 and 6% higher controls), but not at 50 mg/kg-day; increased Hct in females at 150 mg/kg-day (5% higher than controls); and increased MCV in males at 150 mg/kg-day (3% higher than controls). Serum chemistry changes that were statistically significant included decreased ALP in males at 50 and 150 mg/kg-day (31 and 28% less than controls), decreased AST in males at 50 and 150 mg/kg-day (22 and 19% less than controls), decreased ALT in males at 50 and 150 mg/kg-day (18 and 18% less than controls), and increased glucose at 50 mg/kg-day (16% higher than controls; similar increases occurred at 17 and 150 mg/kg-day but were not statistically significant). Although statistically significant changes were observed for these and several other hematology and clinical chemistry indices, no responses were clearly dose-related, consistent between sexes or, according to the authors, outside normal ranges or biologically significant. There were no clear effects on organ weights; the only statistically significant changes were increased relative liver weight in females at 17 mg/kg-day, increased absolute spleen weight in males at 17 and 50 mg/kg-day, and increased absolute brain weight in males at 50 mg/kg-day; quantitative data were not reported. There were no gross or histopathological changes in either sex. The lack of any clear treatment-related or biologically significant hematology, clinical chemistry or organ weight changes, as well as the lack of any pathological effects, indicates that the highest dose level, 150 mg/kg-day, is a NOAEL for 90-day gavage exposure in rats.

The oral toxicity of 2-chlorophenol was also assessed in 18-day studies with preweanling rats and in 14- and 28-day studies with juvenile rats (Hasegawa et al., 2005). Preweanling Sprague-Dawley SPF rats were administered 2-chlorophenol in olive oil by gavage on postnatal

days (PNDs) 4-21 in dose-finding and main studies. In the 18-day dose-finding study with preweanling rats, groups of 4 males and 4 females were exposed to dose levels of 0, 20, 100 or 500 mg/kg-day. General behavior and body weight were evaluated during the study, and hematology, blood chemistry, gross pathology and organ weights were evaluated on PND 22; histopathology was not assessed. Although not specifically reported, it is assumed that the scope of these evaluations was the same as in the main study with newborn rats summarized below. Effects were limited to 100% mortality by the 9th day of dosing at 500 mg/kg-day; clinical signs were not observed at 20 and 100 mg/kg-day, and no other results were reported. This study identified a FEL of 500 mg/kg-day for lethality in preweanling rats. The next lowest dose level of 100 mg/kg-day is a NOAEL based on the lack of clinical signs and systemic effects, but confidence in this effect level is low due to the small numbers of animals and lack of histological examinations.

In the main 18-day study with preweanling rats, groups of 12 male and 12 female Sprague-Dawley SPF rats were administered 2-chlorophenol in olive oil by gavage in doses of 0, 8, 50 or 300 mg/kg-day on PNDs 4-21 (Hasegawa et al., 2005). Half of the animals were sacrificed on PND 22, and the remaining 6 rats/sex/group were observed without treatment for the following 9 weeks and then sacrificed (on PND 85). Endpoints evaluated during the study included general behavior, body weight and postnatal developmental parameters, including surface righting and visual placing reflex for reflex ontogeny, fur appearance, incisor eruption and eye opening for external development, and preputial separation, vaginal opening and estrous cycle for sexual development. Comprehensive hematology and blood biochemistry evaluations were conducted at the end of the treatment period on PND 22 (6 rats/sex/dose) and end of the observation period on PND 85 (6 rats/sex/dose). Hematology indices included RBC, Hct, Hgb, MCV, mean corpuscular hemoglobin, mean corpuscular hemoglobin concentration, total and differential WBC, platelet count, and reticulocyte count. Blood biochemistry indices included total protein, albumin, albumin/globulin ratio, glucose, total cholesterol, triglycerides, phospholipid, total bilirubin, BUN, creatinine, AST, ALT, ALP, γ-glutamyl transpeptidase, calcium, inorganic phosphorus, sodium, potassium and chloride. Prothrombin time, activated thromboplastin time, and urine indices (color, pH, occult blood, protein, glucose, ketone bodies, bilirubin, urobilinogen, sediment, volume and osmotic pressure) were evaluated only at the end of the observation period. Organ weights (brain, pituitary, thymus, thyroids, heart, lungs, liver, spleen, kidneys, adrenals, testes, epididymides, ovaries and uterus) and histopathology (organs that were weighed as well as macroscopically abnormal organs) were evaluated on PND 22 (6 rats/sex/dose); it was not indicated if these evaluations were performed on PND 85.

Effects included tremors in 11/12 males and 12/12 females at 300 mg/kg-day; the tremors appeared within 5 minutes of dosing and disappeared within 4 hours in most animals. At 50 mg/kg-day, 1/12 females showed tremors once from 15-30 minutes following dosing on treatment day 9. No tremors were observed in males at 50 mg/kg-day or in either sex at 0 or 8 mg/kg-day. The only other reported effects occurred at 300 mg/kg-day; these consisted of other signs of neurotoxicity (hypoactivity in 2/12 males and 3/12 females and abnormal gait in 1/12 males and 1/12 females), transiently decreased body weight in both sexes (additional information not reported), and histological changes in the kidneys (slight to moderate basophilic renal tubules in 4/6 males and 5/6 females) with increases in relative kidney weight (8% in males and 4% in females). The biological significance of the basophilic renal tubular changes was not discussed.

No results were reported for the 9-week observation period. The 300 mg/kg-day dose is a FEL for preweanling rats based on the occurrence of tremors in 23/24 of the exposed males and females; other signs of neurotoxicity (hypoactivity and abnormal gait) were also observed at this dose level. The next lowest dose of 50 mg/kg-day is a NOAEL because tremors were only observed in 1/12 females once on exposure day 9; the incidence is not statistically different from the control group (0/12) and the occurrence was isolated. Additionally, there were no clinical signs of neurotoxicity in the males exposed to 50 mg/kg-day, or in the 4 males and 4 females exposed to 100 mg/kg-day in the dose-finding study summarized above.

The studies with juvenile rats included a 14-day dose-finding study and a 28-day main study (Hasegawa et al., 2005). In the 14-day dose-finding study, 5-week-old male and female Sprague-Dawley SPF rats were administered 2-chlorophenol in olive oil by gavage in doses of 0, 100, 200 or 500 mg/kg-day; group sizes were 3 per sex at 500 mg/kg-day and were not reported for the other dose levels. General behavior, body weight and food consumption were evaluated during the study, and hematology, blood chemistry, gross pathology and organ weights were evaluated the day after the last treatment; histopathology was not assessed. Although not specifically reported, it is assumed that the scope of these evaluations was the same as in the study with newborn rats summarized above. The only information regarding the results is a statement that no toxic signs were observed, indicating that 500 mg/kg-day is a NOAEL in juvenile rats. Confidence in this effect level is low due to the apparent small numbers of animals and lack of histological examinations.

In the 28-day main study, groups of 12 male and 12 female 5- to 6-week old Sprague-Dawley SPF rats were exposed to 2-chlorophenol in olive oil by gavage in doses of 0, 8, 40, 200 or 1000 mg/kg-day (Hasegawa et al., 2005). It appears that half of the animals were sacrificed following the last treatment and the remaining 6 rats/sex/group were observed without treatment for the following 2 weeks and then sacrificed. Evaluations included general behavior, body weight, food consumption, urinalysis, hematology, blood biochemistry, gross pathology, organ weights and histopathology. Although not specifically reported, it is implied that the scope and schedule of these evaluations are the same as in the 18-day study with preweanling rats summarized above. The only effects in this study were clinical signs of neurotoxicity and histological changes in the liver in most animals only at 1000 mg/kg-day. The clinical signs occurred sporadically in both sexes within 3 hours of dosing and included tremors (4/12 males and 5/12 females), hypoactivity (8/12 males and 5/12 females) and abnormal gait (4/12 males and 7/12 females). The liver effects consisted of slight centrilobular hypertrophy of hepatocytes (6/6 males and 5/6 females); the authors indicated that this suggested a compensatory response for hepatic metabolism. None of the animals showed basophilic renal tubules as observed in the preweanling rats exposed to 300 mg/kg-day on PNDs 4-21 (see above). No results were reported for the 2-week observation period. This study identified a FEL of 1000 mg/kg-day based on the clinical signs of neurotoxicity; the NOAEL is 200 mg/kg-day.

Additional information on effects of repeated oral exposures to 2-chlorophenol is available from a series of reproductive toxicity, immunotoxicity and carcinogenicity studies in Sprague-Dawley rats that were exposed prenatally, postnatally, or both pre- and postnatally to concentrations of 0, 5, 50 or 500 ppm 2-chlorophenol in drinking water (Exon and Koller, 1982, 1983a,b, 1985). Offspring produced in the reproductive study were used in the immunotoxicity

and carcinogenicity studies. In the reproductive study, groups of 12-14 females were exposed to the treated drinking water from 3 weeks of age through breeding (to untreated males) at 90 days of age and subsequently until 3 weeks post-parturition (Exon and Koller, 1982, 1983b, 1985). Table 1 shows the statistically significant reproductive endpoints that were reported by Exon and Koller (1982). The values found in Exon and Koller (1983b, 1985) agree with each other but are slightly different from those found in Exon and Koller (1982), and differ in their statistical evaluation. The reason for the differences is unknown. Maternal and pup weight, percent conception, litter size, and number of stillbirths were evaluated at parturition. Pup survival, body weight and hematology (red and white cell counts, hemoglobin, packed cell volume, and mean corpuscular volume) were evaluated at weaning.

Table 1. Reproductive effects of 2-Chlorophenol in Rats

Effect	Dose (ppm)			
	0	**5**	**50**	**500**
Litter Size (mean ± SD)	11.4 ± 1.2 n=12	11.7 ± 3.5 n=12	10.1 ± 2.3 n=12	9.2 ± 4.3[b] n=14
Stillborn (incidence)	0/91	2/105	0/91	6/110[b]

[a] Female rats were exposed to 2-chlorophenol in drinking water from 3 weeks of age through mating at 90 days of age and subsequently through pregnancy and lactation.
[b]Significantly different from control group ($p \leq 0.05$).
Source: Exon and Koller (1982)

Statistically significant ($p \leq 0.05$) changes included 19% reduced mean litter size (live and stillborn pups) at 500 ppm (9.2 ± 4.3 compared to 11.4 ± 1.2 in controls) and 5% increased incidence of stillbirths at 500 ppm (6/110 compared to 0/91 in controls) (Exon and Koller, 1982).

Based on the evidence of decreased litter size and an increase in stillbirth incidence, this study identified a NOAEL of 50 ppm and a LOAEL of 500 ppm for reproductive toxicity. The conversion factor for converting the amount of 2-chlorophenol ingested in drinking water (ppm) to a dose (mg/kg-day) was calculated by dividing the reference water consumption of 0.031 L/day for female Sprague Dawley rats in a subchronic study by the corresponding reference body weight in female Sprague Dawley rats (0.031 L/day/0.204 kg = 0.15 L/kg-day) (U.S. EPA, 1988b). Thus, the 5, 50 and 500 ppm doses correspond to estimated drinking water doses of 0.75, 7.5 and 75 mg/kg-day, respectively, and the NOAEL and LOAEL correspond to 7.5 and 75 mg/kg-day, respectively.

In the immunotoxicity studies, offspring from female rats described in the above studies that were exposed to 0, 5, 50 or 500 ppm 2-chlorophenol in drinking water from 3 weeks of age through mating at 90 days until 3 weeks post-parturition were continued on treatment for 10 weeks (Exon and Koller, 1983a) or 15 weeks (Exon and Koller, 1985), at which time immune responses were evaluated. Tests were conducted for humoral immunity (measured as the ratio of serum Immunoglobulin gamma (IgG) antibody levels to bovine serum albumin or keyhole limpet hemocyanin), cell-mediated immunity (measured as delayed-type hypersensitivity response in ears injected with oxazolone), and macrophage function (measured as the ability of peritoneal exudate cells to phagocytize sheep red blood cells *in vitro*) in 4 male and 4 female offspring from each exposure group. Body, liver, spleen, and thymus weights were also evaluated in these

offspring. There were no statistically significant ($p \leq 0.05$) differences between the treated and control groups for any of the immune responses or other end points, indicating that a NOAEL of 500 ppm was identified. Using conversion factors of 0.14 and 0.15 L/kg-day based on subchronic values for water consumption and body weight in male and female Sprague Dawley rats (U.S. EPA, 1988b), respectively, the NOAEL of 500 ppm identified in these studies corresponds to estimated drinking water doses of 70 mg/kg-day in males and 75 mg/kg-day in females.

In the carcinogenicity studies (Exon and Koller, 1983b, 1985), groups of 24-32 male and 24-28 female rats received combined pre- and postnatal exposures to 0, 5, 50 or 500 ppm of 2-chlorophenol in drinking water. Three-week-old females were exposed continuously through mating (90 days of age), pregnancy and lactation, and the offspring received treated drinking water from weaning for 24 months. All rats were observed daily for gross signs of morbidity, and moribund or tumor-bearing rats were sacrificed. Body weight was measured monthly in all rats, and hematology (RBC, WBC, Hct, Hgb and MCV) was evaluated every 2 weeks (Exon and Koller, 1983b) or every 2 months (Exon and Koller, 1985) in 5 males and 5 females per group. Gross and microscopic examinations of major organs and tumor tissues were conducted in all animals. There were no effects on body weight at 15 weeks (Exon and Koller, 1985) or 7 months (Exon and Koller 1983b), the only times for which data were reported. A significant decrease in body weight ($p \leq 0.10$) was observed at 7 months in females at doses of 5 and 500ppm (7.6 and 5.2% less than controls respectively). Exon and Koller (1985) noted that red blood cell count, packed cell volume and blood hemoglobin concentrations were "generally increased" in both sexes at 500 ppm. These effects were most evident after 14 months of exposure, when the RBC, packed cell volume (PCV) and hemoglobin values were 15, 19 and 16% higher than controls ($p \leq 0.05$), respectively; no other quantitative hematology data were reported. In an earlier report of interim (15-month) findings, however, Exon and Koller (1983b) indicated that 2-chlorophenol did not affect any of the measured hematology parameters. Noncancer histopathologic observations were not reported. Although there were no clear treatment-related or biologically significant body weight or hematology changes, the lack of noncancer histopathology data precludes identification of a NOAEL or LOAEL for chronic toxicity. There were no statistically significant ($p \leq 0.10$) differences between exposed and control groups in tumor incidence, latency or type in either sex. Incidences of total tumors in the 0, 5, 50 and 500 ppm groups were 13, 17, 8 and 18% in males, and 5, 0, 13, and 18% in females, respectively; no other incidence data were reported.

Inhalation Exposure. Relevant information regarding the inhalation toxicity of 2-chlorophenol in animals was not located.

Other Studies

Co-carcinogenicity and Tumor Promotion. In a co-carcinogenicity study (Exon and Koller, 1983b, 1985), groups of 24-32 male and 24-28 female Sprague-Dawley rats were exposed prenatally, postnatally, or both pre- and postnatally to 0, 5, 50 or 500 ppm 2-chlorophenol in drinking water, with prenatal exposure to the known carcinogen ethylnitrosourea (ENU). Comparison groups received prenatal exposure to ENU alone; comparisons were not made to offspring unexposed to ENU or 2-chlorophenol. Rats were exposed to ENU as its precursors,

ethylurea (0.316% in feed) and sodium nitrite (1 ppm in drinking water), on days 14-21 of gestation. Prenatal exposure to 2-chlorophenol involved exposing 3-week-old females through mating (90 days of age) and pregnancy; the dams were not exposed during lactation, and the offspring were observed without treatment from weaning for 24 months. Postnatal exposure to 2-chlorophenol involved exposing offspring from unexposed dams to the treated water from weaning for 24 months. Combined pre- and postnatal exposure to 2-chlorophenol involved exposing 3-week-old females continuously through mating (90 days of age), pregnancy and lactation, and subsequent exposure of the offspring to the treated water from weaning for 24 months. Histological examinations were performed on major organs and grossly observed tumors, but data were only reported for total tumors.

Male offspring of rats treated with ENU and combined pre- and postnatal exposure to 2-chlorophenol, at all treatment levels, had significantly ($p \leq 0.10$) increased incidences of total tumors when compared to the group exposed to ENU alone (Table 2). Significantly higher incidences of total tumors also occurred in male offspring exposed to ENU and 2-chlorophenol given prenatally at 5 and 500 ppm (but not 50 ppm), male offspring exposed to ENU and 2-chlorophenol given postnatally at 5 ppm, and female offspring exposed to ENU and 2-chlorophenol given prenatally or postnatally at 500 ppm. Tumor latency (mean days to tumor) was significantly decreased in rats exposed to ENU with combined pre- and postnatal exposure to 2-chlorophenol at all treatment levels when compared to the group exposed to ENU alone. Although total tumor incidence was increased and time-to-tumor latency was decreased in all groups of male rats with combined pre- and postnatal exposure to 2-chlorophenol compared with those exposed to ENU alone, interpretation of the findings is complicated by a high tumor incidence in the group exposed to ENU alone, lack of a dose-response relationship, and lack of similar effects in females (Table 2). The authors concluded that the results suggest that 2-chlorophenol may act as a co-carcinogen or promoter of carcinogenesis.

Table 2. Tumor Incidence and Latency in Rats Exposed Pre- and Postnatally to 2-Chlorophenol with Prenatal Exposure to ENU (Exon and Koller, 1983b)

2-Chlorophenol (ppm) (Pre-and Postnatal + ENU)	Total Tumor Incidence (%)			No. Rats/Group		Days to Tumor (mean ± SE)
	Total	Male	Female	Male	Female	
Unexposed	3	7	0	30	30	422 ± 40
ENU only	58	54	63	28	24	302 ± 16
5	85[a]	92[a]	79	24	24	245 ± 14[a]
50	63	75[a]	50	24	24	256 ± 17[a]
500	68	77[a]	60	30	30	259 ± 14[a]

[a]$p \leq 0.10$ compared to ENU positive control group by chi-square test (incidence data) or analysis of variance (least-square means) (latency data).

The skin tumor-promoting ability of 2-chlorophenol was assessed in 2- to 3-month old female albino Sutter mice (Boutwell and Bosch, 1959). When 25µl of a 20% solution of 2-chlorophenol in benzene was applied to shaved back skin twice weekly for 15 weeks following initiation with a single 25µl application of 0.3% DMBA (9,10-dimethyl-1,2-benz[a]anthracene) in benzene, 31/35 mice survived compared to 15/20 similarly initiated vehicle control mice. Of the survivors, 61% had skin papillomas compared to 7% in controls, and 10% had skin

carcinomas compared to 0% in controls. When 2-chlorophenol was applied as a 20% solution in dioxane to uninitiated mice twice weekly for 12 weeks, 28/30 mice survived; 46% of the survivors had papillomas and 0% developed carcinomas. A dioxane-treated vehicle control group was not reported.

Genotoxicity. A limited amount of information is available on the genotoxicity of 2-chlorophenol. 2-Chlorophenol did not induce reverse mutations in *Salmonella typhimurium* strains TA98, TA100, TA1535 and TA1537 when tested with or without exogenous metabolic activation (Haworth et al., 1983). 2-Chlorophenol did not induce DNA-repairing genes (*umuDC*) in *S. typhimurium* TA1535/pSK1002 (Ono et al., 1992), or DNA damage in *Escherichia coli* as shown by the induction of prophage lambda (DeMarini et al., 1990), when tested with or without exogenous metabolic activation. Sister-chromatid exchanges were not increased in mice that were exposed to 2-chlorophenol in corn oil by gavage in doses of 35-175 mg/kg-day for 14 days (Borzelleca et al., 1985); bone marrow and testicular cells (specific cell types not indicated) were examined.

DERIVATION OF A PROVISIONAL SUBCHRONIC ORAL RfD FOR 2-CHLOROPHENOL

Subchronic RfD

Information relevant to the derivation of a subchronic oral RfD for 2-chlorophenol is available from one 14-day study in mice (Borzelleca, 1983; Borzelleca et al., 1985) and several studies in rats ranging in exposure duration from 10 days to approximately 16-21 weeks (Daniel et al., 1993; Exon and Koller, 1982, 1983a, 1985; Hasegawa et al., 2005). The preponderance of these studies used gavage exposure and showed frank toxic effects, particularly mortality and clinical signs of neurotoxicity, as summarized in Table 3. The gavage studies identified FELs of 175 mg/kg-day for mortality in mice exposed for 14 days (Borzelleca, 1983; Borzelleca et al., 1985), 300 mg/kg-day for overt neurotoxicity (tremors) and 500 mg/kg-day for mortality in preweanling rats exposed for 18 days on PNDs 4-21 (Hasegawa et al., 2005), and 1000 mg/kg-day for overt neurotoxicity (tremors, hypoactivity and abnormal gait) in rats exposed for 28 days (Hasegawa et al., 2005). Although these are generally well-designed studies with comprehensive evaluations that included clinical signs, body weight, hematology, clinical chemistry, organ weights, histology and, in the study with preweanling rats, postnatal developmental indices, they did not identify more subtle indicators of toxicity and actual data were not supplied in some instances. NOAELs in the gavage studies were 69 mg/kg-day in mice exposed for 14 days (Borzelleca, 1983; Borzelleca et al., 1985), 50 and 100 mg/kg-day in preweanling rats exposed for 18 days on PNDs 4-21 (Hasegawa et al., 2005), 150 mg/kg-day in rats exposed for 90 days (Daniel et al., 1993), and 200 mg/kg-day in rats exposed for 28 days (Hasegawa et al., 2005).

Table 3. Summary of Effect Levels from Oral Toxicity Studies of 2-Chlorophenol

Species	Exposure Duration	NOAEL[a]	LOAEL[a]	FEL[a]	Effects	Reference
mouse	14 days (gavage)	69	ND	175	100% mortality at 175 mg/kg-day. No biologically significant effects at 69 mg/kg-day[b,c].	Borzelleca, 1983; Borzelleca et al., 1985
rat	10 days (gavage)	257	ND	ND	No clear treatment-related or biologically significant effects[b].	Daniel et al., 1993
rat	90 days (gavage)	150	ND	ND	No clear treatment-related or biologically significant effects[b,d].	Daniel et al., 1993
rat	18 days (PND 4-21) (gavage)	100	ND	500	100% mortality at 500 mg/kg-day. No effects at 100 mg/kg-day but small numbers of rats were tested. Dose-finding study with no histology[b].	Hasegawa et al., 2005
rat	18 days (PND 4-21) (gavage)	50[e]	ND	300	Tremors in 23/24 males and females at 300 mg/kg-day. No clear treatment-related effects at 50 mg/kg-day[b,d].	Hasegawa et al., 2005
rat	14 days (gavage)	500	ND	ND	No clinical signs or other effects but small numbers of rats were tested. Dose-finding study with no histology[b].	Hasegawa et al., 2005
rat	28 days (gavage)	200	ND	1000	Tremors, hypoactivity, abnormal gait and centrilobular hepatocellular hypertrophy at 1000 mg/kg-day. No reported effects at 200 mg/kg-day[b,d].	Hasegawa et al., 2005
rat	16 weeks[f] (drinking water)	7.5	75	ND	Reduced litter size (19%) and increased incidence of stillbirths.	Exon and Koller, 1982, 1985
rat	16-21 weeks[g] (drinking water)	75	ND	ND	No effects on immune responses[h] or body, liver, spleen or thymus weights. Other endpoints not evaluated.	Exon and Koller, 1983a, 1985

ND = not determined
[a]mg/kg-day
[b]Endpoints included clinical signs, body weight, hematology, serum chemistry, organ weights and gross pathology.
[c]Endpoints included immune responses and behavioral tests.
[d]Endpoints included histopathology.
[e]The only reported effect was tremors in 1/12 females that occurred once on treatment day 9.
[f]Female rats were exposed from 3 weeks of age through mating to untreated males at 90 days of age and subsequently through pregnancy and lactation.
[g]Offspring of female rats that were exposed from 3 weeks of age through mating to untreated males at 90 days of age and subsequently through pregnancy and lactation were continued on treatment for 10-15 weeks.
[h]Tests for humoral immunity, cell-mediated immunity and macrophage function were conducted.

Drinking water studies (Exon and Koller, 1982, 1983a and b, 1985) investigated reproductive and immunological toxicity in rats. There were no effects on immune function in rats that were exposed to 75 mg/kg-day via maternal drinking water during gestation and lactation and subsequently by direct consumption for 10-15 weeks (Exon and Koller, 1983a, 1985). Exposure to 75 mg/kg-day in drinking water during pregnancy and lactation significantly ($p \leq 0.05$) affected litter size (19% reduced) and stillbirths (5% increased) in rats (Exon and Koller 1982, 1985); no effects on litter size occurred at 7.5 mg/kg-day. Therefore, reproductive toxicity as evidenced by decreased litter size and an increase incidence in stillbirths was chosen for the development of the subchronic RfD for 2-chlorophenol based on a NOAEL of 7.5 mg/kg-day (Exon and Koller, 1982).

The NOAEL of 7.5 mg/kg-day is divided by a composite uncertainty factor of 1000 to derive a provisional **subchronic RfD of 8E-3 mg/kg-day**, as follows:

sRfD	=	NOAEL / UF
	=	7.5 mg/kg-day / 1000
	=	**0.0075 or 8E-3 mg/kg-day**

The composite UF of 1000 includes a factor of 10 for animal-to-human extrapolation, 10 for interindividual variability and 10 for database deficiencies.

The animal-to-human UF of 10 reflects a factor of three ($10^{1/2}$) for pharmacokinetic differences across species and a factor of three ($10^{1/2}$) for pharmacodynamic considerations.

The intraspecies UF of 10 is used to account for variation in sensitivity within human populations because there is limited information on the degree to which humans of varying gender, age, health status or genetic makeup might vary in the disposition of, or response to, the chemical.

An UF for extrapolation from a LOAEL to a NOAEL is not necessary because a NOAEL was chosen for the point of departure for the derivation for the sRfD.

The UF of 10 for database deficiencies is applied due to the lack of comprehensive reproductive and developmental toxicity studies, including a two-generation reproductive toxicity study and a subchronic study in mice (see below).

Confidence in the key study is low because a limited number of reproductive/ developmental endpoints (maternal and pup weight, percent conception, litter size and number of stillborn) were evaluated and the adequacy of the reporting is marginal. Confidence in the database is also low. The database includes 18-day, 28-day and 90-day studies in rats that assessed systemic toxicity and postnatal developmental toxicity at doses that include the range of those tested in the key study. Deficiencies in the database include the lack of comprehensive reproductive and developmental toxicity studies (especially important because reproductive effects have been identified as critical for this chemical) and a subchronic toxicity study longer than 14 days in duration in mice, which appeared to be more sensitive than rats to the subchronic effects of the chemical. In addition, a two-generation reproductive toxicity study is not

available. Considering the levels of confidence in the key study and data base and the lack of supporting data for the critical effects, confidence in the provisional RfD is low.

FEASIBILITY OF DERIVING PROVISIONAL SUBCHRONIC AND CHRONIC INHALATION RfC VALUES FOR 2-CHLOROPHENOL

No information is available on the subchronic or chronic inhalation toxicity of 2-chlorophenol, precluding derivation of RfC values for this chemical.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR 2-CHLOROPHENOL

Weight-of-evidence Classification

Information regarding the carcinogenicity of 2-chlorophenol mainly consists of the negative results of a drinking water study in which rats were exposed to 0, 5, 50 or 500 ppm via maternal consumption during pregnancy and lactation and subsequently by direct consumption for 24 months (Exon and Koller 1983b, 1985). There were no significant increases in tumor incidence, latency or type in either sex, but a definitive conclusion regarding carcinogenicity is precluded by the use of marginal numbers of animals for a cancer bioassay (24-32/sex/dose level) and the apparent lack of a MTD, because the only observed effects (body weight and hematology changes) were not clearly treatment-related or biologically significant.

The ability of 2-chlorophenol to act as a promoter or co-carcinogen was investigated in a study with the known carcinogen ENU (Exon and Koller 1983b, 1985). Male rats that were exposed to 0, 5, 50 or 500 ppm of 2-chlorophenol in drinking water via maternal consumption during pregnancy and lactation and subsequently by direct consumption for 24 months, combined with prenatal exposure to ENU, had increased total tumor incidences and decreased time-to-tumor latencies compared to rats exposed to ENU alone. Another study found that dermal application of 2-chlorophenol promoted the formation of DMBA-initiated skin tumors in mice (Boutwell and Bosch, 1959).

2-Chlorophenol has been studied in several short term *in vitro* and *in vivo* animal studies. 2-Chlorophenol did not induce reverse mutations or DNA-repair in *S. typhimurium* (Haworth et al., 1983; Ono et al., 1992), DNA damage in *E. coli* (DeMarini et al., 1990), or sister-chromatid exchanges in orally-exposed mice (Borzelleca et al., 1985).

In accordance with current EPA cancer guidelines (U.S. EPA, 2005), the available data are inadequate for an assessment of human carcinogenic potential.

Quantitative Estimates of Carcinogenic Risk

Derivation of quantitative estimates of cancer risk for 2-chlorophenol is precluded by the lack of data demonstrating carcinogenicity associated with 2-chlorophenol exposure.

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9-20-2007

Provisional Peer Reviewed Toxicity Values for

2-Nitrophenol
(CASRN 88-75-5)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2-NITROPHENOL (CASRN 88-75-5)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and

circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

Neither a reference dose (RfD), reference concentration (RfC), nor carcinogenicity assessment is available for 2-nitrophenol in the Integrated Risk Information System (IRIS) database (U.S. EPA, 2007), the Health Effects Assessment Summary Table (HEAST) (U.S. EPA, 1997), or the Drinking Water Standards and Health Advisories list (U.S. EPA, 2006). The Chemical Assessments and Related Activities (CARA) database (U.S. EPA, 1991, 1994a) lists a Health Effects Assessment (HEA) (U.S. EPA, 1987) and a Health and Environmental Effects Profile (HEEP) (U.S. EPA, 1985) for Nitrophenols in which limited toxicity data for 2-nitrophenol are available. An Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile for Nitrophenols (2-Nitrophenol and 4-Nitrophenol) (ATSDR, 1992) also includes only limited toxicity data for 2-nitrophenol. Neither the American Conference of Governmental Industrial Hygienists (ACGIH, 2006), the National Institute of Occupational Safety and Health (NIOSH, 2006) nor the Occupational Safety and Health Administration (OSHA, 2006) has adopted occupational exposure limits for 2-nitrophenol. Health assessments for 2-nitrophenol are not available from CalEPA (2006) or the International Agency for Research on Cancer (IARC, 2006). Pertinent data was found for 2-nitrolphenol after examining the Concise International Chemical Assessment Document (CICAD) for mononitrophenols (WHO, 2000). Relevant information for 2-nitrophenol from the National Toxicology Program (NTP, 2006) is limited to genotoxicity assays.

Literature searches covering the time period 1960's to August, 2006 were conducted in PUBMED, TOXLINE, and DART/ETIC to identify information relevant to 2-nitrophenol. TOXCENTER was searched for the time period August, 2001 to August 2006. Databases

searched without date limitations included TSCATS/TSCATS2, CCRIS, GENETOX, HSDB and RTECS. Search of Current Contents encompassed May to August, 2006.

REVIEW OF PERTINENT DATA

Human Studies

No data were located regarding the toxicity or carcinogenicity of 2-nitrophenol in humans following oral or inhalation exposure.

Animal Studies

Oral Exposure. Available repeated-dose oral studies consist of two limited 28-day gavage studies (Andrae et al., 1981; Koerdel et al., 1981; both in German) performed to evaluate OECD guideline 407 and a range-finding developmental toxicity study (IRDC, 1990).

Andrae et al. (1981) administered 2-nitrophenol to groups of Sprague-Dawley rats (10/sex/dose) at gavage doses of 0, 70, 210 or 630 mg/kg-day for 28 days. Because the original German report of this study was not available, information from the CICAD for mononitrophenols (WHO, 2000) was used to summarize the findings. Mid- and high-dose animals exhibited what was described by the WHO (2000) as locomotor inhibition for approximately 2 hours postdosing. Mortality rates were 1/10 in mid-dose males and 4/10 and 6/10 in high-dose males and females, respectively. Gross and histopathological examinations revealed pale liver in 7/20 low-dose rats (not reported by sex), hydropic liver cell swelling in 4/10 and 0/10 high-dose males and females, respectively, and vascular congestion of the liver in all high-dose male and female rats that died prior to terminal sacrifice. Fatty degeneration of the liver was noted in 6/20 control animals, 14/20 low-dose and 13/20 mid-dose rats, but not in high-dose rats. Other treatment-related effects, noted only at the highest dose level, included significantly increased alanine aminotransferase activity in males (data not reported), increased nephrosis in 2 and 5 males and females, respectively, testicular atrophy (1 male) and decreased spermatogenesis (2 males), and follicular atresia (4 females). This report did not contain information on hematological effects. WHO (2000) concluded that a NOAEL could not be determined for this study due to "unclear effects in the liver."

Koerdel et al. (1981) administered 2-nitrophenol to groups of rats (5/sex/dose) at gavage doses of 0, 22, 67 or 200 mg/kg-day for 28 days. The summary from WHO (2000) was used as the source of study details because the original study was not available. Reported treatment-related effects included decreased food intake in high-dose males and mid- and high-dose females, non-significantly depressed final body weight in all dosed animals, decreased absolute liver and kidney weights in mid-dose groups, increased relative testes weight in low- and mid-dose males (decreased in high-dose males) and increased absolute and relative adrenal weight in all dosed groups. Hematology, clinical chemistry and histopathological examinations gave no indication of treatment-related effects. The study did not show a clear dose-response relationship for any of the endpoints examined.

In a range-finding developmental toxicity study, groups of Charles River COBS CD rats (5 dams/group) were administered 2-nitrophenol (in corn oil) at gavage doses of 0, 50, 125, 250, 500, or 1000 mg/kg-day on days 6-15 of gestation (IRDC, 1990). Body weights were determined during the treatment period and clinical signs were noted. Uterine examinations were performed on gestation day 20. A single high-dose dam died, but cause of death was not determined. Excessive salivation was observed in two high-dose dams. Mean maternal body weight gains in the 0, 50, 125, 250, 500 and 1000 mg/kg-day dose groups were 8, 7, 5, 6, 1 and -8 grams, respectively, for the initial 4 days of treatment (gestation days 6-9) and 52, 56, 54, 55, 45 and 39 grams, respectively, for the entire treatment period (gestation days 6-15). The appearance and behavior of the 50 mg/kg-day group of dams were comparable to the control group. Dose-related increases in the incidence of yellow staining around the nose, mouth and anogenital area were observed at doses ≥125 mg/kg-day. Dose-related increases in the incidence of darkly colored urine (probably due to the presence of the test chemical) occurred at doses ≥250 mg/kg-day. An increase in the number of early resorptions was observed in the highest dose group (2.3 versus 1.2 in controls), resulting in mean postimplantation loss of 13.8% compared to 8.2% in controls (statistical significance not reported). Among dams surviving until necropsy, no biologically significant treatment-related effects were seen. There were no biologically significant treatment-related effects on mean number of viable fetuses, implantations or *corpora lutea*. No data on hematological parameters were included in this study. This study assessed a limited number of potential adverse endpoints and is therefore of limited usefulness for risk assessment.

Inhalation Exposure. Available information for repeated inhalation exposure is restricted to results of a single 28-day study (Hazleton Laboratories, 1984). Groups of 7-week-old Sprague-Dawley rats (15/sex/group) were exposed to 2-nitrophenol vapors at target concentrations of 0, 5, 30 or 60 mg/m^3 for 6 hours/day, 5 days/week for 4 weeks. All rats were subjected to ophthalmoscopic examinations prior to initiation of exposures and immediately preceding terminal sacrifice. Each animal was observed twice daily (pre- and postexposure during the week; morning and afternoon on weekends) for mortality and morbidity. Clinical signs and body weights and weight gains were assessed throughout the study. Following the 11th and 20th exposures, blood was collected by orbital sinus puncture from 10 rats/sex/group and analyzed for methemoglobin concentrations. At termination of the study (day 29), blood was collected via the abdominal aorta from 10 anesthetized rats/sex/group for hematology and serum chemistry. At necropsy, all rats were subjected to comprehensive gross examinations and organ weights were recorded. Comprehensive histopathological examinations were performed on 10 rats/sex in the 0 and 60 mg/m^3 exposure groups. Nasal turbinates were examined histopathologically in 10 rats/sex of each exposure group.

Overall mean analytical concentrations deviated from the target concentrations by 0.0, +8.3 and +2.5% for the 5, 30 and 60 mg/m^3 exposure groups, respectively (Hazleton Laboratories, 1984). The aerosol content of the exposure chambers was not significantly different from that present in room air. No significant exposure-related ocular lesions were apparent in any of the rats. No animals died during the study. No apparent exposure-related trends in clinical signs were apparent with the exception of yellow stains on the fur of all 2-nitrophenol exposed animals. There were no statistically significant exposure-related effects on mean body weight or weight gain. A statistically significant increase in methemoglobin

levels was noted in male and female rats of the 5 mg/m^3 group analyzed on day 15 of the study. However, when animals were analyzed on day 28, the methemoglobin levels were similar to controls. No statistically significant increases were found in the higher dose groups. The change, compared with controls, in methemoglobin levels in treated animals of the low dose groups, while exhibited statistical significance, was not considered biologically significant. Hematology and clinical chemistry findings were unremarkable. Gross pathology revealed no consistent exposure-related trends. Small increases in liver weight, liver/brain weight ratio and spleen/brain weight ratio were seen in the 5 mg/m^3 group females, but were not observed in females at higher doses or in any of the treated males. Histopathological examinations revealed squamous metaplasia in epithelium of the nasoturbinates and maxilloturbinates in 1/10, 0/10, 10/10 and 10/10 male rats and 1/10, 1/10, 9/10 and 10/10 female rats of the 0, 5, 30 and 60 mg/m^3 exposure groups, respectively. No other apparent exposure-related effects were observed. On the basis of the nasal lesions, this study identified a NOAEL of 5 mg/m^3 and a LOAEL of 30 mg/m^3 for 2-nitrophenol in rats.

Other Studies

Limited genotoxicity data are available for 2-nitrophenol. The chemical produced negative results in the Ames test with *Salmonella typhimurium* strains TA98, TA100, TA1535, TA1537 and TA1538 both in the presence and absence of rat liver S9 metabolic activation (Chiu et al., 1978; Dellarco and Prival, 1989; Haworth et al., 1983; Kawai et al., 1987; Koerdel et al., 1981; Massey et al., 1994; Shimizu and Yano, 1986; Suzuki et al., 1983). 2-Nitrophenol did not induce DNA breakage in λ phage DNA (Yamada et al., 1987) or increase reversions from streptomycin dependence to independence in *Escherichia coli* strain Sd-4-73 (Szybalski, 1958). Negative results were reported for mutagenic activity in post-meiotic and meiotic germ cells of male *Drosophila melanogaster* exposed to 2-nitrophenol via feeding (400-500 ppm) or injection (2500 or 5000 ppm) (Foureman et al., 1994).

2-Nitrophenol did not exhibit skin tumor-promoting action in mice receiving dermal applications of a 20% solution twice weekly for 12 weeks (Boutwell and Bosch, 1959).

In rats and mice administered single oral doses of 2-nitrophenol, calculated LD_{50} values were 2830 and 1300 mg/kg, respectively (Vernot et al., 1977). No information was located regarding the toxicity of 2-nitrophenol following acute inhalation exposure.

FEASIBILITY OF DERIVING PROVISIONAL SUBCHRONIC AND CHRONIC RfD VALUES FOR 2-NITROPHENOL

Oral studies of 2-nitrophenol are limited to two 28-day studies from the German literature available only as brief summaries in WHO (2000) and a range-finding developmental toxicity study. None of these studies appear to have been adequate to derive NOAEL or LOAEL values. The lack of adequate oral data for humans or animals precludes the derivation of a provisional subchronic or chronic RfD for 2-nitrophenol.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC RfC VALUES FOR 2-NITROPHENOL

Subchronic p-RfC

Results of the only available repeated exposure (28-day) inhalation study of 2-nitrophenol (Hazleton Laboratory, 1984) provide marginally adequate information in rats to derive a provisional subchronic RfC for 2-nitrophenol. This study identified significantly increased incidences of squamous metaplasia of the nasal epithelium in rats as the critical effect following 4 weeks of exposure to 2-nitrophenol vapors for 6 hours/day, 5 days/week. The lowest concentration of 2-nitrophenol associated with squamous metaplasia of the nasal epithelium was 30 mg/m^3 in both male and female rats; the associated NOAEL was 5 mg/m^3. Because the NOAEL and LOAEL represent essentially 0 and 100% response, respectively, it is not feasible to apply meaningful benchmark dose analysis to the data set. Therefore, the NOAEL of 5 mg/m^3 was selected as the point of departure for deriving a subchronic RfC for 2-nitrophenol.

The NOAEL of 5 mg/m^3 from intermittent exposure was adjusted to account for a continuous exposure scenario as follows:

$NOAEL_{[ADJ]}$ = NOAEL x 6 hours/24 hours x 5 days/7days
$NOAEL_{[ADJ]}$ = 5 mg/m^3 x 6/24 x 5/7 = 0.89 mg/m^3

According to U.S. EPA (1994b) methodology for respiratory effects of a category 1 gas (a systemic toxicant without significant portal of entry (lung) effects), such as 2-nitrophenol the $NOAEL_{[HEC]}$ (human equivalent concentration) is calculated by multiplying the $NOAEL_{[ADJ]}$ for upper respiratory effects by the regional gas dose ratio for extrathoracic effects ($RGDR_{ET}$). The default $RGDR_{ET}$ is calculated according to the following equation:

$$RGDR_{ET} = \frac{\left[\frac{\dot{V}_E}{SA_{ET}}\right]_A}{\left[\frac{\dot{V}_E}{SA_{ET}}\right]_H}$$ (Equation 4-18; U.S. EPA 1994b)

where:

$\dot{V}_E$ = minute volume (cm^3/minute)
SA_{ET} = surface area of the extrathoracic region (cm^2), and
A, H = subscripts denoting laboratory animal and human, respectively.

Default surface area values for the extrathoracic respiratory region are 15 cm^2 for the rat and 200 cm^2 for the human (U.S. EPA (1994b). For the male Sprague-Dawley rat, a reference inhalation rate of 0.27 m^3/day (270,000 cm^3/day; U.S. EPA, 1988, standard default) produces a minute volume of 187.5 cm^3/min (270,000 cm^3/day ÷ 1440 min/day). The default minute volume for the human is 13,800 cm^3/min (13.8 L/min or 20 m^3/day; U.S. EPA, 1994b). Therefore:

$$RGDR_{PU} = \frac{\left[\frac{187.5}{15}\right]_A}{\left[\frac{13{,}800}{200}\right]_H} = 0.1812$$

The $NOAEL_{[HEC]}$ is derived as follows:

$$NOAEL_{[HEC]} = NOAEL_{[ADJ]} \times RGDR_{ET} = 0.89 \text{ mg/m}^3 \times 0.1812 = 0.1613 \text{ mg/m}^3$$

The **subchronic p-RfC of 5E-4 mg/m^3** based on squamous metaplasia of the nasal epithelium in rats (Hazleton Laboratories, 1984) is derived by dividing the $NOAEL_{[HEC]}$ of 0.16 mg/m^3 by a composite uncertainty factor (UF) of 300, which includes factors of 3 for interspecies extrapolation, 10 for interindividual human variability and 10 for data base deficiencies.

A 3-fold UF is used to account for uncertainty in extrapolating from laboratory animals to humans (i.e., interspecies variability). No information is available regarding the toxicity of 2-nitrophenol in humans. No comparative information is available regarding the toxicokinetics or toxicodynamics of 2-nitrophenol in animals and humans. However, the default dosimetric calculation for deriving an HEC accounts for the uncertainty in the variability in toxicokinetics of humans and rats. A 3-fold UF is applied to account for uncertainty in species differences for toxicodynamics (U.S. EPA, 1994b).

A 10-fold UF is used to account for variation in sensitivity among members of the human population (i.e., interindividual variability). This UF was not reduced due to the lack of human inhalation exposure data.

A 10-fold UF is used to account for uncertainty associated with data base deficiencies. A single 28-day inhalation toxicity study in one animal species (rat) is available (Hazleton Laboratories, 1984). The data base lacks studies of subchronic and chronic toxicity, inhalation neurotoxicity, developmental toxicity and reproductive toxicity (including 2-generation reproductive toxicity). Although the principal study (Hazleton Laboratories, 1984) was only a 28-day study (less than subchronic duration), the minor nature of the effects observed suggests that the 10-fold database UF is adequate to capture the uncertainties associated with use of the less-than-subchronic study in this instance.

Confidence in the principal study (Hazleton Laboratories, 1984) is low-to-medium. The study included comprehensive gross and histopathologic assessments. A major limitation of this study is the less-than-subchronic study duration of 28 days. Confidence in the data base is low because the data base lacks studies of subchronic and chronic toxicity, inhalation neurotoxicity, and developmental and reproductive toxicity (including 2-generation reproductive toxicity). Reflecting low-to-medium confidence in the principal study and low confidence in the data base, confidence in the provisional subchronic RfC is low.

Chronic p-RfC

The lack of adequate subchronic or chronic inhalation data for humans or animals precludes the derivation of a provisional chronic RfC for 2-nitrophenol. Use of the 28-day study (Hazleton Laboratories, 1984) was rejected because of uncertainties in exposure duration and toxicokinetics and dynamics in humans, and a lack of reproduction/developmental studies and which would result in five areas of uncertainties. According to the uncertainty in hematological effects which could become apparent in a chronic study, the database is insufficient to support derivation of chronic p-RfC (U.S. EPA, 1994b).

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR 2-NITROPHENOL

Weight-of-Evidence Descriptor

No information was located regarding the carcinogenicity of 2-nitrophenol in humans. No lifetime assessments were located regarding the carcinogenicity of inhaled or ingested 2-nitrophenol in animals. 2-Nitrophenol did not exhibit skin tumor-promoting action in mice receiving dermal applications twice weekly for 12 weeks (Boutwell and Bosch, 1959). Available genotoxicity assays of 2-nitrophenol indicate that the chemical is not genotoxic (Chiu et al., 1978; Dellarco and Prival, 1989; Foureman et al., 1994; Haworth et al., 1983; Kawai et al., 1987; Koerdel et al., 1981; Massey et al., 1994; Shimizu and Yano, 1986; Suzuki et al., 1983; Szybalski, 1958; Yamada et al., 1987). In accordance with U.S. EPA (2005) cancer guidelines, there is *inadequate information to assess carcinogenic potential* for 2-nitrophenol, based on the lack of human or animal carcinogenicity data.

Quantitative Estimates of Carcinogenic Risk

There are no human or animal data from which to derive an oral slope factor or inhalation unit risk for 2-nitrophenol.

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10-23-2006

Provisional Peer Reviewed Toxicity Values for

Aluminum
(CASRN 7429-90-5)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
i.v.	intravenous
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ALUMINUM (CASRN 7429-90-5)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions or the EPA Headquarters Superfund Program sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

This document has passed the STSC quality review and peer review evaluation indicating that the quality is consistent with the SOPs and standards of the STSC and is suitable for use by registered users of the PPRTV system.

INTRODUCTION

Verified toxicity values for aluminum (Al) and its compounds are unavailable on IRIS or HEAST (U.S. EPA, 2006, 1997), except for a chronic oral RfD of 4E-4 mg/kg-day for aluminum phosphide. However, occupational guidelines and standards have been established for a number of chemical and physical forms of Al, including, from ACGIH, 8-hour TWA-TLVs of 10 mg/m^3 for the compound as a metal dust or oxide, 5 mg/m^3 as "pyro" powders or welding fumes, and 2 mg/m^3 for soluble salts or organic forms of the metal (ACGIH, 1998). From NIOSH, 10-hour TWA-RELs of 10 mg/m^3 are specified for "total" Al dust versus 5 mg/m^3 for the respirable portion (NIOSH, 1994). NIOSH covers all other forms of the metal by identical values to those specified by ACGIH (ACGIH, 1998). OSHA PELs for Al include an 8-hour TWA value of 15 mg/m^3 for "total" metal dust, versus 5 mg/m^3 for the respirable portion (NIOSH, 1994). The U.S. EPA's CARA list (U.S. EPA, 1994) cites a HEA for Al (U.S. EPA, 1987), and ATSDR has updated its toxicological profile of the element (ATSDR, 1998).

The U.S. FDA (2000) has specified a maximum aluminum concentration of 25 mcg/L in large-volume parenterals (LVP) used in total parenteral nutrition (TPN). The FDA regulation applies to all LVPs used in TPN, including but not limited to parenteral amino acid solutions, highly concentrated dextrose solutions, parenteral lipid emulsions, sodium chloride and electrolyte solutions, and sterile water for injection.

Research papers pertinent to the potential toxicological and carcinogenic effects of Al were sought through computer searches of the HSDB, RTECS, MEDLINE and TOXLINE (and its subfiles) databases, covering the time period 1995-1999. The literature searches were conducted in June, 1999.

REVIEW OF PERTINENT DATA

The review by Stokinger (1981) gives an account of Al as an all-pervasive component of products that are central to the daily lives of most Americans. For example, the metal is a crucial part of manufactured products for the building, automobile and container industries, while Al as powder or flake is a component in a number of consumer products, such as paints, fireworks, etc. Al complexes and minerals are used in the brewing and paper industries, and as coagulants for water purification. Aluminum oxide finds application in abrasives, as a catalyst or absorbent, and as a component in fillers. Aluminum chloride is included in cosmetic formulations such as deodorants.

Human exposure to Al arises principally from food and water, through its widespread use in food additives, packaging and cooking utensils and Al-containing medications, particularly antacid, buffered aspirin, anti-ulcer and anti-diarrheal formulations (Marquis, 1989; Lione, 1985). Pennington and Schoen (1995) estimated daily Al intakes of 0.1-0.3 mg/kg-day for infants and children 6 months-6 years of age and 0.1-0.18 mg/kg-day for older children and adults, based on the FDA Total Diet Study (1993) and the U.S. Department of Agriculture Nationwide Food Consumption Survey (1987-1988). These data are in broad agreement with those of Wilhelm et al. (1995) who reported the dietary intake of Al in German children (living in the Duisberg area) as ranging from 0.008 to 0.11 mg Al/kg-day. In addition, these values are consistent with a range of 1-20 mg/day (0.014-0.3 mg/kg -day) for normal oral daily Al intake from food and water reported by other investigators (Ganrot, 1986; Iyengar et al., 1987; Wilhelm et al., 1990). However, users of Al-containing medications can ingest much larger amounts of the element, possibly as high as 840-5000 mg/day (12-71 mg/kg-day) from antacids, 126-728 mg/day (1.8-10.4 mg/kg-day) from buffered aspirins and 828 mg/day (11.8 mg/kg-day) from anti-ulcer compounds when taken at recommended dosages (Lione, 1985).

Toxicokinetics of Aluminum

There is a large amount of information available on the absorption, transfer from tissue to tissue and elimination of Al from the body, including data that have been amassed from studies on either human volunteers or laboratory animals. In general, the chemical appears to be poorly absorbed from the gastrointestinal tract, though the portion of the load that is retained will vary depending on the concentration, the chemical species administered, the fasting or fed state of the

host, gastrointestinal pH, animal model, etc. For example, Yokel and McNamara (1988) administered single oral doses of a number of Al compounds (both water soluble and insoluble) to New Zealand white rabbits and obtained absorbed proportions of the load ranging from 0.27% to 27%. Fractional uptake of Al in humans under normal conditions (i.e., with no intake of large quantities of Al from medicine) was estimated to be 0.1-0.3% assuming an intake of 20 mg Al/day (0.3 mg Al/kg-day) and urinary excretion of 20-50 µg Al/day (0.3-0.7 µg Al/kg-day) (Ganrot, 1986). However, little information is available on the actual mechanism by which the element and its compounds are transported across the brush border. (Wilhelm et al., 1990; Lione, 1985).

Although the overall extent of Al absorption is poor following oral exposure, there may be significant intake of the compound by those taking large amounts of Al compounds in patented remedies. As stated, absorption of Al is influenced by gastrointestinal conditions and content because Al can form various complexes with different solubilities and oxidation states depending on pH and interactions with dietary constituents. At low pH (3-5) in aqueous solutions, the soluble (ionic) forms of the Al prevail (Al^{3+}); at high pH (>8), Al in the form of soluble aluminum oxide is present; and at pH 5-8, the element is predominantly in the form of aluminum hydroxide, which is insoluble (van der Voet and de Wolff, 1986; Wilhelm et al., 1990). Ingested constituents that can influence absorption by forming complexes with Al include phosphate, fluoride, calcium, citrate and lactate. For example, Al is used to bind dietary phosphorus and decrease its absorption as a control for hyperphosphatemia, and citrate and lactate are complexing agents that can significantly increase Al absorption (Slanina et al., 1984, 1985, 1986; Partridge et al., 1989; Domingo et al., 1991; Ittel et al., 1991; Lione, 1985; Wihelm et al., 1990).

A number of recent reports of studies on the gastrointestinal absorption of Al have examined the influence of organic anions such as citrate. In general, the presence of such components appears to enhance the absorption of Al, within narrow limits. For example, Deng et al. (1998) administered a single oral dose of either distilled water, 2 mmoles/L aluminum chloride or 2 mmoles/L aluminum chloride plus 2 mmoles/L sodium citrate to six male Wistar rats/group. Animals were bled at 1, 2 and 4 hours after dosing, then terminated after 6 hours. Inductively coupled plasma (ICP) was used to measure Al concentrations in blood, bone (tibia), kidney, liver and the intestinal wall. Irrespective of treatment, the appearance of Al in the blood of dosed groups peaked after 1 hour, with the concentration of the element at higher levels in those animals receiving citrate in addition to aluminum chloride. In those animals receiving aluminum chloride alone, significant tissue concentrations of the element were restricted to the gastrointestinal wall. Those receiving citrate displayed measurable quantities of the element in several of the other monitored tissues, including bone.

Sutherland and Greger (1998a) used a similar dosing regimen to examine the kinetics of absorption and elimination of Al in male Sprague-Dawley rats that had received a single oral dose of 0, 0.25, 0.5 or 1 mmoles/L/kg body weight aluminum lactate in 1 mL of 16% citrate. Concentrations of Al in serum, liver, kidney or bone (tibia) were measured at various post-dosing time intervals up to 6 hours. Depending on the dose, absorption factors for Al of up to 4.2% of the administered dose were observed, with the greater proportion retained in bone. The authors reported a slower rate of absorption in those animals receiving Al at the higher doses, an

observation potentially indicating reduced gut motility and/or saturation of the transcellular absorption processes at the higher concentrations. Aluminum deposited in kidney and bone appeared to turn-over at a slower rate than in the liver.

The influence of citrate on the gastrointestinal absorption of Al in man was examined directly by Taylor et al. (1998) who administered a drink containing Al and citrate to three volunteers. Aluminum and citrate concentrations were monitored in serial blood and urine samples for up to 24 hours. The kinetics of citrate and Al differed markedly, the former peaking in plasma after 32 minutes, versus 87 minutes for Al. This suggests that Al probably does not cross the gastrointestinal barrier as the citrate. Furthermore, the authors reported that the overall extent of Al absorption had probably not exceeded 1% in their experiment, a finding that contrasts with the higher values reported by Sutherland and Greger (1998a) in Sprague-Dawley rats and by Deng et al. (1998) in Wistar rats.

As discussed in a report by Glynn et al. (1999), gastrointestinal absorption of Al from aqueous media will be almost impossible to predict, because of the likelihood that the element will become absorbed to food particles in the intestinal lumen. Accordingly, depending on the dose, mode of delivery and caloric state of the experimental animal (fed/fasted), significant amounts of aqueous forms of Al will be absorbed only when available binding sites on food have become saturated. This presents an inherently complex overall picture of the element's absorption since, additionally, the normal dietary content of Al will be substantial. Thus, it may be assumed that some sequestered Al will be absorbed along with non-sequestered water soluble forms of the element, while the rest will be retained within the gastrointestinal tract.

Sutherland and Greger (1998b) used their aluminum lactate in 16% citrate dosing regimen to examine the comparative importance of biliary versus urinary excretion of Al. Five to seven male Sprague-Dawley rats/group who had previously received an implanted bile cannula were treated by gavage. Another similarly-treated cohort of five animals/group were housed in metabolic cages immediately after dosing to provide 0- to 3-hour and 3- to 6-hour urine specimens. At termination, all animals were sacrificed and exsanguinated, and tissue, bile and urine samples were measured by graphite furnace atomic absorption spectroscopy. Among the key findings to emerge from this study was the incremental appearance of Al in bile as early as 15 minutes after dosing. However, overall amounts of Al were greater in the 3-hour urine samples than those that had accumulated in bile samples collected within a similar time frame. The fact that control rats excreted 3 times more Al in bile than in urine during the first 3 hours after dosing led the authors to conclude that, at low exposure to Al (in controls receiving Al solely from food), the liver is capable of excreting the element to the bile, a mechanism that becomes saturated as the level of Al administration becomes increased. Thereafter, urinary excretion becomes the primary route of elimination in circumstances of Al overload.

Aluminum can also be absorbed by inhalation as indicated by age-related deposition in the lungs of the general population and exposure-related increased blood and urine concentrations in workers exposed to Al (Bast-Pettersen et al., 1994; Sjogren et al., 1996; Hosovski et al., 1990; Wilhelm et al., 1990; U.S. EPA, 1987). Aluminum occurs primarily in particulate form in the ambient atmosphere and as various dusts and fumes during its production and use. Common forms of inhaled Al include aluminum oxide (alumina; Al_2O_3), pyro powders

(powder and flake Al-treated to reduce surface oxidation), Al welding fume and soluble salts (e.g., aluminum chloride and sulfate) (ACGIH, 1998).

Neurotoxicity as a Primary Toxicological Effect of Aluminum

One of the greatest health concerns regarding Al is its neurological effects. The first evidence for Al-induced neurotoxicity in humans was seen in patients who, as a result of receiving long-term hemodialysis for chronic renal failure, developed a degenerative neurological syndrome (dialysis dementia) characterized by the gradual loss of motor, speech and cognitive functions (Alfrey, 1993). This dementia, attributable to Al in the dialysate, is usually fatal within 6-9 months after the first clinical signs appear. In addition, many patients received high oral doses of Al to act as phosphate binders. Autopsies of these patients revealed increased concentrations of Al in the gray matter and cerebral spinal fluid (CSF) but no evidence of neurofibrillary degeneration (NFD) despite the elevated Al levels. Once the connection between Al and dialysis dementia was established, Al was removed from dialysis fluid and the incidence of dementia rapidly declined, thereby strengthening the argument that Al was a causal agent in dialysis dementia (Ganrot, 1986).

Amyotrophic Lateral Sclerosis (ALS) and Parkinson's Disease (PD) are other neurological diseases which have been associated with Al exposure. ALS is a progressive disease of the Central Nervous System (CNS) that is characterized by an accumulation of neurofibrillary tangles. In Guam, southern West New Guinea and parts of Japan, there is an unusually high prevalence of ALS and PD. This may be related to the natural abundance of Al coupled with the virtual lack of magnesium and calcium in the drinking water supplies and soil of these areas. In a study designed to evaluate effects of high Al and low calcium levels in the diet, much like the conditions associated with Guam and other similar areas, cynomolgus monkeys were placed on a low calcium diet either with or without supplemental Al and manganese (Garruto et al., 1989). Chronic calcium deficiency alone produced neurodegenerative effects, although neurofibrillary changes were most frequently seen in the monkeys on a low calcium diet supplemented with Al and manganese.

Though a cause and effect relationship between Al and three forms of chronic encephalopathy in humans: senile dementia of the Alzheimer type (SDAT, Alzheimer's Disease), endemic Amyotrophic Lateral Sclerosis (ALS) and endemic Parkinsonism-dementia (PD, a mixture of Parkinsonism and senile dementia) has been suggested, there is no firm evidence that it plays a causal role in the development of these diseases (Ganrot, 1986; Lione, 1985). The condition is degenerative and characterized by the progressive loss of speech, motor and cognitive functions, with death typically occurring within 1-6 months. Autopsies of patients revealed increased concentrations of Al in the gray matter and cerebral spinal fluid (CSF), though with no conclusive evidence of NFD or other neuropathological changes despite the elevated Al levels.

The neurotoxicity of Al is well documented in certain animal species. Aluminum induces a spectrum of behavioral abnormalities and brain neurofibrillary degenerative changes in rabbits and cats when injected intracranially or parenterally in high doses, though hamsters and monkeys are less sensitive (Ganrot, 1986; Lione, 1985). Such studies have been designed as models for

the possible neurotoxicological effects of Al in humans. However, it should be noted that the neurofibrillary changes in affected animals differ in morphological detail from those associated with SDAT. As discussed further in the Oral Toxicity section, oral doses of Al can also induce neurobehavioral effects in adult mice and rats and in their developing offspring. In general, such neurotoxic effects of Al appear to be more subtle than those induced through routes of administration that by-pass the gastrointestinal tract, perhaps reflecting the lower doses of Al reaching the brain.

Recent reports of studies on the effects of Al on neurotoxicity in animals have sought to define the biochemical mechanisms that are impaired when Al crosses the blood-brain barrier. However, a unifying concept has yet to emerge, though the passage of the element into various regions of the brain has been clearly demonstrated (Deloncle et al., 1995). Among the many biochemical functions and processes that appear to be perturbed by the presence of Al in the brain are the peroxidation status of biological membranes (Katyal et al., 1997; Deloncle et al., 1999), inhibition of the neuronal glutamate-nitric oxide-cyclic GMP pathway (Cucarella et al., 1998), and the marked reduction of protein- and non-protein-bound thiols and the specific activity of Na^{+}/K^{+} and Mg^{++} ATPases (Katyal et al., 1997). The relative importance of each of these mechanisms and how (or whether) they interact to bring about the observed physiological changes remains unclear.

Other Effects of Aluminum

Osteomalacia was frequently observed among long-term dialysis patients with neurological signs and is commonly attributed to Al overload (Ganrot, 1986; Lione, 1985). This bone condition is characterized by widened osteoid (unmineralized bone matrix) with no fibrosis, reduced mineralization rate, skeletal pain and a strong tendency for fractures, lack of response to vitamin D therapy and increased Al concentration in bone. Effects on bone histology and elevated bone Al levels have also been observed in patients with normal renal function who received total parenteral nutrition with Al-contaminated casein as a protein source, and in parenteral Al loading induced osteomalacia in rats and dogs (Lione, 1985).

There are a number of published reports of studies in which the carcinogenicity of aluminum compounds has been evaluated. These include oral exposure studies in which the compounds were made available to experimental animals in the drinking water or diet (Schroeder and Mitchener, 1975a,b: Oneda et al., 1994), and inhalation epidemiological studies, in which the incidence of tumor formation in persons exposed to aluminum-containing dusts and fumes in an occupational setting was compared to unexposed individuals (Spinelli et al., 1991; Thériault et al., 1984, 1990; Armstrong et al., 1986; Tremblay et al., 1995; Selden et al., 1997; Cullen et al., 1996; Dufresne et al., 1996; Ronneberg and Langmark, 1992). However, it has been generally concluded that the inferential association between exposure to Al and marginally increased incidences of tumors of the bladder and/or lung are confounded because of the co-exposure of subjects in such settings to other harmful and potentially carcinogenic substances, such as polycyclic aromatic hydrocarbons (PAHs and coal tar pitch volatiles (CTPV) (Ronneberg and Langmark, 1992). Therefore, the issue of the potential carcinogenicity of Al compounds remains uncertain.

Human Studies

Oral Exposure

Few reports have been identified that address the toxicological effects of Al in humans exposed orally. Furthermore, in a review, Reiber et al. (1995) pointed to the conflicting findings that have been reported when the incidence of neurological symptoms has been assessed in relation to Al exposure in either cross-sectional, ecological or case-control epidemiological studies. Among the more recent studies that have used this approach, Martyn et al. (1997) discussed the findings of a case-control study involving 441 men in England and Wales who were afflicted with either Alzheimer's disease, brain cancer, dementia or other neurological conditions. Assessing the historical exposure of these subjects failed to establish a link between Al in drinking water at the prevailing concentrations (below 0.2 mg/L) and the incidence of one or more of the conditions under investigation. No data were located regarding the oral carcinogenicity of aluminum compounds in humans.

Inhalation Exposure

Neurobehavioral effects were evaluated in a group of 87 Al foundry workers who were occupationally exposed to 4.6-11.5 mg/m^3 Al fumes and dust for a mean of 12.0 years [standard deviation (SD) 4.5 years, shortest exposure 6 years] compared to an unexposed control group (n=60) who were matched for age, job seniority and social status to exposed subjects (Hosovski et al., 1990). It is reported that environmental Al concentrations were measured for each worker separately during the winter and summer, implying that personal sampling may have been used and that the contributing concentrations are time-weighted averages. In certain places, the number of particles ranged as high as 329-1020/cm^2 air, and dust particle sizes were ≤1, 1-5 and ≤5 microns in 65.6, 26.6 and 7.6% of the samples, respectively. Tests of psychomotor ability (simple and complex reaction time, oculomotor coordination), intellectual ability (Wechsler intelligence, performance intelligence and verbal intelligence quotients and Wechsler subtests on information processing, memory, understanding, calculation, coding, picture completion, picture grouping, object assembling, assembling of cubes and common concepts) and cerebral damage (Bender visual motor test) were conducted. Performance of the exposed workers was found to be significantly ($p<0.02$) impaired on the complex reaction time, oculomotor coordination, memory, coding, picture completion and object assembling tests. However, the investigators noted that the performance deficits had no clinical manifestations, and that additional studies were probably needed to confirm the possibility of cerebral damage. The study yielded a lowest available non-duration adjusted LOAEL of 4.6 mg Al/m^3 for psychomotor and cognitive impairment during repeated 8-hour occupational exposures (Hosovski et al., 1990), that could be corrected for discontinuous exposure (10 m^3/20 m^3 and 5 days/7 days) to yield a $LOAEL_{HEC}$ of 1.64 mg/m^3 Al.

Aluminum oxide powders were administered to Canadian miners (mainly underground gold and uranium miners) in known exposures as a means of prophylaxis against silicosis (Stokinger, 1981; Rifat et al., 1990). Data in which more than 42 million Al treatments (≈150,000 man-years) had been given over a period of 27 years ending in 1971 were reviewed

by Stokinger (1981). The effectiveness of this treatment is uncertain but no lung damage or other ill effects (not specified) were observed. The powders (McIntyre powder) were prepared by grinding Al pellets so that 96% of the particles were ≤1.2 μm in diameter. During this process most of the particles became oxidized to aluminum oxide; the powder contained 85% aluminum oxide and 15% elemental Al. According to Stokinger (1981), recommended exposure concentrations were 30,000 particles of respirable size per cubic centimeter (ppcc) for 10 minutes/day or 10,000-20,000 ppcc for 20 minutes/day (total treatment days not indicated). Rifat et al. (1990) stated that the recommended exposure was to an Al dust concentration of 20,000-34,000 parts per ml air in the miners' changing rooms before each shift for 10 minutes. Stokinger (1981) reported that the 30,000 ppcc concentration corresponds to ≈350 mg/m^3, which is equivalent to an 8-hour average concentration of 2 mg/m^3. Based on the Stokinger (1981) data and the fact that one unspecified study used levels 30 times higher than advised, the TLV of 10 mg/m^3 is recommended for Al dust (ACGIH, 1998).

The increasing awareness of the potential neurotoxicity of Al has resulted in a number of investigations of the incidence of neurotoxicological symptoms in Al workers. Although treatment with McIntyre powder had not produced apparent adverse effects, a neurobehavioral evaluation of male miners (261 exposed to McIntyre powder, 346 unexposed) who started working between 1940 and 1979 (additional duration data not reported) was performed in 1988-1989 (Rifat et al., 1990). There were no significant differences between exposed and unexposed miners in reported diagnoses of neurological disorder. Results of cognitive testing (Mini-Mental State Examination for general cognitive function, Ravens colored progressive matrices test for reasoning and Symbol Digit Modalities Test for spatial perceptual accuracy and information processing), however, showed that the exposed group had significantly ($p \leq 0.001$) impaired performance on at least one test, and when all test scores were summed. Also, the likelihood of scores in the impaired range increased with duration of exposure.

A neurologic syndrome was described in Al smelting plant potroom workers (White et al., 1992). Twenty-five men were evaluated for suspected work-related neurologic illness based on findings in three patients studied previously. The average duration of employment was 18.7 years (SD, 3.6; range, 12-23 years), 15 of the patients were working at the time of evaluation, and 10 had taken early retirement or medical leave due to workplace-related symptoms (mean length of time since exposure was 1.3 years ranging from 0.2-5 years). Quantitative exposure level data were not reported, but 21 of the workers had been employed in the potroom prior to installation of fume hoods for a mean duration of 5.3 years (range 3-7 years). Symptoms most often reported by the patients were frequent loss of balance (88%), memory loss (84%) and joint pain (84%); other symptoms included dizziness (80%), numbness (80%), parasthesias (72%) and tremor (68%). Neurologic examinations showed mild to moderate signs of lack of coordination (tremor, dyssynergy of upper extremity limb movement or ataxia) in 84% of the patients. Neuropsychologic effects were evaluated in 21 of the patients using the Wechsler Adult Intelligence Scale-Revised (intellectual functioning), Wide Range Achievement Test-Revised (academic functioning), Halstead-Reitan Neuropsychological Test Battery (neuropsychological assessment) and Minnesota Multiphasic Personality Inventory (personality functioning). Memory function was assessed with the Wechsler Memory Scale (14 patients) and Wechsler Memory Scale-Revised (8 patients). The memory function evaluation showed mild to moderate impairment on subtests of immediate recall for verbal or visual information (70-75% of the

tested patients) and delayed verbal or visual recall (50-70%). Other effects included mild or moderate impairment on Halstead-Reitan tests of abstract reasoning and flexible thinking (42% of the tested patients), memory for tactile information (53%) and sustained attention and discrimination of tonal and speech patterns (44 and 64%, respectively). On the Wechsler memory and Halstead-Reitan tests, mild and moderate impairment was defined as scores 1.5-2 and ≥2 standard deviations below the mean of the normal population, respectively. Most (89%) of the patients tested with the Minnesota Multiphasic Personality Inventory had abnormally elevated scores (≥2 SDs above the population mean) indicative of clinical depression. Significant positive correlations were found between severity of incoordination (signs and symptoms) and degree of exposure (qualitative) before the introduction of the ventilation hoods.

White et al. (1992) noted two other studies that described neurologic problems among Al smelter workers. Thus, an evaluation of 444 electrolysis workers found neuropsychiatric changes in 123 (28%), "neurotic syndromes" in 89 (20%) and "slight pyramidal and cerebellar changes" in 39 (9%) (Langauer-Lewowicka and Braszczynska, 1983). In the second study, symptoms including mental confusion, concentration and memory problems were described in six potroom workers (Cawthon, 1988).

In another study of Al production workers, neuropsychological effects were assessed in 38 elderly men who had been exposed for at least 10 years exclusively in the potroom (n=14), foundry (n=8) or other manual labor departments of the same plant (n=16, control group) (Bast-Pettersen et al., 1994). The mean ages and employment durations of the groups were in the ranges of 62.5-63.5 and 19.2-19.6 years, respectively. The men were examined soon after or just before retirement in 1991. Limited environmental monitoring data indicates that the degree of Al exposure varied between the subgroups and over the years. Average annual total dust concentrations in the potroom were reduced significantly from 9.5 mg/m^3 in 1977 to 3.0 mg/m^3 in 1990. Aluminum levels were not specifically reported, but the average Al content in the total potroom dust was approximately 20% by weight; other constituents of the dust included fluoride and coal tar pitch components. Data from an Al uptake/excretion study of workers from the same plant indicated that the level of Al exposure was approximately 8 times higher in the potroom than in the foundry (0.48 and 0.06 mg/m^3, respectively) (Drablos et al., 1992). Medical examinations (including lung function, standard laboratory tests and serum and urine Al concentrations) and a neuropsychological test battery were performed. The battery assessed six mental functions (neuropsychiatric symptoms, motoric/sensoric, reaction time, psychomotor speed/efficiency, memory/learning and intelligence) using a questionnaire and 15 different objective tests. Some subtle deficits were found in potroom workers that were not considered to be indicative of a significant neurological syndrome. The findings in potroom workers included a subclinical tremor as indicated by results of a static steadiness test [time scores on one of two test indices were significantly worse in comparison with the control group (84% slower, p=0.03)], and possible tendencies (i.e., test results that were about 1 SD below normal mean values but not statistically significant) for increased risk of impaired visuospatial organization (Block Design subtest of the Wechsler Adult Intelligence Scale) and psychomotor tempo (one Halstead ReitanTrail Making test). Although these findings were not considered to be indicative of a neurologic syndrome, it was suggested that they may be early signs of CNS impairment. Additionally, the finding of a subclinical tremor seems to be consistent with the tremor and other

signs of incoordination observed in 84% of the patients in the White et al. (1992) study summarized above.

Studies of Al welders are consistent with those of Al smelter workers in indicating that occupational exposure to Al can be neurotoxic. CNS function was evaluated in 17 welders who had an average of 15 years (range 5-27 years) experience, with the last 4 years exclusively with Al (Hanninen et al., 1994). Most of the welders had equipment that ventilated the welding masks but the respiratory protection was not always used. The assessment included measurements of serum and urinary Al, neuropsychological tests (simple reaction time, three tests for psychomotor speed, two tests for visual and spatial ability, four memory tests and two verbal ability tests), a symptom questionnaire and neurological interview, quantitative electroencephalography (QEEG) and P-300 event-related auditory-evoked responses. Serum and urine Al levels were 3.5 and 8.5 times higher, respectively, than an unexposed reference population. The welders performed normally on the neuropsychological tests, although correlation analysis of test scores and exposure parameters showed weak negative associations between the four memory tests and urinary Al level and a positive association between the variability (standard deviation) of visual reaction times and serum Al levels. Analysis of the QEEG data showed that serum Al levels were positively correlated with the amount of delta and theta activity in the brain frontal region and negatively correlated with the amount of alpha activity in the frontal region. Results of this study (disturbances of memory and attention, QEEG changes similar to those in patients with Al encephalopathy) were interpreted as consistent with known CNS effects of Al, but insufficient for establishing a definite relationship between Al exposure and effects.

In another study of Al welders, CNS evaluations were performed on 38 men who had at least 5 years exposure (mean 17.1 years) and a control group of 44 railway track welders exposed to metal fumes other than Al (mean 13.8 years) (Sjogren et al., 1996). Limited monitoring data indicated that the median exposure to welding fumes was 10 mg/m^3 and that the Al content was 40% of the total fumes. Symptom questionnaires, psychological tests (simple reaction time, finger tapping speed and endurance, digit span, vocabulary, tracking, symbol digit coding, cylinders, olfactory threshold and Luria-Nebraska motor scale), neurophysiological indices [electroencephalography, P-300 auditory-evoked responses, brain-stem auditory evoked responses and diadochokinesis (ability to perform rapidly alternating movements with one limb)] and blood and urine Al levels were assessed. The blood and urine Al concentrations were approximately 3 and 7 times higher in the Al welders than in the controls, but there were no clear correlations between duration of exposure to Al and concentration of Al in blood or urine. The Al welders reported more acute CNS symptoms (e.g., concentration difficulties) and had decreased motor function in five tests (finger tapping in non-dominant hand, two tasks from the Luria-Nebraska motor scale, pegboard peg movement with dominant hand, amplitude of diadochokinesis in dominant hand) when compared to the control group. Urinary Al concentration was significantly correlated with acute CNS symptoms, but not with any of the performance measures. To further study possible dose-effect relationships of Al exposure, the Al welders were combined with the control group and divided into three exposure categories according to urinary Al levels, using the 50^{th} and 75^{th} percentiles as category dividers. The group with the highest mean urinary Al level had significantly more acute CNS symptoms and significantly reduced performance on one of the motor function tests (a Luria-Nebraska motor

scale task) when compared to the group with the lowest Al level. In an earlier study of 65 welders with ≥10 years of exposure to Al fumes, the highest exposure category (based on exposure duration) was 2.8 times more likely than unexposed workers to have three or more neuropsychiatric symptoms (Sjogren et al., 1990).

A body of epidemiological evidence has pointed to an increased incidence of cancers of various kinds in workers employed in the aluminum production industry. However, as discussed in a review by Ronneberg and Langmark (1992), the concern about potential cancer hazards in the aluminum industry has primarily arisen because of exposures to polycyclic aromatic hydrocarbons (PAHs) and coal tar pitch volatiles (CTPVs) rather than to Al *per se*. Thus, while a number of studies have provided inferential data linking occupationally exposed aluminum workers with an increased risk of developing tumors of the bladder or lung (Gibbs, 1985; Thériault et al., 1984, 1990; Armstrong et al., 1986; Spinelli et al., 1991; Pearson et al., 1993; Tremblay et al., 1995), it would be unwise to ascribe any excess tumor formation to the effects of Al in view of the concurrent exposure to well-documented carcinogenic PAHs such as benzo(a)pyrene. The issue is further complicated by the likely exposure of production workers to other substances such as fluorides, sulfur dioxide, aromatic amines and asbestos (Ronneberg and Langmark, 1992; Tremblay et al., 1995; Dufresne et al., 1996), and to the possible effects of cigarette smoking in affected individuals. Consequently, these studies have failed to provide direct evidence for the carcinogenicity of Al fumes and dusts.

Animal Studies

Oral Exposure

Numerous subchronic animal studies were located in the biomedical/toxicological literature but only those that define the threshold region of the oral dose-response relationship are summarized in this paper. A major limitation of many of the studies of Al toxicity is the lack of complete information on total dietary (e.g., food and drinking water) intake of Al and of other elements that are known to effect Al biokinetics and toxicity (e.g., calcium and magnesium). Estimated or reported dosages used in studies in which Al content of the basal diets are not reported must be assumed to underestimate the actual experimental dosages. The magnitude of the underestimate may be considerable. For example, a range of Al contents of 200-1200 mg Al/kg for commercial grain-based diets (Golub et al., 1992b) would provide 30-200 mg Al/kg bw-day in a subchronic or chronic mouse bioassay [based on U.S. EPA (1988) default values for body weight and food intake]. On this basis, studies in which complete dietary Al intakes were not reported or could not be estimated may provide some information about the hazards of oral exposure to Al but are inappropriate for establishing NOAELs or LOAELs for the critical effect of Al. NOAELs and LOAELs from studies that provide estimates of total Al dosages, or otherwise provide information relevant to determining the NOAEL/LOAEL boundary for the critical effect of Al are presented in Table 1 and are summarized below.

Systemic toxicity

Groups of 10 female Sprague-Dawley rats were administered aluminum nitrate nonahydrate in sugar-containing drinking water at doses of 360, 720 and 3600 mg/kg-day (26, 52

and 259 mg Al/kg bw-day, respectively) for 100 days (Domingo et al., 1987). A control group received sugar-containing distilled water only. Sugar had been added to the drinking water of all groups to reduce the taste-aversive effects of Al. The level of Al in the diet was not reported. Animals were housed in metabolic cages to facilitate the collection of fecal and urine samples. Food and water consumption were measured daily, body weights were noted weekly and blood samples were taken at monthly intervals and at termination to monitor clinical chemistry and hematological parameters. At termination, all animals were necropsied, and the weights of major organs (brain, heart, lungs, kidneys, liver and spleen) were monitored. Aluminum concentrations were measured in various tissues, pieces of which were processed for histopathological examination. A significant decrease ($p<0.05$) in body weight gain was observed in the 259 mg Al/kg-day group, attributed by the authors to decreased food intake. Overall, no consistent variations in hematological (hemoglobin, hematocrit) or clinical chemistry (SGOT, SGPT, alkaline phosphatase, urea, creatinine, total protein, cholesterol, glucose) parameters were observed. No histopathological alterations in the heart, liver, kidney, spleen, brain and cerebellum were observed. Interpretation of these data was complicated by the concurrent exposure of the rats to high doses of nitrate of up to 475 times the RfD for nitrate (1.6 mg nitrate-nitrogen/kg-day) which is based on methemoglobinemia in humans (U.S. EPA, 1999). Therefore, because of nitrate co-exposure, the absence from the study design of a food-restricted control group and uncertainty surrounding the contribution of Al in food, the apparent effect of Al on body weight gain cannot be conclusively attributed to Al alone.

Some recent studies have identified a number of potential toxicological responses in laboratory animals exposed orally to Al compounds in a subchronic or chronic dosing regimen. In most cases, however, only one dose level was employed in the study compared to controls, and since the amount of Al in the diet was not given, the resulting dose level represents an incremental dose of Al compared to that of controls as baseline. However, while these studies may offer inadequate quantitative dosimetric information for NOAEL/LOAEL identification and consequent RfD development, they provide an qualitative indication of a range of potential toxicological responses that might be induced in humans exposed to the element. For example, Garbossa et al. (1998) studied the potential for water-soluble Al to affect the erythropoietic integrity of late erythroid progenitor cells in the bone marrow. Three groups of five male Wistar rats/group were either (1) gavaged with citrate at a dose of 1.0 μm Al/g-day (27 mg/kg-day), 5 days/week, for 15 weeks, (2) had drinking water containing 100 mmol Al/L made available to them as the citrate for the same length of time or (3) maintained as controls. As calculated by the authors, the dose associated with the applied concentration of Al in drinking water approximated to 14-17 μmol/g-day (420 mg/kg-day). Rats had access to a standard chow diet, though with no indication of the baseline concentration of Al provided therein. At the end of the in-life phase of the study, all rats were sacrificed, and samples of blood were obtained for hematological investigation. Femoral bone marrow cells were flushed with physiological medium, stimulated with recombinant human erythropoietin, then monitored for the comparative incidence of colony-forming units-erythroid (CFU-E). Further tests were carried out to monitor the osmotic fragility and average life-span of erythrocytes from each test group. The animals in the group receiving Al at the higher dose showed decreased hematocrit, hemoglobin concentration, median osmotic fragility and erythrocyte life-span values compared to controls. The content of Al increased in the serum and bone of both exposed groups, the distribution of concentrations in bone correlating inversely with the extent of an animal's CFU-E development.

That Al in drinking water may have the ability to cause histopathological changes and altered hepatic enzyme activities was suggested by Basu et al. (1997) who made available aluminum chloride in drinking water to groups of eight male Sprague-Dawley rats at a dose of 50 mg/kg-day (10.1 mg Al/kg-day) for 40 days. Additionally, other groups of similarly-treated rats received drinking water containing either 0, 50, 100, 200 or 400 ppm (mg/L) added calcium (Ca), as the chloride. The authors reported increased specific activities of acid and alkaline phosphatases in liver 10,000 x g supernatants from Al-receiving animals versus controls, and in alkaline phosphatase activity in equivalent kidney preparations. The presence of Ca in the drinking water appeared to reverse these changes, plus the accompanying histopathological features associated with them.

Konishi et al. (1996) examined the ability of Al and Ca to cause opposite and potentially harmful effects in laboratory animals, in relation to the well-documented association between Al and the onset of osteomalacia. Male STD Wistar rats were divided into four groups (n=4), receiving either (1) a normal diet (Group I), (2) a normal diet supplemented with Al (Group II), (3) a Ca-deficient diet (Group III) or (4) a Ca-deficient diet with supplemental Al (Group IV), for 10 weeks. Blood samples were taken at termination, and then animals were perfused with paraformaldehyde/glutaraldehyde fixative. Levels of Ca, iron (Fe) and Al in serum and bone were measured by atomic absorption spectrophotometry, and sections of the resected right tibia were prepared for histopathological examination after decalcification in 5% formic acid in 10% formalin.

There were statistically-significant changes in body weight gain when those of groups 3 and 4 were compared to animals from groups 1 and 2, the values for the latter groups remaining constant from about 4 weeks of dosing. In discussing their histopathological findings, the authors described no decrease in the thickness of cortical bone in Group II compared to control, while bone specimen from Groups III and IV showed “an increase in osteoid as well as osteoblasts and osteoclasts”, in addition to other disturbances of ossification. Such effects were considered to suggest bone fragility, with changes being more marked in Group IV compared to III. The amount of Al in the tibia of exposed rats was significantly greater in Group II than in Group I, whereas the average levels in Groups III and IV showed a further increase in Al deposition, most notably in group IV. There were also differences among the groups in the concentration of Fe in bone (tibia), and in the concentrations of Al, Ca, Fe and the levels of parathyroid hormone in blood. The authors concluded that Ca deficiency appeared to potentiate the deposition of orally administered Al in bone, and the attendant inhibition of ossification. Iron deposition was also thought to play a role in the osteogenic disturbance, where Ca is deficient.

A histopathological investigation indicated profound changes in the cerebrovascular and neuronal integrity when male Long-Evans rats (n=9) were exposed for 52 weeks to 0.5 ppm aluminum fluoride in drinking water (Varner et al., 1998). This corresponded to an Al dose of 0.019 mg/kg-day, based on a default drinking water consumption of 0.057 L/day, and a default body weight of 0.472 kg for male Long-Evans rats (U.S. EPA, 1988). Duel control groups received either NaF (fluoride controls) or double distilled deionized water. Tissue levels of Al were measured in brain, liver and kidney by the use of a direct current plasma technique.

Animals receiving aluminum fluoride showed poor survival compared to the other groups, with 6/9 having died by week 48. The tissue concentrations of Al were increased in the brain and kidney compared to both the control groups, with Al-fluorescence being used to demonstrate that Al deposition was mostly in the vasculature. Morphological and histopathological changes due to treatment were apparent in the liver, kidney and spleen. Some changes in neuronal integrity were also evident in the hippocampus and neocortex. Other cytological changes in the brain were associated with chromatid clumping, pyknosis and vacuolation.

A report by Somova et al. (1997) describes a study in which 10 male Wistar rats/group received either 0, 5 or 20 mg/kg-day aluminum chloride by gavage in water for 6 months. At termination, all animals were exsanguinated, then subjected to a necropsy in which excised pieces of liver, kidney and cardiac and skeletal muscle were taken for histopathological examination. Pieces of brain were examined by electron as well as light microscopy, and all tissues were monitored for Al concentration by atomic absorption spectrophotometry. As tabulated by the authors, Al in plasma and all of the listed tissues was dose-dependently increased to levels that were statistically significantly greater than controls. However, though described in qualitative terms and illustrated photographically, the Al-induced lesions did not receive a quantitative treatment in the report. Thus, while at least some of the low dose rats displayed NFD (neuro fibrillar degeneration) of the hippocampal region of the brain, insufficient data are provided in the report to apply this observation to the identification of a NOAEL or LOAEL.

Dietary experiments

Six Beagle dogs/sex/group were fed a diet providing either, in males, 0, 118, 317 or 1034 mg/kg-day sodium aluminum phosphate (0, 3.4, 9.0 or 29.4 mg Al/kg-day, respectively) or, in females, 0, 112, 361 or 1087 mg/kg-day sodium aluminum phosphate (0, 3.2, 10.3 or 30.9 mg Al/kg bw-day, respectively), for 6 months (Katz et al., 1984). No information was available on the level of Al in the diet, and no compound-related effects on body weight gain, hematological and clinical chemistry parameters (parameters not specified) or histopathological endpoints (major organs and tissues examined) were observed. A highest NOEL of 30.9 mg Al/kg-day could be tentatively identified in this study, but this would not include the contribution of Al from the basal diet, nor reflect the identification of any toxicological effects, since the NOEL occurred at the upper limit of the dose-response curve.

Neurotoxicity

A number of studies have been reported in which neurotoxicological/neurobehavioral effects have been explicitly evaluated. In others, the effects of Al on neurological developmental have been addressed. For example, Golub et al. (1989) fed diets containing Al as the lactate at 25 (controls), 500 or 1000 mg Al/kg diet (3.3, 65 or 130 mg Al/kg-day) to groups of 15 female Swiss-Webster mice for 6 weeks (Golub et al., 1989). No mice were exposed to lactate alone. While no statistically significant differences in food intake or body weight gain were observed, mice fed the highest Al concentration gained less weight than the controls or low-dose group. As reported by the authors, a significant decrease (20%) in spontaneous motor activity (i.e., total, vertical and horizontal movement) was observed in the 130 mg Al/kg-day group. Activity in the

65 mg Al/kg-day group was not significantly different than the controls. Thus, the highest NOAEL is 65 mg Al/kg-day and the LOAEL is 130 mg Al/kg-day.

Neurobehavioral effects of aluminum lactate were evaluated in groups of 12 female N:NIH Swiss-Webster mice (4.5-5.5 weeks old) that were fed 25 (controls) or 1000 mg Al/g diet for 90 days (Golub et al., 1992a). Based on a food factor of 0.19 kg diet/kg body weight/day calculated using an algorithm relating food consumption to body weight (U.S. EPA, 1988) and reported body weight data (the time-weighted average weight is 25.4 g), the dosage in the treated mice is estimated to be 190 mg Al/kg bw-day. No mice were exposed to lactate alone. A neurobehavioral test battery used by Donald et al. (1989) was administered at the beginning of the experiment (day 0) and after 45 and 90 (±3) days, with motor activity evaluated at the latter two time points. Aluminum levels were measured in brain, femur and liver at the end of the exposure period.

Body weight was significantly increased in the treated mice but no exposure-related changes in food intake or overt signs of neurotoxicity were observed. Results of the neurobehavioral tests showed significantly decreased hindlimb grip strength at 90 days, decreased air puff startle response at 90 days and decreased auditory startle response at 45 days in the treated mice. Spontaneous motor activity was reduced at 90 days as indicated by decreased total activity counts, horizontal activity counts and percentage of intervals with high activity counts. Aluminum concentrations in the brain and liver were increased approximately 3-fold in the treated mice, but brain and liver lipid peroxidation indices were not altered.

Male Wistar rats (6-8 per group) were exposed continuously for 6 months to food containing 1.52 mg Al/kg (normal diet) or 1000 mg Al/kg as aluminum chloride with citrate (Florence et al., 1994). The average daily Al intake was estimated to be 0.13 or 84 mg Al/kg bw-day, assuming a body weight of 0.305 kg (arithmetic mean of default mature weight of male Wistar rats and the starting weight in this study of 0.11 kg) and a food intake of 0.026 kg food/kg bw-day, calculated using an algorithm relating food intake to body weight (U.S. EPA, 1988). The citrate content of the diet was in a 1:1 stoichiometric proportion to Al, therefore, the estimated daily intake was 598 mg/kg-day. Rats exposed to Al developed histopathological abnormalities in brain tissue, not specific to any brain region, characterized by extensive cytoplasmic vacuolization in astrocytes, swelling of astrocytic processes, particularly of astrocyte end-feet abutting blood vessels. Neurons also exhibited vacuolization and nuclear inclusions. Although no specific behavioral assays were reported, the investigators noted that "no significant behavioral changes were observed". Accordingly, the functional significance of the histopathological lesions is uncertain. The lesions appear to differ from the NFD observed with parenteral Al exposures (Kowall et al., 1989; Wakayama et al., 1993); or from exposures to Al in combination with calcium deprivation (Garruto et al., 1989; Kihira et al., 1995; Mitani, 1992). The LOAEL for histopathological changes in the brain was 84 mg Al/kg-day.

Male Sprague-Dawley rats (40 per group) were exposed in drinking water to 0, 50 or 100 mg Al/kg bw-day as aluminum nitrate with citric acid for 6.5 months beginning at 21 days of age, 8 months of age or 16 months of age (Domingo et al., 1996). The citric acid dosage was 355 or 710 mg/kg-day in the 50 or 100 mg Al/kg bw-day groups, respectively. Controls did not receive citric acid. Dietary Al intake was not reported; the rats were maintained on Panlab rat

chow. Animals from control and exposed groups were subjected to a number of neurobehavioral tests, and at termination, Al levels were measured in various excised regions of the brain. The authors observed the highest Al levels in the olfactory bulb and rhachidical bulb, while the cortex and thalamus were the regions showing the lowest Al content. However, compared to controls, there were no significant effects ($p>0.05$) of Al (with citric acid) on spontaneous motor activity (open-field) or passive avoidance operant training or performance (grid floor shock, light/dark shuttle box). Thus, the NOAEL was 100 mg Al/kg-day with citric acid; although this does not include the Al contribution from food. This study is listed on Table 1 because the NOAEL, although probably underestimated because of unreported Al intake from food, is still lower than the LOAELs from other studies.

Groups of six male albino rats were administered 0 or 25 mg Al/kg bw-day as aluminum nitrate in normal saline by gavage, 10% ethanol in drinking water, or 25 mg Al/kg bw-day by gavage combined with 10% ethanol in drinking water, 6 days/week for 6 weeks (Flora et al., 1991). The level of Al in the diet was not reported. Urinary Δ-aminolevulinic acid (ALA), blood ALA-dehydratase (ALAD), blood zinc protoporphyrin (ZPP), glutamic oxaloacetic transaminase (GOT) and glutamic pyruvic transaminase (GPT) in serum and liver and brain biogenic amines and their metabolites [dopamine (DA), norepinephrine (NE), 5-hydroxytryptamine (5-HT), homovanillic acid (HVA) and 5-hydroxyindolacetic acid (5-HIAA)] were evaluated at the end of the treatment period. Treatment with Al alone caused significantly increased blood ALAD ($p<0.01$), decreased liver GPT ($p<0.05$), decreased brain DA ($p<0.01$), increased brain NE ($p<0.05$) and decreased brain 5-HT ($p<0.05$). Compared to treatment with Al alone, concurrent exposure to ethanol and Al produced significantly decreased ALAD, increased ALA, increased ZPP, increased liver GPT, increased serum GOT and increased brain HVA. Significant changes found only in the combined Al and ethanol group included increased serum GPT, increased brain NE and decreased brain 5-HT. Treatment with ethanol alone only inhibited blood ALAD. The rats were co-exposed to relatively high levels of nitrate [comparable to those in the Domingo et al. (1987) subchronic study], but it seems likely that some of the changes (i.e., effects on brain chemicals) are related to aluminum which is known to be neurotoxic. Because the toxicological significance of the changes is unclear due to lack of evaluation of neurobehavioral performance and other endpoints, there is uncertainty whether the 25 mg Al/kg-day dose is a NOAEL or a LOAEL, an uncertainty compounded by the absence of information about the level of Al in the basal diet.

Reproductive/developmental toxicity

A number of studies have been carried out to examine the effects of Al compounds on developmental toxicity, particularly their effects on postnatal neurobehavioral development. For example, Bernuzzi et al. (1989) exposed groups of 6-12 pregnant Wistar rats to aluminum chloride or aluminum lactate in the diet on gestational days 1 through 21. The rats received nominal daily doses of 0, 100, 300, 400 mg Al/kg as aluminum chloride or 0, 100, 200 or 400 mg Al/kg as aluminum lactate. No rats were exposed to lactate alone, and information regarding level of Al in the basal diet was not reported. On the average, there was a less than 10% decrease in maternal body weight gain and no effect on food or water intake. No significant difference in litter size was observed. However, postnatal mortality increased 55% and 26% in offspring of the rats exposed to 300 or 400 mg Al/kg-day, respectively. The offspring of dams

fed ≥300 mg Al/kg-day weighed significantly less than controls on postnatal day 1. Decreased body weight was also observed on postnatal days (PD) 4 and 14 in the offspring of rats fed 400 mg Al/kg-day as aluminum lactate. The following tests were used to assess neuromotor development (maturation): righting reflex, grasping reflex, negative geotaxis, suspension test and locomotor coordination. The tests were performed on PDs 4, 6, 9, 12 and 20, respectively. Impairment of neuromotor development (righting and grasping reflexes) was observed in the pups exposed to ≥200 mg Al/kg-day. Impaired grasping reflex was also observed in the 100 mg/kg-day aluminum lactate group. Offspring of rats fed 400 mg/kg-day also exhibited altered performance on the locomotor coordination test.

A follow-up study by the same research group found that ingestion of 400 mg Al/kg bw-day as aluminum lactate had no effect on postnatal mortality, body weight and righting and grasping reflex tests (Muller et al., 1990), although significant differences between control and exposure groups were noted in locomotor coordination and operant conditioning tests. Significant differences between controls and exposed groups in the negative geotaxis test were limited to those pups of dams treated during the second and third weeks of gestation, a finding interpreted by the authors to indicate the possibility of long-term effects on the central nervous system of trans-placenta exposure to Al during a later organogenic phase. According to Muller et al. (1990), the contradictions between this and their earlier study (Bernuzzi et al., 1989) could be related to environmental modifications. In particular, the mothers and pups were much more protected in the Muller et al. (1990) study than in the previous one because they were housed in plastic cages instead of wire mesh cages and received cotton to build nests. Body temperature of the pups, therefore, may have been more adequately maintained in the Muller et al. (1990) study. As discussed in this study, toxicity in pups can be confounded by insufficient body temperature, and delayed pup weight gain could explain the differences in neuromotor performance.

Muller et al. (1990) administered diets supplemented with 0 or 400 mg Al/kg bw-day as aluminum lactate to groups of 6-9 pregnant Wistar rats on days 1-7, 1-14 or 1-21 of gestation. No rats were exposed to lactate alone, and information regarding level of Al in the basal diet was not reported. Neuromotor development was assessed on postnatal days 4, 6, 9, 12 and 20 using tests of righting reflex, grasping reflex, negative geotaxis, suspension and locomotor coordination, respectively. Learning ability was also tested on PD 65 using operant conditioning. No effects on maternal body weight or food intake were observed in dams exposed on gestational days 1-7 or 1-14. In the dams exposed on gestational days (GD) 1-21, a significant decrease in maternal body weight (26 and 35%, respectively) was observed on days 16 and 19 of gestation. Decreased food intake was also observed on day 19 of gestation. No effects on litter size, postnatal mortality or postnatal body weight were observed. Impairment of neuromotor development ($p<0.05$) was observed in two of the five tests (negative geotaxis and locomotor coordination); no differences between the three treated groups were observed. For the operant conditioning test, there were significant differences ($p<0.05$) between the treated and control young rats. No differences between the three treated groups were observed. The LOAEL for developmental toxicity is 400 mg Al/kg-day, but this does not include the contribution of Al from the basal diet.

Groups of 10 pregnant Sprague Dawley rats were administered 180, 360 or 720 mg/kg-day aluminum nitrate nonahydrate by gavage (13, 26, 52 mg Al/kg bw-day) on GDs 6-14

(Paternain et al., 1988). A vehicle (water) only control group was used. The level of Al in the diet was not reported. Aluminum exposed dams gained significantly less weight than the controls. No significant effects on the numbers of litters, corpora lutea, total implants, live fetuses, resorptions or runt fetuses were observed. Significant decreases in fetal body weight and tail length were observed at all three Al doses; decreased fetal body length was also observed at the 52 mg Al/kg-day dose level. No dose-related external or visceral malformations were observed in the offspring. However, a significant increase in the incidence of skeletal malformations (delayed ossification, hypoplastic deformed ribs) was observed at all three treatment levels. In addition, the incidence of hematomas was significantly increased at the high dose. Because the rats were co-exposed to relatively high levels of nitrate [comparable to those in the Domingo et al. (1987) subchronic study], the effects of treatment cannot be conclusively attributed to Al alone, in the absence of a nitrate-exposed control group.

By contrast to the striking findings of potentially teratogenic effects of aluminum nitrate in Sprague-Dawley rats, as described above (Paternain et al., 1988), equivalent experiments by Domingo et al. (1989) in Swiss mice did not reveal any reproductive, developmental or teratogenic effects of Al, when administered to dams as the hydroxide. Domingo et al. (1989) administered by gavage 0, 66.5, 133 or 266 mg/kg-day aluminum hydroxide (0, 23.9, 47.8 or 95.5 mg Al/kg bw-day) to groups of 20 pregnant Swiss mice on GD 6-15. The level of Al in the diet was not reported. The dams were killed on GD 18. No compound-related effects were observed on maternal mortality, clinical signs, body weight, food intake or absolute or relative heart, lung, spleen, liver, kidney and brain weights. In addition, no compound-related effects were observed on numbers of implantations, resorptions, live and dead fetuses, sex ratio and the incidences of external malformations, internal soft-tissue defects or skeletal abnormalities. Therefore, this study identifies a NOEL of 95.5 mg Al/kg-day by default for reproductive, developmental and teratogenic toxicity in mice. However, neuromotor development was not assessed and the contribution of Al from the basal diet was not stated in the report.

A number of studies have been designed to evaluate the influence of citrate or lactate on the potential developmental toxicity of Al. For example, Gomez et al. (1991) exposed groups of 15-19 pregnant Sprague-Dawley rats to either distilled water (controls) or 133 mg Al/kg bw-day in the form of either aluminum hydroxide (384 mg/kg-day), aluminum citrate (1064 mg/kg-day) or aluminum hydroxide (384 mg/kg-day) concurrent with citric acid (62 mg/kg-day) by gavage on GD 6-15. The level of Al in the diet was not reported and no rats were exposed to citric acid alone. Terminations were performed on GD 20. Maternal and fetal evaluations showed exposure-related effects only in the group exposed to aluminum hydroxide and citric acid concurrently. Significant changes included reduced maternal body weight gain on GDs 6-20 (but not at sacrifice on day 20), reduced fetal body weight and some skeletal variations (increased delayed occipital and sternebrae ossification and increased absence of xiphoides). No effects were seen on maternal food consumption or clinical signs, maternal absolute or relative liver, kidney or brain weights, gravid uterine weight, corpora lutea/dam, implantations/litter, pre- or postimplantation loss/litter, viable or nonviable implants/litter, fetal sex ratio or fetal malformations (external, visceral or skeletal). This study identified a stand alone minimum LOAEL of 133 mg Al/kg-day for non-neurobehavioral developmental toxicity of aluminum hydroxide and aluminum citrate in rats. Although confidence in this LOAEL is low (because aluminum hydroxide administered concurrently with citric acid induced did developmental

effects and because the dose does not include a contribution of Al from the basal diet) the value is consistent with the developmental NOAEL of 95.5 mg Al/kg-day for aluminum hydroxide in mice (Domingo et al., 1989).

In a similar experimental protocol, groups of 11-13 pregnant female Swiss albino (CD-1) mice were administered 57.5 mg Al/kg bw-day as either aluminum hydroxide (166 mg/kg-day), aluminum lactate (627 mg/kg-day) or aluminum hydroxide (166 mg/kg-day) concurrent with lactic acid (570 mg/kg-day) by gavage on gestation days 6-15 (Colomina et al., 1992). Other groups were treated with lactic acid alone (570 mg/kg-day, equivalent to the amount in 627 mg/kg of aluminum lactate) or distilled water (controls). The level of Al in the diet was not reported. Fetal evaluations were performed on GD 18, including examinations for skeletal and visceral abnormalities in approximately two-thirds and one-third of the pups, respectively. The investigators noted that the dose of Al (57.5 mg/kg-day) is equivalent to ingestion of 3.5 g Al/day by a 60 kg person, which is higher than the usual quantities of Al ingested therapeutically for peptic disorders. Maternal body weight gain was significantly lower than control values in the aluminum lactate-treated mice when evaluated over GDs 6-9 (92%), 6-12 (55.6%) and 0-18 (38.5%) and in the mice treated with combined aluminum hydroxide and lactic acid evaluated over GDs 6-12 (37.8%), 6-15 (42.7%) and 0-18 (15.7%). The decreased maternal weight gain in the aluminum lactate group was accompanied by significantly reduced food consumption during gestation days 6-18. Significant developmental and/or teratological effects in the aluminum lactate group included 16% reduced fetal body weight ($p<0.01$) and increased incidences of cleft palate (13.2%, $p<0.05$), dorsal hyperkyphosis (i.e., excessive flexion of spine) (13.5%, $p<0.05$) and delayed parietal ossification (15.4%, $p<0.01$). These developmental effects were not observed in any of the control or aluminum hydroxide exposed pups, and the only other significant changes in the other groups were decreased maternal relative liver weight and delayed fetal parietal ossification in the lactic acid only exposure group. Other types of internal or skeletal malformations or variations were not found in any of the fetuses. Additionally, no effects were seen on maternal absolute or relative kidney weight, gravid uterine weight, numbers of implantation sites/litter, live or dead fetuses, resorptions, postimplantation loss/litter, litters with dead fetuses or fetal sex ratio in any of the groups. By analogy to the findings of the Domingo et al. (1989) and Gomez et al. (1991) studies, the lack of developmental effects of aluminum hydroxide at the tested dose could be related to low solubility and absorption.

In a more recent study, pregnant Swiss mice were administered gavage doses of 0 or 104 mg Al/kg bw-day as aluminum hydroxide on days 6-15 of gestation (Colomina et al., 1994). Dietary Al intake was not reported; the mice were maintained on Panlab rodent chow. Compared to controls, there were no effects ($p>0.05$) of Al on maternal body or organ weight, number of implantations per litter, number of resorptions per litter, number of dead fetuses per litter, percentage of positive post-implantation loss, sex ratio or fetal body weight per litter. Gross external, visceral or skeletal examination of fetuses revealed no abnormalities or developmental variations. Thus, the NOAEL for development effects from this study is 104 mg Al/kg-day, however, this does not include the Al contribution from food. Thus, based on this study and the previous study (Colomina et al., 1992), aluminum lactate appears to be more potent as a developmental toxicant in mice than the less water soluble aluminum hydroxide.

Groups of 16 pregnant Swiss-Webster mice were fed 25 (control group), 500 or 1000 mg Al/kg diet as aluminum lactate throughout gestation and lactation (Donald et al., 1989). The control diet was fed to pups that were selected for post-weaning neurobehavioral assessment. Reported maternal doses were 5, 100 and 200 mg Al/kg bw-day at the beginning of pregnancy and 10.5, 210 and 420 mg Al/kg bw-day near the end of lactation. No mice were exposed to lactate alone. There were no treatment-related changes in maternal survival, body weight (measured on GD 0 and 16 and PDs 0, 5, 10, 15 and 20), food intake, toxic signs or neurobehavior (evaluated after pups were weaned at PD 21 using the same test battery used for the pups and described below), or on litter size or postnatal growth and development in pups as assessed by body weight, toxic signs on PDs 0-55, and by crown-rump length on PDs 0 and 20. Neurobehavioral maturation was tested in two pups per litter on PDs 8-18 with a 12-item test battery (fore- and hindlimb grasp, fore- and hindpaw placement on sticks of 2 widths, vibrissa placing, visual placing, auditory and air puff startle, eye opening and screen grasp, cling and climb). A neurobehavioral test battery was administered to six pups per litter at age 25 days (4 days postweaning) or 39 days (fore- and hindlimb grip strengths, temperature sensitivity of tail, negative geotaxis, startle reflex to air puff and auditory stimuli) or age 21 and 35 days (foot splay). The pre-weaning neurobehavioral testing showed that a significant ($p=0.007$) number of pups in the high dose group had impaired vertical screen climb performance. The postweaning neurobehavioral assessment showed significantly ($p<0.05$) altered performance on several tests. These included decreased forelimb grip strength at age 39 days in the low dose group, increased hindlimb grip strength at age 25 days in both low and high dose groups, increased foot splay distance at age 21 days in both low and high dose groups and at age 35 days in the low dose group, and increased forelimb grip strength at age 25 days and decreased thermal sensitivity at age 25 and 39 days in the high dose group. There were no treatment-related changes in concentrations of Al in pup liver or bone (brain tissue was not analyzed).

In a more recent study of similar design by the same group of investigators, groups of 14 and 9 female Swiss Webster mice (6-8 weeks old) were fed 25 (control) or 1000 mg Al/g diet as aluminum lactate, respectively, during gestation and lactation (Golub et al., 1992b). The 1000 mg/g concentration was selected based on the demonstration of neurobehavioral effects in weanlings at this level (Donald et al., 1989). No mice were exposed to lactate alone. Using food intake and body weight values estimated from reported data, maternal doses are estimated to be approximately 4.3 and 174 mg Al/kg bw-day at the beginning of gestation and 4.8 and 607 at the end of the lactation period. At birth, litters were fostered either within or between groups to provide four groups of offspring that were exposed to excess Al via maternal diet during gestation, lactation, both or neither (i.e., 25 ppm during gestation and lactation, 1000 ppm during gestation and 25 ppm during lactation, 25 ppm during gestation and 1000 ppm during lactation, and 1000 ppm during gestation and lactation). Maternal effects included significantly ($p\leq0.015$) reduced (10-12%) body weight gain and food intake in the treated group during late pregnancy and lactation, and signs of neurotoxicity (hindlimb splaying and dragging) in one treated dam at postnatal day 21 (weaning); this dam had seizures and died 4 days later. No treatment-related effects on litter size, birth weight, crown-rump length, righting ability at birth, sex ratio or postnatal survival were observed. Both gestation-only and lactation-only exposure caused significantly ($p<0.05$) decreased body weight gain in the treated pups beginning on postnatal day 10; combined gestation and lactation exposure produced the greatest decrease (approximately 24% at weaning). Neurobehavioral testing using the same battery as Donald et al. (1989) was

performed at weaning on the dams and on a total of 12, 16, 12 and 6 pups (1 male and 1 female pup per litter) from the control, gestation-only, lactation-only and combined gestation and lactation groups, respectively. Results of this testing showed effects only in pups, including significantly decreased forelimb grip strength after gestation-only exposure, increased hindlimb grip strength after both gestation and lactation exposure, decreased temperature sensitivity after lactation-only exposure, and longer negative geotaxis latency after lactation-only exposure. In general, the findings of this study are consistent with those of Donald et al. (1989) in showing neurodevelopmental effects at the 1000 mg/kg dietary concentration, although intake dosages are dissimilar at the end of lactation. Using the dosage at the beginning of gestation, this study defines a LOAEL of 174 mg/kg-day for developmental effects.

The Donald et al. (1989) study differs from that of Golub et al. (1992b) in that offspring were not fostered, were tested at a later age (25 vs. 21 days), were allowed 4 days of recovery from the treated diet prior to testing, participated in other behavioral tests currently, and experienced no growth retardation. The effects found only in the cross-fostered groups in the Golub et al. (1992b) study (lower forelimb strength after gestation exposure and altered negative geotaxis latencies after lactation only exposure) were not observed by Donald et al. (1989). Increased footsplay was observed by Donald et al. (1989) but not by Golub et al. (1992b), perhaps due to an opposing effect of smaller pup body size in this study. Neither gestation or lactation exposure affected pup brain or liver Al concentrations, but lactation exposure caused significantly lower manganese and iron concentrations in liver and manganese concentrations in brain.

In a further extension of the two previous studies (Donald et al., 1989; Golub et al., 1992b), pregnant female Swiss-Webster mice were exposed continuously to a semi-purified diet containing 7 (control), 500 or 1000 mg Al/kg from the time of conception, through pregnancy and lactation (Golub et al., 1995). At weaning, pups were exposed to the same Al diet as their mothers (500 or 1000 mg Al/kg) until they were 150-170 days of age or were switched to the control diet (7 mg Al/kg) for the same time period. Based on reported dosages in previous studies by the same investigators, estimated daily dosages for mice exposed to 1000 mg Al/kg diet were as follows: 200 mg/kg bw-day in pregnant mice, 420 mg/kg-day in lactating mice and 130 mg/kg-day in offspring (Golub et al., 1994); doses for the mice exposed to 500 mg Al/kg diet were assumed to be approximately half of that of mice fed 1000 mg Al/kg, or 100 mg/kg-day in pregnant mice, 210 mg/kg-day in lactating mice and 65 mg/kg-day in offspring. Compared to the control diet, the Al diet had no effect on dam weight, gestation length, litter size, pup weight, offspring growth or organ weights. Operant conditioning (nose poke) of offspring for delayed spatial alternation or discrimination reversal tasks was initiated at 50 days of age and continued 5 days/week for a total of 35 sessions. A neurobehavioral test battery was conducted when the offspring were 150-170 days of age (forelimb and hindlimb grip strength, temperature sensitivity, negative geotaxis, air puff and auditory startle response). Maternal and pre-weaning exposure to 500 mg Al/kg significantly affected ($p<0.05$) operant training in the offspring, but not performance after training in delayed spatial alternation or discrimination reversal tasks (i.e., decreased number of training sessions to achieve the training criteria). This exposure also significantly decreased forelimb and hindlimb grip strength and puff startle response ($p<0.05$). Pre-weaning and combined pre- and post-weaning exposure to 1000 mg Al/kg significantly increased ($p<0.05$) incidence of cagemate aggression at the time behavioral

testing. No effects were observed on auditory startle response, temperature sensitivity or negative geotaxis in offspring. Histopathological examination of the brain and spinal cord revealed no treatment-related changes. Thus, the LOAEL for combined maternal and pre-weaning exposure on neurobehavioral effects in mice would approximate to 100 mg Al/kg-day (estimated daily maternal dosage).

Pregnant Charles River CD rats were administered gavage doses of 0, 250, 500 or 1000 mg Al/kg bw-day ("experiment A") or 0, 5, 25, 50, 250 or 500 mg Al/kg bw-day ("experiment B") as aluminum lactate in distilled water on GDs 5-15 (Agarwal et al., 1996). Dietary Al intake was not reported. Offspring were examined for body weight, anogenital distance, oestrus cycle regularity (after puberty), duration of pseudopregnancy induced by mechanical stimulation of the cervix, oocyte production induced by an injection of human chorionic gonadotropin, and male and female gonad weights. Aluminum had no effect on litter size and no consistent effects on birth weight were observed. For example, birth weights were decreased in male offspring from dams that received 250 mg Al/kg-day, but not at higher dosages, and the effect was observed only in experiment A. Female offspring birth weights decreased at certain dosage levels in experiment A and increased at these same dosage levels in experiment B. Similar inconsistencies between experiment A and B were observed for gonadal weights, anogenital distance, time to puberty (vaginal opening), duration of pseudopregnancy or numbers of superovulated oocytes. A significantly increased ($p<0.05$) number of abnormal oestrus cycle lengths (defined as less than 4 days or greater than 5 days) occurred in offspring from dams that received 250 mg Al/kg-day (in experiment A, the endpoint was not measured in experiment B). However, the effect was most pronounced in the first three oestrus cycles (of five observed) and not detected by the 5th cycle. Thus, the NOAEL for temporary disturbance of the oestrus cycle in offspring of dams administered Al is 250 mg Al/kg-day. NOAELs for all other reproductive endpoints in this study were 1000 mg Al/kg-day. These NOAELs do not include the contribution of Al in food.

In a three-generation study, Ondreicka et al. (1966) exposed initial groups of seven female and three male Dobra Voda mice to either 0 or 19.3 mg Al/kg bw-day as aluminum chloride in drinking water. The diet also contained 160 to 180 ppm Al, giving an estimated intake of 27-31 mg/kg-day based on default values for food consumption and body weight for chronic exposure of mice (U.S. EPA, 1988). Using this estimate, the total Al intakes (drinking water and food) were 27 mg/kg-day (controls) and 46.3 mg/kg-day (exposed group). The P_0 group produced three litters (designated F_{1a}, F_{1b} and F_{1c}) and the F_{1a} group produced two litters (designated F_{2a} and F_{2b}) from which the weanlings were exposed to Al in the drinking water starting at 4 weeks of age. There was no difference in body weight gain among the groups in the P_0 generation, a result that contrasted with the striking decrease in this parameter in the treated F_{1b}, F_{1c}, F_{2a} and F_{2b} groups. Though no effects on erythrocyte count, hemoglobin levels or histopathology of the liver, spleen and kidneys were observed in the P_0, F_1 or F_2 generations at the end of the study and no significant differences were seen in the number of litters or offspring between the exposed and control groups, the study identified a LOAEL of 46.3 mg Al/kg-day, based on the observed changes in body weight gain.

Other toxicological effects of aluminum

In a study designed to determine the effects of oral Al exposure on susceptibility to bacterial infection, female Swiss-Webster mice (13-14 per group) were exposed to a diet containing 25 (control), 500 or 1000 mg Al/kg as aluminum lactate during pregnancy, through lactation and for 10 days following weaning of the pups (Yoshida et al., 1989). Based on reported dosages in previous studies by the same investigators, estimated daily dosages for mice exposed to 1000 mg Al/kg diet are as follows: 200 mg/kg-day during pregnancy and 420 mg/kg-day during lactation; doses for the mice exposed to 500 mg Al/kg diet are assumed to be approximately half of that of mice fed 1000 mg Al/kg, or 100 mg/kg-day in pregnant mice and 210 mg/kg-day in lactating mice (Golub et al., 1994). At weaning, dams and pups were inoculated with a tail vein injection of *Listeria monocytogenes* and monitored for mortality for 10 days. In a separate experiment, female mice, 6 weeks of age, were exposed to the same dietary Al levels for 6 weeks and then inoculated with *L. monocytogenes*. Estimated Al dosages were 5, 98 or 195 mg Al/kg bw-day for the 25, 500 or 1000 mg Al/kg dietary levels, respectively, based on a default food factor of 0.195 kg diet/kg bw-day assuming a reference "subchronic" food intake and body weight for female B6C3F1 mice over the period from weaning to 90 days (U.S. EPA, 1988). Inoculation resulted in significantly greater ($p<0.025$) mortality in dams exposed to 500 or 1000 mg Al/kg diet compared to controls. There were no differences in mortality between the groups of inoculated pups or between groups of inoculated adult mice exposed to Al for 6 weeks. The LOAEL for pregnant mice was 100 mg Al/kg bw-day and the NOAEL for adult, non-pregnant mice was 195 mg Al/kg bw-day. Although the exposure duration in this study was only 7 weeks, it is included in Table 1 because it provides the only dose-response data on the effects of Al on resistance to pathogens.

Carcinogenicity studies

Schroeder and Mitchener (1975a) exposed 52 Long-Evans rats/sex/group to 0 or 5 ppm Al as potassium aluminum sulfate in drinking water for life. Based on default values for drinking water consumption and body weight for this strain of rat in a chronic study (U.S. EPA, 1988), these values are equivalent to Al doses of 0.472 and 0.67 mg/kg-day, for males and females, respectively. Study endpoints included body and heart weight; serum glucose, cholesterol and uric acid; and urinary protein, glucose and pH. All animals were necropsied at the time of natural death, and histological examinations were carried out on heart, lung, kidney, liver, spleen and gross tumors, for approximately 50% of the animals in the group. The only remarkable finding was a significant increase ($p<0.005$) in gross tumor incidence in exposed male rats [13/25 (52%) compared to 4/26 (15%) in controls], although the tumor sites were not reported. Six of the tumors in the exposed males (46% of total) were considered malignant compared to two malignant tumors (50% of total) in the male controls. There were no significant differences in tumor incidences between exposed and control females.

In another study by the same investigators, 54 Swiss mice/sex/group were exposed to drinking water containing 0 or 5 ppm Al as aluminum potassium sulfate for life (Schroeder and Mitchener, 1975b). Based on default values for drinking water consumption and body weight for B6C3F1 mice in a chronic study (U.S. EPA, 1988), these values approximate to Al doses of 1.2 mg/kg-day in both males and females. Study endpoints included body weight, gross pathology,

and some limited histology of the heart, lung, liver, kidney and spleen. The incidences of gross tumors were 15/41 (36.6%) and 11/38 (28.9%) in exposed and control males, respectively, and 19/41 (46.3%) and 14/47 (29.8%) in exposed and control females, respectively, differences that did not achieve statistical significance by Fisher's exact test, although incidences of multiple tumors and lymphoma leukemia were considered by the authors to be significantly increased in females ($p<0.025$ and $p<0.05$, respectively). However, a definitive assessment of aluminum carcinogenicity in both this and the rat study (Schroeder and Mitchener, 1975a) is precluded by the limitations of the pathology examinations and reporting.

In a more recent study, the tumorigenic potential of aluminum potassium sulfate was assessed in B6C3F1 mice chronically exposed in the diet (Oneda et al., 1994). Sixty animals/sex/group were fed a diet containing 0, 1.0, 2.5, 5.0 or 10.0% (w/w) for 20 months. These concentrations of aluminum potassium sulfate (as the dodecahydrate) are equivalent to 0, 569, 1422, 2844 and 5687 ppm Al. Using food factors calculated with an algorithm relating food consumption to body weight (U.S. EPA, 1988) and body weight data estimated from growth curves reported by the investigators, the dosages of aluminum are estimated to be 0, 95, 237, 483 or 1024 mg Al/kg-day in males and 0, 97, 242, 512 or 1110 mg Al/kg-day in females. Clinical signs, food consumption, and body weight were evaluated weekly. Hematology, clinical chemistry or urine endpoints were not assessed. Necropsies that included organ weight measurements and comprehensive histological examinations (including brain) were performed on all animals, including those that died during the course of the study. Survival rates were higher than control values in all treated male and female groups, ranging from 86.7-95.0% compared to 73.3% in males and 86.7-91.7% compared to 78.3% in females. No changes in food consumption were observed, but body weight gain was increased in both sexes at 95-97 and 237-242 mg Al/kg-day (weights were 10-23% higher than controls at end of study), was similar to controls in both sexes at 483-512 mg Al/kg-day, and decreased in both sexes at 1024-1110 mg Al/kg-day (11-16% lower than controls at end of study). There were no exposure-related increased incidences of tumors, other proliferative lesions or non-neoplastic lesions. In fact, the incidence of spontaneous hepatocellular carcinomas was significantly decreased in males at 1024 mg Al/kg-day (5.5% compared to 20.5% in controls, $p<0.01$).

Inhalation Exposure

Groups of 20 weanling Fischer 344 rats/sex and 20 weanling Hartley guinea pigs/sex were exposed to 0, 0.25, 2.5 or 25 mg/m^3 aluminum chlorhydrate [$Al_2(OH)_5Cl{\geq}x(H_2O)$] for 6 hours/day, 5 days/week for 6 months (Steinhagen et al., 1978). Analysis of the aluminum chlorhydrate by the investigators showed it to contain 24.5% Al, indicating that the animals were exposed to 0, 0.061, 0.61 and 6.1 mg Al/m^3. Body weights were measured weekly for the first 8 weeks and biweekly thereafter. At the end of the exposure period, 10 animals (5/sex) of each species were sacrificed for organ weight measurements (heart, lung, liver, kidney, spleen and brain) and histological examination of the lungs, liver and kidney. In addition, comprehensive histological examinations were performed on animals in the control and 6.1 mg AL/m^3 groups. The remainder of the animals was used for hematology evaluation (RBC, WBC, hematocrit and hemoglobin) and Al measurements in blood and tissues. Apparent effects of Al included multifocal granulomatous pneumonia in both species at ≥0.61 mg Al/m^3, significantly increased absolute and relative lung weights in both species, and decreased body weight gain in rats and

minimal lung edema in guinea pigs at 6.1 mg Al/m^3. The granulomatous reaction was characterized by foci of giant vacuoled particle-containing macrophages in the lungs and macrophages that did not appear to contain vacuoles or other evidence of phagocytized material in the peribronchial lymph nodes. There was a significant dose-related accumulation of Al in the lungs of both species at ≥0.061 mg Al/m^3. However, a NOAEL of 0.061 mg/m^3 could be identified for the onset of compound-induced histopathological effects.

In other studies, groups of 14-30 guinea pigs, rats and hamsters were exposed to fine metallic Al powders (pyro, atomized and flaked) at concentrations of 15, 30, 50 or 100 mg powder/m^3 air for 6 hours/day, 5 days/week for 6 months (Gross et al., 1973). Alveolar proteinosis occurred in exposed animals of all three species after 2 months of exposure, but fibrosis or other pulmonary changes did not develop. Similarly, groups of 23 or 46 rats and 48 hamsters were exposed to undetermined concentrations of Al fumes or Al powder (20% Al, 80% $Al(OH)_3$) for morning hours only or morning and afternoon for up to 20 months (Christie et al., 1963). Effects were similar for both forms of Al in both species, including initial increased alveolar macrophage proliferation followed by nodular hyalinized areas, with development of pneumonia but no fibrosis.

Exposure to 2.18 mg Al fibers/m^3 for 6 hours/day, 5 days/week for up to 86 weeks produced slightly increased alveolar macrophages and some irritation of the nasal passages in a group of 50 Alderly Park rats (Pigott et al., 1981). Finally, a study by Drew et al. (1974) observed the development of granulomatous nodules also developed in male hamsters that were exposed to 8 mg Al/m^3 of *Alchlor* (a propylene glycol complex of aluminum-chloride-hydroxide) for 6 hours/day, 5 days/week for 20 or 30 exposures. The alterations persisted at the longest post treatment observation (6 weeks) and consistently developed at the bifurcation of the bronchioloalveolar ducts, which is a likely site of particulate deposition.

DERIVATION OF A PROVISIONAL CHRONIC RfD FOR ALUMINUM

This survey of the toxicological effects of Al in rodents suggests that neurotoxicological and developmental (including neurodevelopmental) endpoints are among the most sensitive indicators of Al toxicity. However, as vehicles for the development of toxicity values such as a provisional chronic RfD, the latter group of studies are considered to be more appropriate, since the level of exposure to Al appears to be better characterized. In fact, neurobehavioral deficits have been observed in mice and rats exposed during various stages of development and in subchronic studies (Bernuzzi et al., 1989; Donald et al., 1989; Golub et al., 1989, 1992a, b, 1995; Muller et al., 1990), as described above. These deficits include impaired operant learning, changes in grip strength, altered startle response and impaired motor coordination. In addition, several studies have shown that oral Al can produce histopathological changes in the CNS, although the histopathological lesions have yet to be causally related to the neurobehavioral deficits. Thus, Florence et al. (1994) reported histopathological changes in the brain of rats exposed to dietary Al for 6 months, the changes including the appearance of vacuolation of the cell body and cell processes of astrocytes in the brain and swelling of astrocytic processes. In addition, more localized vacuolization of neurons in the brain also was observed. These changes

were observed in rats exposed to elevated Al in the diet and are distinct from the NFD that has been observed in rats, rabbits and monkeys maintained on elevated dietary Al in combination with reduced dietary calcium (Garruto et al., 1989; Kihira et al., 1994; Mitani, 1992; Yano et al., 1989; Yoshida et al., 1990) or in rabbits administered intracisternal or intraventricular injections of Al (Kowall et al., 1989; Wakayama et al., 1993). Interpretation of the low-calcium studies is complicated by the observation that NFD was observed in animals maintained on low-calcium diets without excess Al and was enhanced by the addition of excess Al to these diets (Garruto et al., 1989; Kihira et al., 1994). Furthermore, Al has been shown to inhibit the gastrointestinal absorption of calcium (Orihuela et al., 1996), an effect that may exacerbate the calcium deprivation induced by low calcium diets. Thus, it is not clear whether calcium deprivation enhances the neurotoxicity of Al or Al exacerbates the adverse effects of calcium deprivation.

Donald et al. (1989) and Golub et al. (1995) are co-principal studies that identify a LOAEL of 100 mg Al/kg-day for minimal neurotoxicity in the offspring of mice exposed to dietary aluminum lactate (soluble aluminum) during gestation and lactation. The neurotoxicity associated with this LOAEL is consistent with LOAELs from other developmental and subchronic neurobehavioral studies in mice and rats which used higher dietary dosages of aluminum lactate or aluminum chloride (Golub et al., 1989, 1992a,b; Bernuzzi et al., 1989; Muller et al., 1990). Of the above, Golub et al., (1995) is the only study in which a histopathological examination of the brain and spinal cord was conducted and no abnormalities were reported. The Florence et al. (1994) study indicates that histopathological abnormalities of the CNS can occur in rats exposed subchronically to 84 mg/kg-day; although this is lower than the LOAEL for neurobehavioral effects, it was not chosen as the principal study because the functional significance of the histopathological lesions are uncertain.

A number of studies were identified that, at face value, appeared to indicate LOAELs at lower doses than the 100 mg Al/kg-day value selected herein, for example, Paternain et al. (1988) and Colomina et al. (1992). However, in these as in many of the studies under consideration, insufficient information on dietary Al (Al content and/or feed type) was reported to permit a reliable estimation of the overall dose level to which the animals were subjected.

Other developmental studies with aluminum hydroxide and/or citrate in mice and rats identified a NOAEL which are equivalent (95.5 mg Al/kg-day), or a minimum LOAEL that was greater (133 mg Al/kg-day) than the 100 mg Al/kg-day critical LOAEL (Domingo et al., 1989; Gomez et al., 1991), an overlap potentially related to differences in effective doses due to variations in unreported Al dietary content and factors affecting absorption such as chemical form (e.g., the use of less absorbable aluminum hydroxide). In addition, the LOAEL of 43.3 mg Al/kg-day for decreased body weight gain in mice exposed to aluminum chloride for 180-390 days (Ondreicka et al., 1966) was thought be inappropriate for risk assessment due to the small sample size and to the poor reporting of study details. Aluminum nitrate caused alterations in levels of brain biogenic amines and hepatic and hematological indices in rats exposed to 21.4 mg Al/kg-day for 6 weeks (Flora et al., 1991). This dose is not a LOAEL because insufficient information is available to determine if the effects are adverse.

Therefore, the LOAEL of 100 mg Al/kg-day for minimal neurotoxicity in the offspring of mice (Donald et al., 1989, Golub et al., 1995) is selected as the basis for the provisional chronic

RfD. The LOAEL is considered minimal because the results of the postweaning neurobehavioral test battery indicate that performance deficits may be marginal. In particular, of the three observed effects (decreased forelimb and increased hindlimb grip strengths, increased hindlimb foot splay distance), one effect (increased grip strength) has unclear toxicological significance and two effects (increased grip strength and foot splay distance) did not persist after 2 weeks of no further exposure.

Application of an uncertainty factor (UF) of 100 (3 for use of a minimal LOAEL, 10 for interspecies extrapolation and 3 for intrahuman variability where the critical effects have been observed in a sensitive sub-group) results in a provisional RfD of

p-RfD = 1E-0 mg Al/kg-day.

The provisional RfD of **1E-0** mg Al/kg-day is approximately 3-fold higher than estimated normal daily Al intake of approximately 0.2-0.3 mg/kg-day (Iyengar et al., 1987; Ganrot, 1986; Wilhelm et al., 1990). Chronic users of medications such as antacids, buffered aspirins and antiulceratives would be expected to ingest much larger amounts of Al, possibly as high as 10-70 mg/kg-day. However, these subjects would not represent the most sensitive population (developing infants), as indicated by the animal data.

Low confidence is placed in the co-critical studies, because they only identify a LOAEL for a sensitive effect and evaluated comparatively small numbers of animals. Confidence in the data base is low because the most reliable supporting data for neurotoxicity of Al in humans are of limited general relevance (e.g., dialysis encephalopathy is manifested in patients with impaired renal function and excessive Al uptake from intravenous exposure). In fact, neurotoxicity remains to be assessed in animals chronically exposed to Al, and developmental morphology has not been adequately investigated in two animal species. These limitations in the Al data base do not increase uncertainty in the RfD; therefore, a data base uncertainty factor was not used. However, reflecting the low confidence in the co-critical studies, there is low overall confidence in the RfD.

DERIVATION OF A PROVISIONAL CHRONIC RfC FOR ALUMINUM

Al seems to be the most likely cause for the generally and consistently reported psychomotor and cognitive effects (particularly signs of impaired coordination) in Al production workers and welders (Bast-Pettersen et al., 1994; Rifat et al., 1990; Hosovski et al., 1990; White et al., 1992; Hanninen et al., 1994; Sjogren et al., 1990, 1996). In addition, there is strong evidence that Al is neurotoxic by other routes of exposure. Thus, a degenerative neurological syndrome (dialysis dementia) has been documented in humans with chronic renal failure, apparently due to an increased exposure to Al from dialysis treatment and/or ingestion of phosphate binding agents which contain Al (Alfrey, 1993). This syndrome is characterized by gradual loss of motor, speech and cognitive functions. Neurotoxicity, particularly neuromuscular effects such as decreased motor activity, startle responsiveness and grip strength, has also been observed in mice following subchronic oral exposure and in the offspring of mice and rats exposed orally during gestation and/or lactation. Based on this information, as well as evidence

that Al is absorbed by Al production workers and welders, the hypothesis that the occupational studies are indicative of a neurotoxic effect of Al appears to be justified. However, the only occupational study that has yielded suitable monitoring data is that of Hosovski et al. (1990), in which workers were exposed to presumed time-weighted average (TWA) concentrations of 4.6-11.5 mg Al/m^3 magnitude for an average of 12 years. Using 4.6 mg Al/m^3 as the LOAEL for psychomotor and cognitive impairment for an 8-hour occupational exposure (Hosovski et al., 1990) and corrections for discontinuous exposure (10 m^3/20 m^3 and 5 days/7 days), the $LOAEL_{HEC}$ is 1.64 mg/m^3. Applying an uncertainty factor of 300 for intrahuman variability (10), use of a LOAEL (10) and an incomplete database (3) yields a provisional RfC of

p-RfC = 1.64 mg/m^3/300 = 5E-3 mg/m^3.

The lack of inhalation developmental studies may increase uncertainty in the database because oral data in animals indicate that neurotoxic and morphological developmental effects may occur at lower doses than neurotoxicity in adults. Additionally, there is uncertainty related to the lack of corroborating data on air concentrations associated with neurotoxicity. Confidence in the critical study is low to medium because only a LOAEL was identified. Confidence in the database is medium because (1) there are no corroborating data on effect levels (NOAELs and additional LOAELs), (2) no data are available for developmental neurotoxicity by the inhalation route and (3) a well-designed two-generation reproduction study is lacking. Reflecting the low to medium confidence in the critical study and database, there is low to medium confidence in the provisional RfC.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR ALUMINUM

Weight-Of-Evidence Classification

A considerable number of epidemiological studies have examined the incidence of excess tumor formation in persons occupationally exposed to Al in the form of dusts or fumes. In general, a body of inferential evidence exists for an increase in cancer of the bladder and lung through such occupational exposure to Al, although conclusions linking these responses to the effects of Al are confounded by attendant co-exposure to other harmful emissions such as PAHs and by cigarette smoking. A 20-month exposure of B6C3F1 mice to Al potassium sulfate dodecahydrate in the diet at concentrations up to 10% w/w displayed no indication of compound-related carcinogenicity and, in general, no indication of adverse toxicological effects of any kind (Oneda et al., 1994). Similarly, the life-time exposure of Swiss mice and Long-Evans rats to 5 ppm Al as aluminum potassium sulfate in drinking water provided no convincing evidence for the carcinogenicity of Al compounds (Schroeder and Mitchener, 1975a,b). Gene reversion experiments on Al compounds resulted in negative results in *S. typhimurium* (Ahn and Jeffrey, 1994). Taking all of the evidence of Al carcinogenicity together, and in accordance with the U.S. EPA (2005) cancer guidelines, aluminum is classified as *inadequate information to assess carcinogenic potential*. The basis for this classification is insufficient evidence in epidemiological/occupational studies, lack of demonstrated carcinogenicity or mutagenicity in

available animal studies, lack of positive evidence of non-carcinogenicity and lack of mode of action data for aluminum.

Quantitative Estimates of Carcinogenic Risk

Due to insufficient data, a provisional oral slope factor and inhalation unit risk could not be developed.

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Table 1. Summary of oral toxicity data for aluminum[a]

Study	Type	Species	Al	Exposure Concentration (ppm)	Exposure Dosage (mg Al/kg-day)	Exposure Frequency and Duration	Critical Effect	NOAEL (mg Al/kg-day)	LOAEL (mg Al/kg-day)	FEL (mg Al/kg-day)
Ondreicka et al., 1966	Subchronic 3-gen dietary	Dobra Voda mice	chloride	--	27 (control), 46	Continuous, 180-390 days	Decreased body weight gain in F1 and F2.	--	46	--
Golub et al., 1989	Subchronic dietary	S-W mice	lactate	25 (control), 500,1000	3.3 (control), 65,130	Continuous, 6 weeks	Decreased spontaneous motor activity; decreased weight gain.	65	130	--
Golub et al., 1992a	Subchronic dietary	S-W mice	lactate	25 (control), 1000	190	Continuous, 90 days	Decreased hindlimb grip, decreased spontaneous motor activity, decreased startle response.	--	190	--
Florence et al., 1994	Subchronic dietary	Wistar rat	chloride (with citric acid)	1.52 (control), 1000	0.13 (control), 84	Continuous, 6 months	Histopathological changes in brain astrocytes and neurons.	--	84	--
Domingo et al., 1996	Subchronic drinking water	Sprague Dawley rats	nitrate (with citric acid)	--	0, 50, 100 (plus unreported dietary Al)	Continuous, 6.5 months	Operant conditioning and performance	100	--	--
Yoshida et al., 1989	Subchronic dietary	S-W mice	lactate	25 (control), 500, 1000	5 (control), 98, 195	Continuous, 7 weeks	Increased mortality from *L. monocytogenes* inoculation	195	--	--
Donald et al., 1989	Developmental dietary	S-W mice	lactate	25 (control), 500, 1000	5 (control), 100, 200	Continuous, gestation and lactation	Neurobehavioral effects.	--	100	--
Golub et al., 1992b	Developmental dietary	S-W mice	lactate	25 (control), 1000	4 (control), 174	Continuous, gestation and lactation	Neurobehavioral effects.	--	174	--
Golub et al., 1995	Developmental dietary	S-W mice	lactate	7, 500, 1000	1 (control), 100, 200	Continuous, gestation, lactation to maturity	Neurobehavioral effects.	--	100	--

Table 1. Summary of oral toxicity data for aluminum[a]

Study	Type	Species	Al	Exposure Concentration (ppm)	Exposure Dosage (mg Al/kg-day)	Exposure Frequency and Duration	Critical Effect	NOAEL (mg Al/kg-day)	LOAEL (mg Al/kg-day)	FEL (mg Al/kg-day)
Yoshida et al., 1989	Developmental dietary	S-W mice	lactate	25 (control), 500, 1000	4 (control), 100, 200	Continuous, gestation and lactation	Increased mortality of dams from *L. monocytogenes* inoculation	--	100	--

[a]Studies for which total dosages were reported or could be estimated (unless otherwise noted).

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March 24, 2008

Chloe Metz, Region 2
Onondaga Lake

ASSISTANCE REQUESTED: Toxicity values for approximately 50 chemicals

ENCLOSED INFORMATION:

Attachment 1: PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR DIBENZOFURAN (CASRN 132-64-9)

Attachment 2: PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ENDOSULFAN SULFATE (CASRN 1031-07-8) Derivation of a Carcinogenicity Assessment

Attachment 3: PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ENDOSULFAN SULFATE (CASRN 1031-07-8) Derivation of a Chronic Oral RfD

BE ADVISED: *Unless specifically indicated to have been peer reviewed, it is to be noted that the attached Provisional Toxicity Value Paper(s) have not been through the U.S. EPA's formal review process; therefore, they do not represent a U.S. EPA verified assessment.*

If you have any questions regarding this transmission, please contact the STSC at (513) 569-7300.

Attachments (3)

cc: STSC files

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6-11-2007

Provisional Peer Reviewed Toxicity Values for

Dibenzofuran
(CASRN 132-64-9)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor

p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

6-11-2007

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR DIBENZOFURAN (CASRN 132-64-9)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

This document has passed the STSC quality review and peer review evaluation indicating that the quality is consistent with the SOPs and standards of the STSC and is suitable for use by registered users of the PPRTV system.

INTRODUCTION

RfD and RfC values for dibenzofuran (DBF) were not available on IRIS (U.S. EPA, 2007) or in the HEAST (U.S. EPA, 1997). There is a Class D cancer assessment on IRIS (U.S. EPA, 2007). Dibenzofuran was included in a Drinking Water Toxicity Profile from 1992 (U.S. EPA, 1992), although no oral toxicity value was listed. The Office of Water did not include dibenzofuran on the latest Drinking Water Regulations (U.S. EPA, 2006a) or the Drinking Water Contaminant Candidate List (U.S. EPA, 2006b). The CARA list (U.S. EPA, 1991, 1994)

included a Health Effects Assessment (HEA) (U.S. EPA, 1987) and a Reportable Quantity Document (U.S. EPA, 1989) for Dibenzofuran. The HEA concluded that additional toxicity testing was necessary and did not derive a toxicity value due to the lack of data (U.S. EPA, 1987). The 1987 HEA for Dibenzofuran neither identified nor included discussion of Thomas et al. (1940), the primary source of data used in this PPRTV document. By contrast, the 1989 Reportable Quantity Document for Dibenzofuran (U.S. EPA, 1989) used Thomas et al. (1940) as the basis for derivation of composite scores and the corresponding reportable quantities for dibenzofuran.

ATSDR had not published a Toxicological Profile for dibenzofuran (ATSDR, 2006). NTP did not study the toxicity of dibenzofuran (NTP, 2006). WHO (2006) provided no relevant information. Available data on carcinogenicity, mutagenicity, metabolism, and other biological effects were summarized for dibenzofuran by the National Cancer Institute (NCI, 2000). Data on the adverse health effects of various halogenated dibenzofurans were available; however, the biological activity varies greatly among these congeners. U.S. EPA (1986a) did not recommend risk assessment by analogy to any of these more widely studied chemicals. NCI (2000) reported that the most structurally related chemical was dibenzo-p-dioxin. NCI (1979) reported that no excess tumors were induced in rats or mice fed dibenzo-p-dioxin up to 10,000 ppm in the diet.

Updated literature searches for noncancer and cancer data were conducted for data available through April 2006. The databases searched included: TOXLINE, MEDLINE, CANCERLIT, CCRIS, TSCATS, HSDB, RTECS, GENETOX, DART/ETICBACK, and EMIC/EMICBACK. Inhalation RfC values were not derived for dibenzofuran, because no human or animal inhalation data were found and the marginal ingestion data seemed inadequate to consider for inter-route extrapolation. However, a subchronic oral p-RfD value was derived, based on a LOAEL point of departure (POD) in Thomas et al. (1940). Chronic toxicity of dibenzofuran is discussed in the appendix. No data were identified from which to derive cancer risk values.

REVIEW OF PERTINENT DATA

Human Studies

Two cross-sectional studies of exposed workers were identified in the OPPT TSCATS database (Koppers 1980a,b). However, these studies reported exposures to dibenzofuran only in complex mixtures of coal tar products. Neither report noted adverse health effects that could be attributed to dibenzofuran exposure. Existing review documents and a detailed literature search identified no other data regarding the toxicity of dibenzofuran in humans.

Animal Studies

The only long-term toxicity data available for dibenzofuran were from a 200-day rat feeding study reported by Thomas et al. (1940). However, this document also will address the NCI (1979) data for dibenzo-p-dioxin, which NCI (2000) considered to be the chemical most structurally related to dibenzofuran.

NCI (1979) reported that unsubstituted dibenzo-p-dioxin, a structural analog of dibenzofuran, exhibited very low toxicity and no evidence of carcinogenicity in Osborne-Mendel rats and B6C3F1 mice, even when the maximum tolerated dose was approached (10,000 ppm in diet). Groups of 35 rats of each gender ingested dibenzo-p-dioxin at 5000 or 10,000 ppm in diet for 110 weeks. Groups of 50 mice of each gender ingested the same doses for 87 or 90 weeks. Controls consisted of groups of 35 untreated rats of each gender and 50 untreated mice of each gender. Mean body weights of the dosed male and female rats and mice were lower than those of the corresponding controls; the depression in the amount of weight gained in the dosed male mice was, however, relatively slight. Except for the male rats, survival at the end of the bioassay was lower in the dosed groups of both rats and mice than in the corresponding control groups. At week 90, at least 57% of the rats and 54% of the mice were still alive. In some male and female rats there was a dose-related increase in the incidence of hepatotoxic alterations characterized by fatty metamorphosis or necrosis. Also in mice, toxic hepatic lesions including liver degeneration, necrosis, fibrosis and/or cirrhosis were observed in slightly increased numbers in the dosed mice ─ particularly in the high-dose females. No tumors were induced in rats or mice of either gender at incidences that were significantly higher in the dosed groups than in the corresponding control groups. The authors concluded that unsubstituted dibenzo-p-dioxin exhibited very low toxicity and was noncarcinogenic in Osborne-Mendel rats and B6C3F1 mice, even when the maximum tolerated dose was approached (10,000 ppm in diet).

The Thomas et al. (1940) report consisted of two studies, a primary 200-day dibenzofuran feeding study and a follow-up 78-day study. In the primary study, groups of five female albino rats (strain not specified), approximately 30 days old, consumed 0, 250, 500, 1000, 2000, or 4000 ppm of dibenzofuran in their food for 200 days. In addition, two female rats consumed 8000 ppm of dibenzofuran in their diet for a shorter period (approximately 100 days). According to the authors, none of the animals exhibited any abnormal activity or behavior, nor was food intake appreciably altered by dibenzofuran administration, although it was noted that the rats receiving dibenzofuran tended to consume more water than controls. The authors also reported no effect on body weight gain at any dose during the exposure period; however, decreases in body length and absolute organ weights were observed in all dibenzofuran-exposed groups at necropsy. The authors also reported that the treated animals had unusually large amounts of abdominal fat, which they interpreted as accounting for the lack of effect on body weight gain. Quantitative data were not provided to support the assertions of no appreciable

changes in food intake or body weight gain, decreases in organ weight and overall length, and excess abdominal fat. In addition, the authors did not report whether a dose-response effect was observed for changes in body length or organ weight, or for excess abdominal fat.

Histological examination of the liver, kidney, spleen, heart, and adrenals was performed in rats exposed to dibenzofuran at 500 ppm and higher, and in the control animals (Thomas et al., 1940). The low dose group (250 ppm) apparently was not examined for histopathology. In the kidney, histological examination of rats exposed to concentrations of 500 ppm and higher revealed fine, brown-pigmented granules in the epithelial cells of proximal convoluted tubules in the deeper parts of the renal cortex. This effect was noted among all rats receiving dibenzofuran, and both the amount of pigmented material within cells and the frequency of occurrence among cells increased with dose of dibenzofuran. In addition, the two rats fed diet containing 8000 ppm dibenzofuran exhibited prominent, irregular dilatation of the collecting tubules with coagulated material resembling protein; other tubules in these two rats were slightly dilated and contained more granular and amorphous material than controls. These effects were reported as occurring without cellular degeneration or glomerular abnormalities. Some (frequency not specified) of the kidneys from rats receiving 4000 ppm showed similar, but less severe, changes. These lesions were not reported among rats fed the lower doses of dibenzofuran. However, quantitative data were not reported. In the spleen, slight hyperplasia of the Malpighian bodies was reported among several rats (frequency not given) in the 4000 and 8000 ppm groups. No alterations, other than reduced organ weight, were noted in the liver, heart, or adrenals of the treated rats.

In the follow-up study to determine whether dietary dibenzofuran affected water balance, an effect noted qualitatively (increased water consumption) in female rats receiving dibenzofuran in their food, Thomas et al. (1940) exposed groups of five male rats (average initial body weight 255 grams) to 0 or 5000 ppm of dibenzofuran in the diet for 78 days. Treated rats exhibited greater water consumption and urine output than controls, suggesting that dibenzofuran altered water balance. The excess in urine output was greater than the excess in water consumption in the treated group, suggesting a slight dehydration of tissues. The authors reported that no alterations in hematological parameters were observed (hemoglobin and erythrocyte, leukocyte, and reticulocyte counts). Tables 1 and 2 have summarized the hematological data reported in the 78-day study.

TABLE 1. Blood cell types in rats exposed to DBF in normal diet for 78 days

Dose	Rats "N"	Hemoglobin	Erythrocytes	Reticulocytes	White cells
0	10	16.3%	8.12×10^6	3.0%	1.44×10^4
5000 ppm	5	16.6%	9.07×10^6	2.35%	1.65×10^4

TABLE 2. Average differential white blood cell counts in 78-day exposed rats vs. "normal rat blood"

Dose	Rats "N"	Lymphocytes	Polymorphonuclear nutrophils	Monocytes	Basophiles	Eosinophils
"Normal"	---	67.9%	27%	5.3%	0.77%	2.1%
5000 ppm	5	63.8%	33.5%	1.18%	0.64%	0.94%

In contrast to qualitative observations reported among the female rats exposed to similar concentrations in the 200-day primary study, the male rats treated for 78 days tended to consume less food than the controls and had a slightly lower rate of body weight gain than the control group. These data and water consumption data are summarized in Table 3. The authors noted that the odor and taste of dibenzofuran at 5000 ppm in the food was distinctly noticeable and may have contributed to this effect. Histological examination was not performed on tissues from these rats.

TABLE 3. Weight gain in male albino rats fed DBF for 78 days vs. controls

Dose	Rats "N"	Weight gain	Food ingestion	Water ingestion
0	5	321 g	6108 g	9652 cc
5000 ppm	5	243 g	5482 g	10,316 cc
Difference	- - - - -	78 g (24%)	626 g (10%)	664 cc (6.9%)

The literature search revealed additional, peripheral data for dibenzofuran, including those for soil nitrification organisms (Sverdrup et al., 2002), drought resistance of certain insects (Sjursen et al., 2001), plant seedling growth (Sverdrup et al., 2003), fungi-specific enzyme systems (Kurihara et al., 2002), and a study of human intellectual effects of exposure (Schantz, 2001) that mistakenly refered to unhalogenated dibenzofuran. Abstracts for these studies reported the following conclusions.

- 75 mg DBF/kg (soil) NOEL for soil nitrification and no effects on soil bacterial diversity (Sverdrup et al., 2002)

- No dose-related decrease in drought tolerance in adult soil-dwelling insects, *Folsomia fimetaria* (Sjursen et al., 2001)
- 20% reduction in plant seedling weight when exposed to 43-93 mg DBF /kg soil (Sverdrup et al., 2003)
- No change in expression of NADH-ubiquinone oxidoreductase (NUO) among DBF-exposed fungus, *Phanerochaete chrysosporium* (Kurihara et al., 2002)

DERIVATION OF A PROVISIONAL SUBCHRONIC ORAL RfD VALUE FOR DIBENZOFURAN

The only subchronic or chronic toxicity data available for dibenzofuran were from the 200-day and 78-day feeding studies described by Thomas et al. (1940). These studies, though of apparently high quality for their era, had a number of major short comings, including the following:

- only qualitative data were reported for most endpoints
- only five organs were examined in the pathology
- the lowest dose group was not subjected to pathology examinations

No pertinent developmental or reproductive data were found for dibenzofuran. The LOAEL data from the Thomas et al. (1940) 200-day feeding study provided the POD for this derivation, because no NOAEL was reported. Data from the 78-day study were used to confirm food ingestion rates estimated using default rates in U.S. EPA, 1986b. Benchmark dose modeling was considered infeasible because adverse effects and the dose-response nature of the response were reported only qualitatively.

The lowest dose tested in the 200-day Thomas et al., 1940 study, 250 ppm in diet, was selected as the LOAEL POD for the aggregate critical effects of reduced length and organ weight, and excess abdominal fat. Ingestion data from the 78-day study was used to estimate the actual doses to the animals treated at the LOAEL, as follows. The 78-day feeding study was conducted under the same conditions as the 200-day primary study. This estimation made the following assumptions.

- Data from the 78-day study (Thomas et al., 1940) were more likely to represent actual food intakes than the default reference food factor from U.S. EPA, 1986b
- Rats in the 200-day study (Thomas et al., 1940) eating a diet treated with 250 ppm dibenzofuran consumed quantities of food closer to the control amounts (6108 g/diet/5 rats) than to the quantities of food treated with 5000 ppm dibenzofuran (5482 g/5 rats) in the 78-day study

- Growth of rats eating the 250 ppm diet in the 200-day study (Thomas et al., 1940) more closely approximated controls than those eating 5000 ppm, and that the 78-day weight provided a reasonable average weight for the 200 day study period.

In the 78-day study, Thomas et al. (1940) reported that a group of 5 control rats ingested a total of 6108 grams of food over the 78 days and grew from 1.273 kg to 1.594 kg/group, while experimental rats ingested 5482 g of food treated with 5000 ppm dibenzofuran and grew from 1.274 kg to 1.517 kg/group of 5 treated rats. The following calculations used food consumption data from the 78-day study to estimate dibenzofuran consumption in the 200-day study at the POD (250 ppm) for the critical effect of reduced length and organ weight, and excess abdominal fat among the exposed rats.

(6108 g diet/5 rats) / 78 days = 78.3 g/diet/5 rats/day

(78.3 g/5 rats/day) x $(250/10^6)$ = 0.0196 g DBF/5 rats/day = 19.6 mg/5 rats/day

19.6 mg DBF/5 rats/day / (1.594 kg/5 rats) = 12.3 mg DBF/kg/day

The estimated dibenzofuran dose of 12.3 g/kg/day was essentially the same as the dose of 12.5 g/kg/day calculated using the EPA default reference food factor (U.S. EPA, 1986b).

Based on the data available, the following uncertainty factors were applied to derive a subchronic oral p-RfD.

- 10 for variability in human susceptibility
- 10 for the uncertainty in animal-to-human extrapolation
- 1 for using data from a 200-day study (in rats) to derive a subchronic p-RfD
- 3 ($10^{0.5}$) for using a minimal LOAEL instead of a NOAEL
- 10 for deficiencies in the database, including the lack of reproductive and developmental data, and the minimal data details reported in the key study

The uncertainty factors noted above provide a composite UF of 3000 ($10^{3.5}$).

In the absence of a NOAEL, a LOAEL could be several orders of magnitude above the actual no adverse effect dose, since it merely represents the lowest dose tested. Nevertheless, the uncertainty factor for using a minimal LOAEL instead of a NOAEL was reduced from 10 to 3 ($10^{0.5}$) because the following findings suggested that the smaller uncertainty factor would be more appropriate in this case. While many of the dose levels tested and the organism effects considered in the following reports would be difficult to relate to humans, together they seem to

emphasize the relatively low toxicity and mild effects of dibenzofuran across a variety of species.

- The Thomas et. al (1940) study noted relatively minor effects in rats, even at very high doses, up to thirty times the LOAEL dose selected as the POD
- Peripheral data in other species indicated very minor effects or no effects among organisms exposed to dibenzofuran
    - 75 mg DBF/kg (soil) NOEL for soil nitrification and for soil bacterial diversity (Sverdrup et al., 2002)
    - No dose-related decrease in drought tolerance in the adult soil-dwelling insects, *Folsomia fimetaria* (Sjursen et al., 2001)
    - 20% reduction in plant seedling weight when exposed to 43-93 mg DBF /kg soil (Sverdrup et al., 2003)
    - No change in expression of NADH-ubiquinone oxidoreductase (NUO) among DBF-exposed *Phanerochaete chrysosporium* fungi (Kurihara et al., 2002)
- NCI (1979) reported no tumors and relatively low toxicity among rats and mice fed diets containing 5000 ppm and 10,000 ppm dibenzo-p-dioxin, a structural analog to dibenzofuran. Effects reported were hepatic lesions, slight reductions in weight gain and nephropathy (in male rats)

Applying the composite UF of $10^{3.5}$ (~3000) to the dietary LOAEL POD of 12.3 mg DBF/kg-day for the combined critical effects of reduced length and organ weight and excess abdominal fat observed in female albino rats allowed the following calculation of the subchronic p-RfD.

Subchronic oral p-RfD = LOAEL / (UF x MF)
= (12.3 mg/kg/day) / ($10^{3.5}$ x 1)
= **$4x10^{-3}$ mg/kg-day**
= 4 µg dibenzofuran/kg-day

The data were insufficient to derive a chronic oral p-RfD value using an acceptable composite uncertainty. However, the Appendix of this document contains a Screening Value that may be useful in certain instances. Please see the attached Appendix for details.

DERIVATION OF PROVISIONAL INHALATION RfC VALUES FOR DIBENZOFURAN

Provisional inhalation RfC values were not derived for dibenzofuran because no useful inhalation exposure data were identified and data were insufficient to attempt inter-route extrapolation from the marginal ingestion data.

STATEMENT OF CONFIDENCE

Confidence in the principal study is low. Thomas et al. (1940) examined a number of endpoints, including histological examination of several major organs. The study had an adequate number of dose groups, but was limited by inclusion of only five rats in each group. Although only female rats were used for the 200-day portion of the study, male rats were used for the shorter water balance study (78 days). Thomas et al. (1940) did not report whether the critical effect selected displayed a dose-response relationship. However, the reductions in growth and organ weights, and the increase in abdominal fat were supported by histological changes noted in the kidney and impairment of water balance at higher doses. Because the critical effects were observed among rats receiving the lowest dose tested, one cannot be certain that the effects noted at 250 ppm (12.5 mg/kg-day), would not have been present at lower doses. Thus, it is uncertain whether 250 ppm is a true LOAEL. Confidence in the database and the resulting RfDs is low because of the limited toxicity data base for dibenzofuran, including lack of human studies and chronic, developmental, or reproductive oral animal studies. However, some confidence is gained from the relatively low toxicity and lack of tumors among rats and mice fed high doses of dibenzo-p-dioxin (NCI, 1979), the chemical identified by NCI (2000) as most structurally related to dibenzofuran. Nevertheless, risk managers are advised to consider any other available data before applying this p-RfD.

Suppliers and users of dibenzofuran should be encouraged to conduct toxicology studies, such as that initiated by EPA in 1978 (NCI, 2000) but then terminated because of lack of funding. The absence of inhalation, toxicokinetic, and metabolic data would justify especially encouraging studies to seek such information.

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APPENDIX

DERIVATION OF A SCREENING VALUE FOR DIBENZOFURAN

For reasons noted in the main PPRTV document, it is inappropriate to derive provisional toxicity values for Dibenzofuran, chronic RfD. However, information is available for this chemical which, although insufficient to support derivation of a provisional toxicity value, under current guidelines, may be of limited use to risk assessors. In such cases, the Superfund Health Risk Technical Support Center summarizes available information in an Appendix and develops a "Screening Value." Appendices receive the same level of internal and external scientific peer review as the PPRTV documents to ensure their appropriateness within the limitations detailed in the document. In the OSRTI hierarchy, Screening Values are considered to be below Tier 3, "Other (Peer-Reviewed) Toxicity Values."

Screening Values are intended for use in limited circumstances when no Tier 1, 2, or 3 values are available. Screening Values may be used, for example, to rank relative risks of individual chemicals present at a site to determine if the risk developed from the associated exposure at the specific site is likely to be a significant concern in the overall cleanup decision. Screening Values are not defensible as the primary drivers in making cleanup decisions because they are based on limited information. Questions or concerns about the appropriate use of Screening Values should be directed to the Superfund Health Risk Technical Support Center.

The Thomas et al. (1940) study provided insufficient data to derive a chronic oral p-RfD value with uncertainty in an acceptable range. The 200-day rat minimal LOAEL POD of 12.3 mg/kg-day was considered to derive a **screening chronic oral reference dose** by applying a composite uncertainty factor of 10,000 (10^4), including 10 for variability in human susceptibility, 10 for animal-to-human extrapolation, 3 ($10^{0.5}$) for extrapolating from 200-day rat data to a chronic screening value, 3 ($10^{0.5}$) for using a minimal LOAEL instead of a NOAEL, and 10 for deficiencies in the database, including the lack of developmental data and the minimal data details reported in the key study.

Applying the minimal LOAEL dietary POD of 12.3 mg DBF/kg-day and the composite uncertainty factor of 10,000 (10^4) allowed the following calculation:

Screening chronic oral p-RfD = LOAEL/UF
= (12.3 mg/kg-day)/10^4
= **$\underline{1x10^{-3}\ mg/kg\text{-}day}$**
= 1 μg dibenzofuran/kg-day

Confidence in the key study was low, because of the lack of detail on the critical effects and other deficiencies noted in this document. Given the lack of additional studies, confidence in the database also was low, leading to low overall confidence in the screening toxicity value. Users are advised to consider any other available data and to consult with the STSC before using this screening p-RfD.

7-31-2003

Provisional Peer Reviewed Toxicity Values for

Endosulfan sulfate
(CASRN 1031-07-8)

Derivation of a Carcinogenicity Assessment

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit

NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ENDOSULFAN SULFATE (CASRN 1031-07-8)
Derivation of a Carcinogenicity Assessment

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

An assessment of the carcinogenicity of endosulfan sulfate is not available on IRIS (U.S. EPA, 2002), or in the HEAST (U.S. EPA, 1997) or Drinking Water Standards and Health Advisories list (U.S. EPA, 2000). The CARA list (U.S. EPA, 1991a, 1994) includes a Health Effects Assessment for α- and β-endosulfan (U.S. EPA, 1987) that included no cancer data for endosulfan sulfate. Subsequent U.S. EPA documents on endosulfan have also reported no cancer data for endosulfan sulfate (U.S. EPA, 1991b, 1999). IARC (2002) has not evaluated endosulfan sulfate for carcinogenicity. Review endosulfan documents by ATSDR (2000), which included endosulfan sulfate, and WHO (1984), as well as the NTP (2002) status reports, were also consulted for relevant information. Literature searches were conducted from 1998 to December 2001 for studies relevant to the derivation of an oral slope factor for endosulfan sulfate. The databases searched were: TOXLINE, MEDLINE, CANCERLIT, RTECS, GENETOX, HSDB, CCRIS, TSCATS, EMIC/EMICBACK and DART/ETICBACK.

REVIEW OF THE PERTINENT LITERATURE

Human Studies

No studies were located regarding the carcinogenic effects of endosulfan sulfate in humans following exposure by any route.

Animal Studies

No studies were located regarding the carcinogenic effects of endosulfan sulfate in animals following exposure by any route.

Other Studies

Dorough et al. (1978) observed no evidence of mutagenicity with or without S-9 liver homogenate in *Salmonella typhimurium* strains TA1535 or TA1978 (up to 100 µg/plate), or TA98 or TA100 (up to 1000 µg/plate).

FEASIBILITY OF DERIVING A PROVISIONAL ORAL SLOPE FACTOR FOR ENDOSULFAN SULFATE

Derivation of a provisional oral slope factor for endosulfan sulfate is precluded by the lack of human or animal cancer data.

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10-31-2003

Provisional Peer Reviewed Toxicity Values for

Endosulfan sulfate
(CASRN 1031-07-8)

Derivation of a Chronic Oral RfD

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

10-31-2003

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ENDOSULFAN SULFATE (CASRN 1031-07-8)
Derivation of a Chronic Oral RfD

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

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Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

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Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

An RfD for endosulfan sulfate is not available on IRIS (U.S. EPA, 2002), the Drinking Water Standards and Health Advisories list (U.S. EPA, 2000a), or the HEAST (U.S. EPA, 1997). Existing regulations for endosulfan sulfate have been based on data for endosulfan. Endosulfan is composed of two isomers: α-endosulfan (70%) and β-endosulfan (30%). Technical endosulfan is at least 94% endosulfan isomers, but also contains a small amount of endosulfan sulfate, which occurs as a result of oxidation, biotransformation, or photolysis of endosulfan isomers (ATSDR, 2000). For endosulfan sulfate, the national recommended water quality criteria human health values for consumption of "water + organism" and "organism only" are 110 and 240 μg/L, respectively (U.S. EPA, 1999a), derived from the RfD for endosulfan (U.S. EPA, 2002). WHO (1982) derived a temporary acceptable daily intake for man of 0 - 0.008 mg/kg body weight for α-endosulfan, β-endosulfan and endosulfan sulfate combined, based on unpublished endosulfan

feeding studies in dogs and rats; NOAEL values were 0.75 and 1.5 mg/kg, respectively (Hazleton Laboratories, 1959a,b). The CARA list (U.S. EPA, 1991a, 1994) includes an Ambient Water Quality Criteria Document (U.S. EPA, 1980) and a Health Effects Assessment for α- and β-endosulfan (U.S. EPA, 1987). A Health and Environmental Effects Document for Endosulfan was also identified (U.S. EPA, 1991b). Other EPA documents (1999b, 2000b, 2001a,b,c), a Toxicological Profile for endosulfan (ATSDR, 2000), the NTP (2002) status report, and IARC (1998) and WHO documents (1982, 1984, 1988, 1989) were consulted for relevant information. Literature searches were conducted from 1998 to December 2001 for studies relevant to the derivation of an RfD for endosulfan sulfate. The databases searched were: TOXLINE, MEDLINE, CANCERLIT, RTECS, GENETOX, HSDB, CCRIS, TSCATS, EMIC/EMICBACK and DART/ETICBACK.

REVIEW OF THE PERTINENT LITERATURE

Human Studies

No studies were identified that investigated the effects of repeated-dose oral exposure of humans to endosulfan sulfate.

Animal Studies

No animals studies were identified that investigated the effects of repeated-dose oral exposure to endosulfan sulfate.

Other Studies

Endosulfan sulfate is the primary metabolite of both α- and β-endosulfan, and has been detected in serum and tissue samples of orally-exposed animals (Braun and Lobb, 1976; Cole and Casida, 1986; Das and Garg, 1981; Deema at al., 1966; Gorbach et al., 1968; Schuphan et al., 1968) and people following acute ingestion of endosulfan (Boereboom et al., 1998; Coutselinis et al., 1978; Demeter et al., 1977; Demeter and Heyndrickx, 1978). Risk assessments and reviews for endosulfan (U.S. EPA, 2001a,b,c; ATSDR, 2000; IARC, 1998; WHO, 1984, 1988) have concluded that α-endosulfan, β-endosulfan, and endosulfan sulfate are approximately equal in toxicity; however, limited toxicity data support this conclusion.

Dorough et al. (1978) reported the results of acute lethality testing in female albino rats (27-30 g) using the method of Deichmann and LeBlanc (1943) for α-endosulfan, β-endosulfan, endosulfan sulfate and four other endosulfan metabolites. Compounds were administered orally in a 1:1 mixture of water:Tween 80. The LD_{50} approximation for endosulfan sulfate was 8

mg/kg. Lethal doses of this compound caused convulsions and death within 1 hour of treatment, but survivors showed "almost no symptoms of poisoning."

In vitro assays showed that endosulfan sulfate and endosulfan affected similar endpoints, and that the sulfate was less toxic. Endosulfan sulfate did not induce mutations in *Salmonella typhimurium* (Dorough et al., 1978). Dubey et al. (1984) observed that the toxicity of endosulfan sulfate was approximately half the toxicity of endosulfan in measurements of rat liver mitochondrial respiration and enzyme activities. Ruch et al. (1990) also observed that endosulfan sulfate was approximately half as effective as endosulfan in the inhibition of gap junctional intercellular communication in primary cultured F344 rat and B6C3F1 mouse hepatocytes. Flodstrom et al. (1988) reported that very similar toxicities were observed for endosulfan sulfate, α-endosulfan, β-endosulfan, technical endosulfan and analytical endosulfan in cytotoxicity assays and intercellular communication assays in WB rat liver cells and wild type and mutant Chinese hamster V79 lung fibroblast cells. Endosulfan sulfate and α-endosulfan exhibited similar activities in a cell free assay using extracts from adult rat prostate tissue (Brieske et al., 1997); both slightly reduced binding of the androgen [^{3}H]-methyltrienolone to androgen receptor protein.

FEASIBILITY OF DERIVING A PROVISIONAL RfD FOR ENDOSULFAN SULFATE

Derivation of a provisional reference dose for endosulfan sulfate is precluded by the lack of adequate human or animal studies.

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From: <Nunes.Robert@epamail.epa.gov>
To: <conklit@obg.com>, <sinhap@obg.com>
CC: <sledward@gw.dec.state.ny.us>, <txsmith@gw.dec.state.ny.us>, <sivak.mich...
Date: 3/27/2008 1:21 PM
Subject: Fw: Toxicity Request for Onondaga Lake (Wastebeds 1-8) NY
Attachments: pic27876.jpg; Onondaga Lake - Metz 1.pdf; Onondaga Lake - Metz 2.pdf; Was tebeds 1-8 toxicity request.pdf

Tom, Ricky - Forwarded here are NCEA recommended toxicity values for the WBs 1-8 HHRA. Since some of these chemicals are also being evaluated in the WB B/HB HHRA, OBG should utilize them for that site as well. Similarly, NCEA recommendations which are being utilized for chemicals evaluated for WB B/HB should be used in the WBs 1-8 HHRA if the chemicals are also being evaluated there.

If you have any questions, please let me know.

Thank you.

Bob Nunes
New York Remediation Branch
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----- Forwarded by Robert Nunes/R2/USEPA/US on 03/27/2008 11:30 AM -----

Chloe Metz/R2/USEPA/US
03/25/2008 06:04 PM

To: Robert Nunes/R2/USEPA/US@EPA
cc: Michael Sivak/R2/USEPA/US@EPA
Subject: Fw: Re: Toxicity Request for Onondaga Lake (Wastebeds 1-8) NY

Bob, attached are the NCEA recommended toxicity values and supporting

PPRTV documentation for Wastebeds 1-8. OBG should use the values in the attached spreadsheet to evaluate chemicals not in IRIS. Some of the chemicals may overlap with the request that Michael had for Harbor Brook/Wastebed B, in which case the recommendations provided here can be used for that site as well.

Michael, Marian looked into the 1,4-dichlorobenzene schedule and it looks like May 2008 is more than optimistic, so we shouldn't expect a new IRIS value any time real soon.

Let me know if you have any questions.

Thanks,
Chloe

Chloe Metz
Superfund Program
US EPA, Region 2
290 Broadway, 18th Floor
New York, NY 10007

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-----Forwarded by Chloe Metz/R2/USEPA/US on 03/25/2008 05:54PM -----

To: Chloe Metz/R2/USEPA/US@EPA
From: SUPERFUND STSC
Sent by: Stacey Lewis/CI/USEPA/US
Date: 03/24/2008 12:50PM
cc: SUPERFUND STSC@EPA
Subject: Re: Toxicity Request for Onondaga Lake (Wastebeds 1-8) NY

(Embedded image moved to file: pic27876.jpg)

Hello Chloe,

We are waiting on a decision regarding the use of the sRfC presented in 2-Nitrophenol's PPRTV as an RfC, but the three files attached address the remaining portions of your request. The first file, "Chloe Metz - Onondaga Tox request.pdf", is a table outlining where toxicity information can be found if available. The remaining two files are the PPRTVs that are available for the requested chemicals. We will notify you as soon as a decision is made concerning 2-Nitrophenol's sRfC and RfC.

Please fell free to contact the Center if you have any questions or concerns regarding this response.

Respectfully

Stacey Lewis
STSC

(See attached file: Onondaga Lake - Metz 1.pdf)(See attached file: Onondaga Lake - Metz 2.pdf)(See attached file: Wastebeds 1-8 toxicity request.pdf)

Superfund Technical Support Center

National Center for Environmental Assessment
U.S. Environmental Protection Agency
26 West Martin Luther King Drive, MS-AG41
Cincinnati, Ohio 45268

Jon Reid/Director, **Pat Daunt/Administrator**
Hotline 513-569-7300, FAX 513-569-7159, E-Mail: STSC.Superfund@epa.gov

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March 28, 2008

Michael Sivak
U.S. EPA, Region 2

ASSISTANCE REQUESTED: PPRTVs for 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2,6-Dinitrotoluene, 2-Chlorophenol, 2-Methylnaphthalene and 2-Nitrophenol (*Onondaga Lake*)

ENCLOSED INFORMATION:

Attachment 1: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2,4-DIMETHYLPHENOL (CASRN 105-67-9)**

Attachment 2: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2,4-DINITROPHENOL (CASRN 51-28-5)**

Attachment 3: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2,6 -DINITROTOLUENE (CASRN 606-20-2)**

Attachment 4: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2-CHLOROPHENOL (CASRN 95-57-8)**

Supported by ECFlex, Incorporated, under
U.S. Environmental Protection Agency Contract No. EP-C-06-088.

Attachment 5: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2-METHYLNAPHTHALENE (CASRN 91-57-6)**

Attachment 6: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2-NITROPHENOL (CASRN 88-75-5)**

BE ADVISED: *Unless specifically indicated to have been peer reviewed, it is to be noted that the attached Provisional Toxicity Value Paper(s) have not been through the U.S. EPA's formal review process; therefore, they do not represent a U.S. EPA verified assessment.*

If you have any questions regarding this transmission, please contact the STSC at (513) 569-7300.

Attachments (6)

cc: STSC Files

Supported by ECFlex, Incorporated, under
U.S. Environmental Protection Agency Contract No. EP-C-06-088.

6-27-2007

Provisional Peer Reviewed Toxicity Values for

2,4-Dimethylphenol
(CASRN 105-67-9)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2,4-DIMETHYLPHENOL (CASRN 105-67-9)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and

circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

2,4-Dimethylphenol (2,4-DMP), also known as m-xylenol, 2,4-xylenol or m-4-xylenol, is a naturally occurring, substituted phenol derived from the cresol fraction of petroleum or coal tars. 2,4-DMP has the empirical formula $C_8H_{10}O$ (Figure 1). It is used in the manufacture of a wide range of commercial products for industry and agriculture. There are six isomeric forms of dimethylphenol that exist (2,3-, 2,4-, 2,5-, 2,6-, 3,4- and 3,5-dimethylphenol).

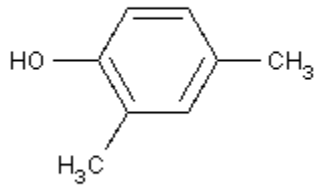


Figure 1. 2,4-Dimethylphenol Structure

The EPA's Integrated Risk Information System (IRIS) (U.S. EPA, 2007) lists a chronic oral reference dose (RfD) of 2E-2 mg/kg-day for 2,4-dimethylphenol based upon data in an unpublished 90-day gavage study in mice (U.S. EPA, 1989). The chronic RfD was derived from

the NOAEL of 50 mg/kg-day for clinical signs of toxicity (lethargy, prostration and ataxia) and a composite uncertainty factor of 3000 (10 for interspecies variability, 10 for intraspecies variability and 30 for lack of chronic toxicity data, data in a second species and reproductive/developmental studies). IRIS does not list a chronic inhalation reference concentration (RfC) or derive a cancer oral slope factor or inhalation unit risk for 2,4-DMP (U.S. EPA, 2007). The HEAST (U.S. EPA, 1997) lists a subchronic RfD of 0.2 mg/kg-day based on the NOAEL from the same principal study identified by IRIS and an uncertainty factor of 300. The Drinking Water Standards and Health Advisories list (U.S. EPA, 2006) does not include an RfD or carcinogenicity assessment for 2,4-dimethylphenol. An Ambient Water Quality Criteria Document for 2,4-DMP does not include an RfD or carcinogenicity assessment, but does lists a criterion level of 400 μg/L based upon undesirable organoleptic qualities, which is more a function of aesthetic property of water than a health effect (U.S. EPA, 1980). The Chemical Assessments and Related Activities (CARA) list (U.S. EPA, 1991, 1994) includes both a Health and Environmental Effects Profile (HEEP) (U.S. EPA, 1986) and a Health Effects Assessment (HEA) (U.S. EPA, 1985) for dimethylphenols. Neither the HEEP (U.S. EPA, 1986) nor the HEA (U.S. EPA, 1985) derived toxicity values for 2,4-DMP, citing insufficient data. Neither the ATSDR (2006), National Toxicology Program (NTP) (2006), International Agency for Research on Cancer (IARC) (2006) nor the World Health Organization (WHO) (2006) has produced documents regarding 2,4-DMP. No occupational exposure limits have been derived by the Occupational Safety and Health Administration (OSHA), the National Institute of Occupational Safety and Health (NIOSH), or the American Conference of Governmental Industrial Hygienists (ACGIH).

Literature searches for studies relevant to the derivation of provisional toxicity values for 2,4,-DMP (CASRN 105-67-9) were conducted from 1965 to August 2006 in TOXLINE (supplemented with BIOSIS and NTIS updates), MEDLINE, TSCATS, RTECS, CCRIS, DART, EMIC/EMICBACK, HSDB, GENETOX, CANCERLIT and Current Contents.

REVIEW OF PERTINENT LITERATURE

Human Studies

No studies investigating the effects of subchronic or chronic oral or inhalation exposure to 2,4-DMP in humans were identified.

Animal Studies

Oral Exposure

Chronic Studies – No studies investigating the effects of chronic oral exposure to 2,4-DMP in animals were identified.

Subchronic Studies – Studies on the subchronic toxicity of oral exposure to 2,4-dimethylphenol have been conducted in rats exposed for 10 and 90 days (Daniel et al., 1993) and

mice exposed for 14 (U.S. EPA, 1987) and 90 days (U.S. EPA, 1989). Additional studies evaluating the effects of subchronic exposure of animals to oral 2,4-DMP were not identified.

Groups of 10 male and 10 female Sprague-Dawley rats (80 days old) were administered 0 (vehicle control), 60, 120, 600 or 1200 mg/kg body weight of 2,4,-DMP in corn oil by gavage once daily for 10 consecutive days (Daniel et al., 1993). Rats were observed daily for mortality and physiological and behavioral signs of toxicity. Body weights were recorded on days 0, 4 and 6 of treatment and at the end of the study. Blood samples taken at the end of the treatment period were analyzed for the following: white blood cell (WBC) count, red blood cell counts (RBC), hemoglobin (Hgb), hematocrit (Hct), mean corpuscular volume (MCV), glucose, blood urea nitrogen (BUN), creatinine, alkaline phosphatase (ALP), aspartate aminotransferase (AST), alanine aminotransferase (ALT), cholesterol, lactate dehydrogenase (LDH) and calcium (Ca^{++}). Organ weights were recorded and gross examination of comprehensive tissues was performed at the end of the treatment period. All tissues from the control and 600 mg/kg groups were examined microscopically. As target organs for 2,4,-DMP were identified, target tissues from the 60 and 120 mg/kg groups were examined microscopically.

All male and female rats treated with 1200 mg/kg body weight 2,4-DMP died prior to completion of the 10-day treatment period (time of death not reported) (Daniel et al., 1993). The study authors attributed the cause of death to 2,4-DMP-induced severe stomach lesions. Mortalities in other groups were as follows: 1 male in the control group, 1 female in the 120 mg/kg group, and 2 females and 1 male in the 600 mg/kg group. The cause of death or relationship to treatment was not reported. No mortalities occurred in the 60 mg/kg group. Clinical and behavioral signs of toxicity were not reported for any dose group. In surviving animals, food and water intake, final body weight and body weight gain were not significantly different from controls in any 2,4-DMP group. Relative liver weight was significantly increased in females, but not males, in the 600 mg/kg group compared to control (Table 1). No increase in relative liver weight was observed in males or females in other 2,4-DMP groups. Relative weights of other organs were not affected by treatment. Absolute organ weights were not reported.

Effects on hematological and clinical chemistry parameters were observed only in the high-dose group, except for decreased AST in females in the 60 mg/kg-day group and decreased Ca^{++} in males in the 120 mg/kg-day group, as shown in Table 2 (Daniel et al., 1993). In general, relative to control, the observed effects were minimal. Significant increases in WBC and Hgb values were observed in females, but not males, in the 600 mg/kg-day treatment group. No other effects on hematological parameters were observed for any treatment group for females or males. In females, mean serum glucose and cholesterol levels were significantly increased in the 600 mg/kg group and AST levels were significantly decreased in the 60 and 600 mg/kg dose groups (Table 2); however, AST levels were not significantly different from control in the 120 mg/kg group. In male rats, serum Ca^{++} was decreased in the 120 and 600 mg/kg groups and AST was significantly decreased in the 600 mg/kg group (Table 2). Serum cholesterol was increased in both males and females treated with 600 mg/kg-day (Table 2).

Table 1. Effect of Oral Treatment of Rats with 2,4-DMP (10 Day Exposure) on Final Body Weight and Relative Liver Weight (Daniel et al., 1993)

Parameter	Treatment Group (mg/kg-day)			
	0	60	120	600
Females				
Number of animals	10	10	9	8
Final body weight (g)	234.2±10.1[a]	237.8±13.0 (101.5)	233.8±11.2 (99.8)	224.9±12.9 (98.0)
Relative Liver weight (%)	2.97±0.24	3.13±0.23 (105.0)	3.19±0.16 (107.0)	3.50±0.32 (117.4)[b]
Males				
Number of animals	9	10	10	9
Final body weight (g)	354.0±19.8	347.9±18.1 (98.3)	358.1±30.2 (101.2)	335.2±21.2 (94.7)
Relative Liver weight (%)	3.05±0.21	3.09±0.22 (101.3)	3.14±0.21 (103.0)	3.29±0.49 (107.9)

[a] Values are means ± Standard Deviation (SD); ( ) = percent of control
[b] Significantly different from control ($p \leq 0.05$), Analysis of Variance (ANOVA)

Table 2. Effect of Oral Treatment of Rats with 2,4-DMP (10 Day Exposure) on Hematology and Serum Chemistry Values (Daniel et al., 1993)

Parameter	Treatment Group (mg/kg-day)			
	0	60	120	600
Females				
WCB ($x10^3$)	7.0±1.8[a]	8.6±1.7 (122.8)	7.3±1.8 (104.3)	9.5±2.3 (135.7)[b]
Hgb (g/dL)	14.9±0.9	15.1±0.5 (101.3)	15.3±0.7 (102.7)	16.2±1.2 (108.7)[b]
Glucose (mg/dL)	95.5±15.4	117.4±14.1 (122.9)	107.8±22.1 (112.9)	138.0±24.2 (144.5)[b]
Cholesterol (mg/dL)	71.6±12.1	78.6±11.6 (109.8)	86.5±9.7 (120.8)	110.9±38.0 (154.9)[b]
AST (IU^c/L)	111.3±18.7	89.6±13.1 (80.5)[b]	95.3±20.5 (86.5)	84.4±13.4 (75.8)[b]
Ca^{++} (mg/dL)	10.1±0.5	10.2±0.6 (101.0)	10.5±0.5 (104.0)	10.7±1.2 (103.0)
Males				
WCB ($x10^3$)	8.6±1.3	10.5±4.0 (122.1)	9.5±1.6 (110.5)	11.5±0.3 (133.7)
Hgb (g/dL)	15.6±0.5	15.8±0.6 (101.3)	16.0±0.7 (102.6)	16.1±0.4 (103.2)
Glucose (mg/dL)	109.2±12.3	120.4±25.9 (110.3)	124.3±27.9 (113.8)	135.9±27.6 (124.5)
Cholesterol (mg/dL)	62.1±10.6	64.2±8.8 (103.4)	60.3±9.8 (97.1)	65.0±17.0 (104.7)[b]
AST (IU/L)	102.5±18.7	101.1±38.2 (98.6)	99.8±15.3 (97.4)	80.4±13.1 (78.4)[b]
Ca^{++} (mg/dL)	10.6±0.3	10.1±0.3 (95.2)	9.7±0.6 (91.5)[b]	9.5±1.0 (89.6)[b]

[a] Values are means ± SD; ( ) = percent of control
[b] Significantly different from control ($p \leq 0.05$), ANOVA
[c] International Units (IU)

Based on the cause of death (severe stomach lesions) for all rats in the 1200 mg/kg group, the stomach was identified as the primary target organ for exposure to 2,4-DMP by gavage (Daniel et al., 1993). In the 600 mg/kg group, lesions of the forestomach (including epithelial hypertrophy, hyperkeratosis and mucosal vacuolar degeneration) were observed in male and female rats. Although the authors state that the incidence and severity of forestomach lesions increased with dose, specific dose-response data were not presented and no information on stomach lesions in the 60 and 120 mg/kg group was reported. Therefore, it is unclear from this report if forestomach lesions were observed in all 2,4-DMP dose groups. Thus, due to inadequacy of reporting, NOAEL and LOAEL values cannot be determined for this 10-day study.

Groups of 10 male and 10 female Sprague-Dawley rats (80 days old) were administered 0 (vehicle control), 60, 180 or 540 mg/kg body weight of 2,4-DMP in corn oil once daily for 90 consecutive days by gavage (Daniel et al., 1993). Rats were observed daily for mortality and clinical and behavioral signs of toxicity. Body weights and food and water consumption were recorded weekly. Blood samples taken at the end of the treatment period were analyzed for the following: WBC count, red blood cell counts (RBC), platelet count, hemoglobin (Hgb), Hct, MCV, mean corpuscular hemoglobin (MCH), mean corpuscular hemoglobin concentration (MCHC), glucose, BUN, creatinine, ALP, AST, ALT, cholesterol, triglycerides, LDH, gamma glutamyl transpeptidase (GGT), total bilirubin, direct bilirubin, total protein, albumin (A), globulin (G), Ca^{++}, sodium (Na^{+}), potassium (K^{+}), chloride (Cl^{-}), phosphate (PO_4) and magnesium (Mg^{++}). At the end of the treatment period, gross pathological examination was conducted on rats from all treatment groups. The stomach of all surviving animals was examined microscopically and histopathological examination was performed on all tissues from the control and high-dose group (180 mg/kg).

All females and 6 of 10 males treated in the 540 mg/kg group died by the fifth day of treatment (Daniel et al., 1993). Subsequently, 6 females and 6 males were added to the 540 mg/kg group, with a total of 3/16 females and 7/16 males surviving for the 90-day treatment period. The cause of death for all animals in the 540 mg/kg group was reported as corrosive effects of 2,4-DMP on the esophagus and stomach, based on findings of the gross pathological examination. No mortalities or clinical signs of toxicity were observed in female or male rats in control or other 2,4-DMP treatment groups. Final body weight was decreased approximately 10% in females in the 180 and 540 mg/kg groups (statistically significant only in the 180 mg/kg-day group) and in males in the 540 mg/kg group. Changes in relative organ weights generally appeared to be secondary to changes in body weight, with small increases in relative brain, liver, kidney, and (in males) testes weights at doses that also produced decreases in body weight (Table 3). Relative thymus weight was significantly decreased in males at 60 mg/kg-day, but not in higher dose males or females.

Hematological analysis revealed a 2.4% increase ($p \leq 0.05$) in MCV in females treated with 540 mg/kg body weight 2,4-DMP compared to control; however, the authors state that the magnitude of change was not considered biologically significant (Daniel et al., 1993). No other

Table 3. Effect of Oral Treatment of Rats with 2,4-DMP (90 Day Exposure) on Final Body Weight and Relative Organ Weights (Daniel et al., 1993)

Parameter	Treatment Group (mg/kg-day)			
	0	60	180	540
Females				
Number of animals	10	10	10	3
Final body weight (g)	269.0±26.2[a]	263.1±21.5 (97.8)	240.3±24.4 (89.3)[b]	244.6±21.0 (90.9)
Relative brain weight (%)	0.81±0.06	0.81±0.08 (100)	0.88±0.07 (108.6)[b]	0.93±0.13 (114.8)
Relative kidney weight (%)	0.74±0.04	0.70±0.04 (94.6)[b]	0.80±0.08 (108.1)[b]	0.82±0.04 (110.8)
Relative liver weight (%)	2.90±0.16	2.84±0.31 (97.9)	3.13±0.32 (107.9)	3.21±0.13 (110.7)[b]
Relative thymus weight (%)	0.12±0.03	0.12±0.02 (100)	0.10±0.02 (83.3)	0.11±0.03 (91.7)
Males				
Number of animals	10	10	10	7
Final body weight (g)	492.8±40.2	516.6±56.4 (104.8)	507.3±21.2 (102.9)	442.0±41.0 (89.7)[b]
Relative brain weight (%)	0.48±0.04	0.46±0.05 (95.8)	0.46±0.03 (95.8)	0.52±0.03 (108.3)[b]
Relative kidney weight (%)	0.70±0.04	0.67±0.04 (95.7)	0.69±0.04 (98.6)	0.77±0.06 (110.0)[b]
Relative liver weight (%)	3.17±0.39	2.97±0.32 (93.7)	3.13±0.18 (98.7)	3.30±0.35 (104.1)
Relative thymus weight (%)	0.08±0.01	0.06±0.01 (75.0)[b]	0.07±0.01 (87.5)	0.07±0.02 (87.5)
Relative testes weight (%)	0.72±0.12	0.66±0.09 (91.7)	0.68±0.07 (94.4)	0.83±0.08 (115.3)[b]

[a] Values are means ± SD; ( ) = percent of control
[b] Significantly different from control ($p \leq 0.05$), ANOVA

hematology parameters were affected by 2,4-DMP treatment. Effects on clinical chemistry parameters were minor (Table 4). In females, mean phosphate levels in the low dose group and AST levels in the middle-dose group were significantly decreased. In high-dose females, the BUN/creatinine ratio and cholesterol levels were increased and creatinine and chloride levels were decreased. In high-dose males, serum creatinine and AST were significantly decreased, whereas cholesterol, triglycerides and Mg^{++} were significantly increased.

Gross pathological examination at the end of the treatment period revealed a small, red thymus in a small percentage (percentage not reported) of males in the 60 and 540 mg/kg groups, but not in the 180 mg/kg group. Incidence data for gross thymus lesions were not reported and histopathological examination of the thymus was not performed. At the end of the 90-day treatment period, histopathological examination of the forestomach showed hyperkeratosis and epithelial hyperplasia in all males in the 180 and 540 mg/kg groups, 60% of females in the 180 mg/kg group and all females in the 540 mg/kg group. Severity of lesions increased with dose (data on severity not reported). Although histopathological assessment of the stomach was performed in the low-dose group, no data or information were presented; thus, it is unclear if lesions were present in rats treated with 60 mg/kg-day 2,4-DMP. No other treatment-related histopathological changes were observed in male or female rats. The study authors identified 60 mg/kg body weight as the NOAEL since "no biologically significant changes in frequency or severity of adverse effects" relative to control were observed; however, the "biologically

Table 4. Effect of Oral Treatment of Rats with 2,4-DMP (90 Day Exposure) on Serum Chemistry Values (Daniel et al., 1993)

Parameter	Treatment Group (mg/kg-day)			
	0	60	180	540
Females				
Creatinine (mg/dL)	0.71±2.8[a]	0.68±0.11 (95.8)	0.70±0.13 (98.6)	0.57±0.06 (80.3)[b]
BUN/Creatinine ratio	26±5	26±4 (100)	31±7 (119.2)	41±5 (157.7)[b]
AST (IU/L)	149±29	137±69 (91.9)	121±15 (81.2)[b]	169±11 (113.4)
Cholesterol (mg/dL)	35±7	42±7 (120)	43±9 (122.9)	73±14 (208.6)[b]
Triglycerides (mg/dL)	64±17	65±20 (101.6)	56±27 (87.5)	63±5 (98.4)
Cl^- (mEq/L)	98±4	100±2 (102.0)	99±3 (101.0)	95±2 (96.9)[b]
Mg^{++} (mEq/L)	2.1±0.2	2.0±0.1 (95.2)	2.1±0.1 (100)	2.2±0.2 (104.8)
PO_4 (mEq/L)	5.3±0.5	4.5±0.9 (84.9)[b]	5.4±1.0 (101.9)	6.6±0.8 (124.5)
Males				
Creatinine (mg/dL)	0.61±0.06	0.61±0.11 (100)	0.59±0.03 (96.7)	0.54±0.05 (88.5)[b]
BUN/Creatinine ratio	30±6	32±7 (103.2)	30±4 (96.8)	34±5 (109.7)
AST (IU/L)	115±15	165±93 (143.5)	113±26 (98.3)	99±6 (86.1)[b]
Cholesterol (mg/dL)	38±9	40±13 (105.3)	43±12 (113.2)	48±5 (126.3)[b]
Triglycerides (mg/dL)[c]	38±9	40±13 (105.3)	43±12 (113.2)	48±5 (126.3)[b]
Cl^- (mEq/L)	100±1	101±2 (101)	100±1 (100)	100±2 (100)
Mg^{++} (mEq/L)	1.8±0.2	1.9±0.1 (105.6)	1.9±0.2 (105.6)	2.0±0.1 (111.1)[b]

[a] Values are means ± SD; ( ) = percent of control
[b] Significantly different from control ($p \leq 0.05$), ANOVA
[c] For male rats, values for triglycerides as reported by study authors, were identical to those for cholesterol. Comparison of triglyceride and cholesterol concentrations for males and females indicated that triglyceride concentrations for males were incorrectly reported by Daniel et al. (1993).

significant" effects serving as the basis for the LOAEL of 180 mg/kg body weight-day were not specifically identified. Based on results of this study, the stomach appears to be a target organ for orally administered 2,4,-DMP. Due to ambiguous reporting, it is unclear if 2,4-DMP induced stomach lesions in the 60 mg/kg-day group, introducing significant uncertainty to the NOAEL and LOAEL values reported by the study authors.

The oral toxicity of 2,4-DMP was evaluated in a 90-day study in albino mice (U.S. EPA, 1989). Data from this unpublished study serve as the basis for the chronic RfD for 2,4-DMP listed by IRIS (U.S. EPA, 2007). Groups of 30 male and 30 female albino mice [strain Crl:CD-1(ICR)BR-VAF+] were administered 5, 50 or 250 mg/kg body weight 2,4-DMP in corn oil by gavage for 90 days. Untreated control and vehicle control, consisting of 30 male and 30 female mice per group, were included. Mice were observed twice daily throughout the treatment period for mortality, morbidity and signs of toxicity. A 30-day interim sacrifice was performed on eight

males and nine females from each group. Body weights and food consumption were recorded weekly. Blood was analyzed for hematological (Hgb, Hct, RBC, total and differential leukocyte count, platelet count, reticulocyte count, MCV, MCH and MCHC) and clinical chemistry parameters (Ca^{++}, Cl^{-}, PO_4, K^{+}, Na^{+}, glucose, creatinine, BUN, ALT, AST, LDH, ALP, albumin, globulin, total protein, total bilirubin and cholesterol) at the interim sacrifice (for mice sacrificed at 30 days) and at the end of the 90-day exposure period. Ophthalmologic examinations were conducted prior to study initiation and in all surviving mice at study termination. Necropsy was performed on all animals found dead during the study and in all surviving animals at the end of the 90-day exposure period. Histopathological examination of comprehensive tissues was performed at the end of the treatment period and in all animals dying prior to study completion.

A total of 15 animals (0 in untreated control, 3 in vehicle control, 4 in 5 mg/kg, 3 in 50 mg/kg and 5 in 250 mg/kg groups) died during the treatment period; deaths were attributed to technical errors (ruptured esophagus) and not considered as treatment-related by study authors (U.S. EPA, 1989). Body weight and food consumption were similar to controls for all 2,4-DMP groups. Clinical signs of toxicity were not observed during the first 6 weeks of treatment. From week 7 through the end of the treatment period, squinting, lethargy, prostration and ataxia were observed in high-dose males and females following daily dosing. No treatment-related ophthalmologic findings were observed in any 2,4-DMP group.

At the interim sacrifice, small decreases in MCV (4.3% decrease, $p \leq 0.05$) and MCH (3.7% decrease, $p \leq 0.05$) were observed for females in the high-dose group compared to vehicle control, while larger decreases were observed in BUN levels for females in the mid- (32.5% decrease, $p \leq 0.05$) and high-dose (21.7% decrease, $p \leq 0.05$) groups (U.S. EPA, 1989). A significant increase in cholesterol levels (79% increase, $p \leq 0.05$) was observed for males in the low-dose group. No effects on other hematological or clinical chemistry parameters were observed at the interim sacrifice. At the end of the 90-day treatment period, all hematology parameters in 2,4-DMP treated mice were similar to control. Changes in clinical chemistry and organ weights observed after 90 days of treatment were sporadic, with no dose-related patterns of change. The organ weight data are shown in Table 5. No treatment-related gross pathological or histological findings, including lesions of the stomach, were observed. Based on clinical signs of toxicity in the high-dose 2,4-DMP group, NOAEL and LOAEL values were identified as 50 and 250 mg/kg-day.

According to IRIS (U.S. EPA, 2007), an unpublished 14-day gavage study with 2,4-DMP (U.S. EPA, 1987) was conducted by the same laboratory as the 90-day gavage study in mice (U.S. EPA, 1989). Results of the 14-day study revealed signs of toxicity (lethargy, prostration and ataxia) in males and females exposed to 250 mg/kg-day, the same dose at which signs of toxicity effects were observed in the 90-day study. No additional information pertaining to this study was provided by IRIS (U.S. EPA, 2007). This study was not available for review.

Inhalation Exposure

No studies investigating the effects of subchronic or chronic inhalation exposure to 2,4-DMP in animals were identified.

Table 5. Effect of Oral Treatment of Mice with 2,4-DMP (90-Day Exposure) on Final Body Weight and Relative Organ Weights (U.S. EPA, 1989)

Parameter	Treatment Group (mg/kg-day)				
	Control	Vehicle Control	5	50	250
Females					
Body weight (g)	27.2±3.9[a]	26.6±2.4	26.4±2.8	26.6±3.1	26.1±1.6
Liver weight (g)	1.1967	1.1001	1.1136	1.1285	1.1425
Relative liver weight(g/100 g)	4.4289	4.1072	4.1953	4.2614	4.3733
Spleen weight (g)	0.0959	0.0846	0.0854	0.0796	0.0898
Relative spleen weight (g/kg)	0.3500	0.1607	0.1639	0.1518	0.1703
Adrenal weight (g)	0.0124	0.0108	0.0142[b]	0.0115	0.0110
Relative adrenal weight (g/100 g)	0.0467	0.0403	0.0548[b]	0.0437	0.0424
Males					
Body weight (g)	33.9±3.3	32.5±2.9	33.3±2.7	32.5±3.3	31.6±3.5
Liver weight (g)	1.4430	1.2658	1.3412	1.2985	1.3166[b]
Relative liver weight(g/100 g)	4.2744	3.9064	4.0421	3.9955	4.1695[b]
Spleen weight (g)	0.1081	0.0758	0.0907[b]	0.0742	0.0747
Relative spleen weight (g/kg)	0.3272	0.2337	0.2740	0.2282	0.2368
Adrenal weight (g)	0.0093	0.0099	0.0108	0.0083	0.0082
Relative adrenal weight (g/100 g)	0.0275	0.0303	0.0324	0.0256	0.0263

[a] Values are means ± SD, or means only
[b] Significantly different from vehicle control ($p \leq 0.05$)

Other Studies

Dermal- The immunomodulatory effects of 2,4-DMP were examined in six- to eight-week old male BALB/cA mice following short-term (3-day) dermal exposure (Yamano et al., 2007). Groups of mice (n = 3/group) were exposed to 25 µL of 1M 2,4-DMP (equivalent to 100 mg/kg) or vehicle (acetone/olive oil, 4:1) through application to the dorsum of both ears for 3 consecutive days. Three or five days after the last exposure to 2,4-DMP, auricular lymph nodes (LN) were excised from each mouse and prepared for evaluation using the murine local lymph node assay (LLNA), or were processed for primary cell culture and subsequent cytokine profiling, respectively. The LLNA allows for determination of whether a chemical acts as an immediate or delayed type immunogen which is related to the relative proportions of or balance between type-1 and type-2 T helper (Th-1 and Th-2, respectively) cells. Th-1 and Th-2 cells are differentiated by the types of cytokines produced in response to an immunogen. Th-1 cells secrete pro-inflammatory cytokines such as interferon-γ (IFN-γ), whereas Th-2 cells secrete anti-inflammatory cytokines such as interleukin-4 (IL-4). Thus, these two subsets of T helper cells are in essence functional antagonists of one another. In addition to the LLNA, primary splenocyte cultures from immunologically naïve mice were used for *in vitro* analysis of cell viability and cytokine profiling following 48 hr. of 2,4-DMP exposure. LLNA data suggested

that 2,4-DMP caused lymph node proliferation by acting as an immunogen via the dermal route of exposure. However, 2,4-DMP failed to stimulate lymphocyte secretion of the pro-inflammatory cytokine IFN-γ, or inhibit the anti-inflammatory cytokine IL-4 compared to control. Thus, it appears that 2,4-DMP is a weak inducer of a type-1 reaction in T helper cells (i.e. Th-1) following dermal absorption. Specifically, the results suggest that while dermal 2,4-DMP exposure induces an apparent increase in lymphocyte population of auricular nodes, the immunomodulatory effect (i.e. the ability to tip the balance between a Th-1 or Th-2 type immune response) was not significantly different from vehicle treated controls.

Toxicokinetic – Little information is available regarding the toxicokinetics of 2,4-DMP. In general, dimethylphenol isomers undergo extensive absorption from the gastrointestinal tract (Miyamoto et al., 1969). Results of a kinetic study in male Sprague-Dawley rats indicate that intravenously administered 2,4-DMP undergoes rapid distribution, with accumulation in the brain, liver and fat (Kaka et al., 1982). Metabolism to glucuronide and sulfate conjugates was rapid and nearly complete within 30 minutes of administration (Kaka et al., 1982).

Genotoxicity – All available evidence indicates that 2,4-DMP, like the other dimethylphenol isomers, is not genotoxic. All dimethylphenol isomers tested negative in reverse mutation assays with *Salmonella tymphimurium* strains TA98, TA100, TA1535, TA1537 and TA1538 with and without activation (Pool and Lin, 1982; Florin et al., 1980; Mortelmans et al., 1986). In a reverse mutation assay with *Escherichia coli* strain Sd 4-72, 2,4-DMP tested negative (Szybalski et al., 1958). 2,4-DMP also tested negative in a sister-chromatid exchange assay in isolated human lymphocytes (Jannson et al., 1986).

Tumor Promoting Activity – Although no subchronic or chronic oral or inhalation carcinogenicity studies have been performed on dimethylphenol isomers, data are available to suggest that the 2,4-, 2,5-, 3,4- and 3,5-DMP isomers exhibit tumor promoting activity on mouse skin (Boutwell and Bosch, 1959). All isomers except 2,6-DMP produced a small increase in carcinoma incidence when applied to skin without an initiation. However, the available data are not sufficient to assess the carcinogenicity of 2,4-DMP or other dimethylphenol isomers.

DERIVATION OF A PROVISIONAL SUBCHRONIC ORAL RfD FOR 2,4-DIMETHYLPHENOL

No studies on the effects of oral exposure to 2,4-DMP in humans are available. Subchronic toxicity studies in rats and mice identify the stomach and thymus as possible target organs for oral 2,4-DMP. The 10-day oral toxicity study in rats showed dose-related irritant and corrosive effects of the esophagus and forestomach following administration of 2,4-DMP by gavage (Daniel et al., 1993). Although the study report clearly indicates that histopathological changes to the forestomach were observed in rats treated with 600 and 1200 mg/kg-day, due to inadequate reporting, it is unclear if effects on the forestomach were present at lower doses (60 and 120 mg/kg-day). Irritant and corrosive effects of the esophagus and forestomach were observed in rats exposed to 180 and 540 mg/kg-day for 90 days; however, results of histopathological examination of the forestomach in the 60 mg/kg-day were not reported. Although 2,4-DMP clearly produces adverse effects to the esophagus and forestomach of rats

following administration by gavage, the available dose-response information is not adequate for the basis of the subchronic p-RfD.

Decrease in relative thymus weight was observed in male, but not female, rats treated with 60 mg/kg-day for 90 days, although the magnitude of change was small (Daniel et al., 1993). Gross pathological examination revealed a small, red thymus in a "small percentage" of surviving males in the 60 and 540 mg/kg groups, but not in the 180 mg/kg group. Thus, a clear dose-response relationship was not observed. No information was reported on histopathological examination of the thymus. Since thymus and immune system function of rats was not assessed, the biological significance of decreased thymus weight and small, red thymus is uncertain. Therefore, the effect of 2,4-DMP on thymus weight was not selected as the basis for the subchronic p-RfD.

The 90-day gavage study in mice reported general signs of toxicity, including squinting, lethargy, prostration and ataxia in males and females following daily dosing with 250 mg/kg-day, establishing a NOAEL of 50 mg/kg-day (U.S. EPA, 1989). Although signs of clinical toxicity are not very sensitive endpoints, comprehensive toxicological endpoints were examined, including histopathology, and the study was well-reported. Thus, the NOAEL of 50 mg/kg-day for signs of toxicity was selected as the basis of the subchronic p-RfD. As indicated in the Introduction section of this document, this is the same study and critical effect used to derive the chronic RfD for 2,4-DMP listed by IRIS (U.S. EPA, 2007).

The **subchronic p-RfD of 5E-2 mg/kg-day** was derived from the NOAEL of 50 mg/kg-day for signs of clinical toxicity as follows:

$$\begin{aligned} \text{p-RfD} &= \text{NOAEL} \div \text{UF} \\ &= 50 \text{ mg/kg-day} \div 1000 \\ &= 0.05 \text{ mg/kg-day or } 50 \text{ } \mu\text{g/kg-day} \\ &= \textbf{5E-2 mg/kg-day} \end{aligned}$$

The uncertainty factor (UF) of 1000 was composed of the following:

- An UF of 10 was applied for interspecies extrapolation to account for potential pharmacodynamic and pharmacokinetic differences between mice and humans.
- A default 10-fold UF for intraspecies differences was used to account for potentially susceptible individuals in the absence of quantitative information or information on the variability of response in humans.
- An UF of 10 was included for database insufficiencies due to the lack of oral developmental studies and a multi-generation reproduction study.

Confidence in the principle study is medium, since it examined appropriate and comprehensive endpoints and identified both LOAEL and NOAEL values. The database for oral exposure to 2,4-DMP includes only two subchronic gavage studies conducted in rats and mice, with different effects in each species. Furthermore, the database provides no information on developmental and reproductive studies. Low confidence in the database and the oral subchronic p-RfD results.

FEASIBILITY FOR DERIVING PROVISIONAL SUBCHRONIC AND CHRONIC INHALATION p-RfC VALUES FOR 2,4-DIMETHYLPHENOL

No studies investigating the effects of subchronic or chronic inhalation exposure to 2,4-DMP in humans or animals were identified. The lack of subchronic and chronic inhalation data precludes derivation of subchronic and chronic p-RfCs for 2,4-DMP.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR 2,4-DIMETHYLPHENOL

No studies evaluating the carcinogenic potential of oral or inhalation exposure to 2,4-DMP in humans were identified in the available literature. Cancer bioassays for 2,4-DMP have not been conducted in animals for either oral or inhalation exposure. Under the 2005 Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005), inadequate information is available to assess the carcinogenic potential of 2,4-DMP.

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9-25-2007

Provisional Peer Reviewed Toxicity Values for

2,4-Dinitrophenol
(CASRN 51-28-5)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose

PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2,4-DINITROPHENOL (CASRN 51-28-5)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).
2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.
3. Other (peer-reviewed) toxicity values, including:
   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

The HEAST (U.S. EPA, 1997) listed a chronic RfD of 2E-3 mg/kg-day for 2,4-dinitrophenol (DNP) based on the IRIS database. The assessments were based on a LOAEL of 2 mg/kg-day for cataract in humans treated with 2,4-DNP as a weight reducing agent (Horner, 1942). The derivation for the chronic RfD included an uncertainty factor (UF) of 1000 (10 for extrapolation from subchronic exposure to chronic exposure, 10 for protecting sensitive individuals, and 10 for the use of a LOAEL). The HEAST also lists a subchronic RfD by adopting the chronic oral RfD from IRIS. The chronic RfD for 2,4-DNP was developed by U.S. EPA in 1991, and is listed on the IRIS database. However, it was not listed on the Drinking Water Standards and Health Advisories list (U.S. EPA, 2006). The toxicity of 2,4-DNP has been summarized in the Ambient Water Quality Criteria for Nitrophenols by U.S. EPA (1980) and the Toxicological Profile for Dinitrophenol by ATSDR (1995). ATSDR proposed an acute-duration Minimal Risk Level (MRL) of 0.01 mg/kg-day, but not for intermediate- or chronic-duration oral exposure to 2,4-DNP.

An RfC for 2,4-DNP was not listed on the HEAST (U.S. EPA, 1997). The health effect data for 2,4-DNP were reviewed by the U.S. EPA RfD/RfC Work Group in 1991 and were determined to be inadequate for the derivation of an inhalation RfC. The American Conference of Governmental Industrial Hygienists has not established a Threshold Limit Value (TLV)-Time-Weighted Average (TWA) and the National Institute for Occupational Safety and Health (NIOSH, 2005) has not established a REL-TWA for this chemical. The Occupational Safety and Health Administration (OSHA) has not developed a Permissible Exposure Limit (PEL)-TWA for 2,4-DNP either.

The 1997 HEAST did not include a cancer assessment for 2,4-DNP. No cancer assessment for this chemical has been developed by IRIS or IARC.

The WHO (2007) has not reviewed the toxicology of 2,4-DNP. Literature searches were conducted for the period from 1980 to August 2007 to identify data relevant for the derivation of provisional RfD, RfC, and cancer assessments for 2,4-DNP. The following databases were searched: TOXLINE, MEDLINE, CANCERLIT, TOXLIT/BIOSIS, Registry of Toxic Effects of Chemical Substances (RTECS), HSDB, GENETOX, CCRIS, TSCATS, EMIC/EMICBACK, and DART/ETICBACK.

This document has passed the Superfund Health Risk Technical Support Center (STSC) quality review and peer review evaluation indicating that the quality is consistent with the SOPs and standards of the STSC and is suitable for use by registered users of the PPRTV system.

REVIEW OF PERTINENT LITERATURE

Human Studies

Numerous occasions of human poisoning by 2,4-DNP have been reported in the literature. The earliest cases of fatal 2,4-DNP intoxication related to its usage as a component of explosives during World War I. Thirty-six cases of fatal occupational dinitrophenol poisoning occurred among employees of the munitions industry in France between 1916 and 1918 (Perkins, 1919). A literature review by von Oettingen (1949) revealed 27 reported cases of fatal occupational dinitrophenol poisoning in the United States for the years 1914 to 1916. In addition, Gisclard and Woodward (1946) reported two fatal cases of dinitrophenol poisoning during manufacture of picric acid where 2,4-DNP was produced as an intermediate. Swamy (1953) also described a case of suicidal poisoning by 2,4-DNP.

Early in the 1930s, 2,4-DNP was widely recommended as a treatment for obesity, and it resulted in both toxic side effects and fatalities. Horner (1942) reported a total of nine deaths resulting from the use of dinitrophenol as a slimming agent. The toxic manifestations of dinitrophenol exposure as reviewed by Horner (1942) included subacute symptoms such as gastrointestinal disturbances (nausea, vomiting, colic, diarrhea, anorexia), profuse sweating, weakness, dizziness, headache, and loss of weight. Acute poisoning has resulted in the sudden onset of pallor, burning thirst, agitation, dyspnea, profuse sweating, and hyperpyrexia. Intense and rapid onset of rigor mortis after death has also been described.

Perkins (1919) reported that postmortem examination of dinitrophenol victims demonstrated no characteristic lesions. Acute edema of the lungs was mentioned but was believed to be secondary to the toxic effects on the vasomotor system. Microscopic lesions of the liver and kidney cells were inconstant and typical changes were lacking elsewhere.

The widespread use of 2,4-DNP as a weight reducing agent in humans during the 1930s also provided some information regarding the chronic effects of this compound in humans. Recommended therapeutic doses of 2,4-DNP for weight control on humans ranged from 2 to 5 mg/kg-day (Dunlop, 1934; Horner, 1942; Tainter et al., 1933). Tainter et al. (1933) administered 2,4-DNP (average daily dose of 0.3 g) to 113 obese patients for as long as four months without demonstrating evidence of cumulative or toxic effects. Based on an assumption of body weight

of 70 kg, the corresponding average daily dose was 4.3 mg/kg-day. The most important side effect noted by the investigators was a skin rash observed in about 7% of the patients treated. The rash was manifested usually after a one-day period of mild itching and consisted of a maculopapular or urticarial type of rash. The itching was intense and in some cases there was considerable swelling. Symptoms subsided in 2 to 5 days following withdrawal from the drug. The next most important side effect noted by the authors was a loss of taste for salt and sweets observed in 5.3% of the patients. This effect also subsided following withdrawal from 2,4-DNP. The investigators failed to detect any effect of 2,4-DNP on liver or kidney function, pulse, blood pressure, or oxygen capacity of the blood. No cases of anemia, agranulocytosis, or malignant neutropenia appeared. Three cases of mild gastrointestinal upset were reported, however.

In a later publication, Horner (1942) reviewed the acute and chronic toxicity of use of 2,4-DNP (including cataract formation) resulting from therapeutic use of the compound. Gastrointestinal symptoms consisting of nausea, vomiting, and loss of appetite were common as a result of 2,4-DNP administration. Cutaneous lesions were the most frequent side effect with an incidence of 8 to 23%. Although the majority of lesions were mild, others were severe. Bone marrow effects of dinitrophenol have also been reported. Eight cases of agranulocytosis were reported, with three fatalities. Thirty cases of neuritis including aberrations of taste and multiple regional involvement, particularly affecting the feet and legs, were recorded. Symptoms appeared after an average of ten weeks, followed ordinary therapeutic doses and persisted for weeks or months. Electrocardiographic evidence of functional heart damage was offered by several investigators and fragmentation of the heart muscle was reported at autopsy in one fatal case. It was generally agreed that 2,4-DNP was rarely injurious to the liver and kidneys when administered in therapeutic doses.

The development of cataracts following dinitrophenol therapy was first described by Horner et al. (1936). Later, over 100 cases of cataract formation following dinitrophenol therapy were reviewed by Horner (1942). Horner described the following characteristic features of 2,4-DNP induced cataracts: (1) they occurred in young women who were physically normal except suffering varying degrees of obesity and were in an age group in which senile cataracts do not occur; (2) they were bilateral and appeared either during or after period of dinitrophenol treatment; (3) an interval of months or years might elapse between the time the last dose was taken and the onset of blurred vision; (4) lenticular changes were strikingly similar and could be demonstrated with the biomicroscope at a time when vision for distance and reading was still normal; (5) after gradual onset, the lenticular changes progressed with startling rapidity until the vision was obscured; (6) treatment was without effect in staying their progress; and (7) surgical removal of the lens was uniformly successful in restoring vision. Cataract formation appears to be the primary reason 2,4-DNP was withdrawn from medical use.

The length of time that 2,4-DNP was taken and the amount of the drug consumed varied widely among cataract victims. In 29 cases, the duration of treatment varied from 3 months to 24 months with an average of 11 months. Neither the length of treatment nor the total dose seemed to have any bearing on the occurrence of cataracts. Individual susceptibility appeared to be a more important factor. Horner (1942) estimated that the incidence of cataracts in patients who had taken dinitrophenol exceed one percent.

The available data do not allow the calculation of a minimum effect level for 2,4-DNP-induced cataract formation in humans. Cataractogenic activity in humans has been observed in a small proportion of patients receiving as little as 2 mg/kg-day. An assessment of the no-effect-level for cataract formation awaits further investigation. Such an assessment is further complicated by the fact that cataract formation in humans, following DNP administration, differs significantly from the situation seen in experimental animal studies.

The existing review documents (U.S. EPA, 1980, 1984; ATSDR, 1995) and an updated literature search did not identify relevant studies regarding the carcinogenicity of 2,4-dinitrophenol in humans following oral or inhalation exposure.

Animal Studies

Short Term Animal Studies

Attempts to find a suitable animal to study cataract development in humans exposed to 2,4-DNP have generally been unsuccessful. Normal mammalian animals have not developed cataracts after oral exposure to 2,4-DNP, although cataracts could be induced in a special strain of mouse (yellow adipose), in vitamin C-deficient guinea pigs, in ducks, and in chickens (ATSDR 1995). Formation of cataracts by acute exposure to DNP was first demonstrated in animals almost 10 years after the problem was known to exist in humans (Gehring and Buerge, 1969a; Ogino and Yasukura, 1957; Feldman et al., 1959, 1960; Bettman, 1946). Experimental cataracts, first produced in ducks and chickens, differ from DNP-induced human cataracts in that they can be formed in acute exposures and may appear in less than one hour. Furthermore, these lesions will disappear spontaneously in animals within 25 hours (Howard et al., 1976). Hence, the usefulness of data on the formation of cataracts in experimental animals following DNP administration in assessing human hazard to dinitrophenol is questionable.

Langerspectz and Tarkkonen (1961) failed to detect histological changes in the adrenals or the liver during 30 day treatment of Swiss albino male mice with twice daily doses of 10 mg of 2,4-DNP/kg (20 mg/kg-day) via the subcutaneous injection.

Subchronic Animal Studies

Tainter and Cutting (1933) administered 2,4-DNP to dogs at intervals of three or more days over a period of 2 to 3 months. Abnormal liver and kidney pathology were not detected but an effect on spleen tissue was noted. Over large areas of the material containing "numerous large faintly staining cells with vesicular polyhedral nuclei." This study is limited due to the lack of dose information in the summary document (U.S. EPA, 1980).

Groups of three male dogs received daily oral dose of 0, 5 or 10 mg/kg 2,4-DNP in capsules for 6 day/week for 27 weeks (Tainter et al., 1934). There were no important changes in body weight as a result of the continuous administration of 2,4-DNP. Estimations at intervals of three weeks of the amount of sugar, and albumin in the urine and of the hemoglobin and red, white and differential blood cell counts, urea content, icteric index and oxygen capacity of the

blood and fragility of the red cells showed no significant or consistent deviations from the normal or control values. At the end of treatment, the dogs were killed for complete necropsy and histological study of the tissues. No significant pathologic changes were noticed grossly or microscopically. Thus, the highest dose of 10 mg/kg-day (equivalent to continuous dose of 8.6 mg/kg-day) is considered a free-standing NOAEL.

Spencer et al. (1948) studied the subchronic toxicity of 2.4-DNP in rats. Male rats (10-20/dose) were fed diets containing 0, 0.01, 0.02, 0.05, 0.1, or 0.2 g of 2,4-DNP per 100g of food. Rats were maintained on diets containing 2,4-DNP for six months and both hematological and pathological investigations on surviving animals were performed. Based on rat food intake in a subchronic study (U.S. EPA, 1988), the average daily food intake factor for male rat of unknown species is assumed to be 0.091 kg food/kg body weight/day. Thus, the estimated doses were 0, 9.1, 18, 46, 91, and 182 mg/kg-day, respectively. Hematological examination included erythrocyte counts, hemoglobin concentrations, leukocyte counts, differential counts, and bone marrow counts at autopsy. Both gross and microscopic examination of liver, kidney, spleen, lung, heart, adrenal, pancreas, and stomach tissues were also performed. Rats maintained on diets containing 0.02% 2,4-DNP (18 mg/kg-day) grew at a normal rate and the investigators failed to detect discernible ill effects of pathological changes at autopsy. Similarly, pathological changes were not found upon microscopic examination of tissues from rats receiving diets containing 0.05% 2,4-DNP (46 mg/kg-day) although growth of these rats fell 5 to 10% below that of the controls throughout the six-month experimental period. At autopsy the only changes observed in these animals were a very slight depletion of body fat and a very slight increase in the average weight of the kidneys. More reduced growth was also seen in the rats treated with 0.1% of 2,4-DNP (91 mg/kg-day). At the highest dose of 2,4-DNP in their diets (182 mg/kg-day) rats occasionally died and survivors lost weight rapidly. Examination of surviving animals revealed marked emaciation, an empty gastrointestinal tract, a slightly enlarged and dark spleen, and undersized testes. Microscopic examination showed slight congestion and cloudy swelling of the liver, very slight parenchymatous degeneration of the epithelium of the renal tubules, slight congestion and hemosiderosis of the spleen and testicular atrophy. No significant pathological changes were observed in the lung, heart, adrenals, pancreas, or stomach of these animals. Based on these observations, a NOAEL for 2,4-DNP in rats was 18 mg/kg-day.

Chronic Animal Studies

Groups of 5-6 white rats (sex unknown) received 2,4-DNP in the food beginning shortly after weaning when they weighted about 30 g, and continuing until death (Tainter, 1938). The treatment doses included 0, 0.001, 0.005, 0.01, 0.02, 0.04, 0.06, 0.08, 0.12 and 0.24% of 2,4-DNP in the diet. Based on rat food intake in a chronic study (U.S. EPA, 1988), the average daily food intake factor for rat of unknown sex and speices is assumed to be 0.078 kg food/kg body weight. Thus, the estimated doses were 0, 0.78, 3.9, 7.8, 16, 31, 47, 62, 94 and 187 mg/kg-day, respectively. The food intakes, growth curves, final weights, and life spans were compared with those of untreated controls. At the time of death, necropsies and histological studies of the tissues were made. The rats were observed closely throughout the entire duration of the experiment. The food intakes were similar for all the groups. Doses of 2,4-DNP in the diet ranging from 0.78 to 31 mg/kg-day did not appreciably modify the growth curves or final weights. Doses of 47 to 94 mg/kg-day decreased the rate of growth, and diminished the final

average weight about 75 g. The average duration of life of about two years was not decreased by doses of 2,4-DNP up to 62 mg/kg-day; a dose of 94 mg/kg-day decreased it by about one-half and 187 mg/kg-day killed the rats in about one month. There was no evidence of any toxic effects of 2,4-DNP on the eyes of these rats, as indicated by direct observations, and ophthalmoscopic study or slit lamp microscopy. At necropsy, and histologically, the tissues of the treated rats were indistinguishable from those of the untreated controls, there being no lesions which could be ascribed to the action of the 2,4-DNP. The NOAEL in rats was identified to be 31 mg/kg-day based on significant decreases in body weight.

Reproductive and Developmental Animal Studies

Based on the available data it appears unlikely that the 2,4-DNP pose a teratogenic hazard to humans. Gibson (1973) examined developmental toxicity of 2,4-DNP in mice. Groups of pregnant mice (7-8 animals/dose) received intraperitoneal (7.7 or 13.6 mg/kg) or oral (25.5 or 38.3 mg/kg) administration of 2,4-DNP during early organogenesis (gestation day 10-12). Nine pregnant females received water served as control. Caesarean section was performed on day 19 of gestation, and the number and position of live, dead and resorbed fetuses was examined. Individual fetuses were weighted, and examined for external anomalies. Fetal crown-rump distance was measured for each fetus. Each litter was divided into two sub-groups for further examination for soft-tissue or skeletal anomalies. Very limited results were provided in the original report. Among the all the endpoints (including number of implantations, resorptions, fetal body weight and fetal crown-rump length) presented in a summary table (Table 8 in the original paper), increased resorptions (mean response/litter), decreased fetal body weight, and fetal crown-rump length occurred in almost all the treated groups (including both i.p. and oral treatments); however, only the decreases in the fetal body weight and crown-rump length in the high i.p. dose group (13.6mg/kg-day) was statistically significant. No other details were provided in the original report. Gibson (1973) ambiguously concluded that dinitrophenol does not produce morphological defects in the offspring, but embryo toxicity occurs at the higher dose levels. The higher doses also produced overt toxic signs (hyperexcitability and hyperthermia) in the dams, but were not lethal. However, it is not clear whether the author referred the higher doses to i.p. high dose of 13.6 mg/kg or to doses ≥13.6 mg/kg-day including i.p. high dose and two oral doses (25.5 and 38.3 mg/kg-day). Based on limited information available from the original report, the low i.p. dose of 7.7 mg/kg-day was considered NOAEL.

The toxicity of 2,4-DNP was examined in newborn rats by Koizumi et al. (2001). Groups of Sprague-Dawley rats (6/sex/dose) were administered 2,4-DNP at 0, 3, 10 or 20 mg/kg-day by gastric intubation daily from days 4 to 21 after birth, and killed after overnight starvation following the last treatment. Recovery-maintenance groups at the same dosages were maintained for 9 weeks without chemical treatment and fully examined at 12 weeks old. General behavior was observed daily, and body weight and food consumption were measured more than once a week. At treatment day 17 or 18, papillary reflex, corneal reflex, surface righting, mid-air righting and auricular reflexes were examined as parameters of reflex ontogeny. Furthermore, fur appearance, incisor eruption and eye opening were noted in the lactating period as evidence of physical development, and testes descent and vaginal opening during the early recovery-maintenance period for assessment of sexual maturation. Color, pH, occult blood, protein, glucose, ketone bodies, bilirubin, urobilinogen, urine sediment and volume of the urine were

examined only at the end of the recovery-maintenance period. The blood samples were analyzed for complete hematological parameters as well as blood biochemistry. All the organs were weighted and examined for gross and histopathological changes at the end of treatment. No clinical signs or deaths were encountered. The body weights at 20 mg/kg-day were significantly below control values from dosing day 7 in the males and dosing day 10 in females in the scheduled-sacrifice group. There was also statistically significant lowering of body weight in the 20 mg/kg-day males for the first quarter of the recovery-maintenance period, but not in females. No definitive changes in abdominal fur appearance, incisor eruption, eye opening and testis descent or vaginal opening as well as reflex ontogeny parameters were detected in any dose groups. There were significant changes in absolute weights of testes at ≥10 mg/kg-day, and changes in absolute and relative organ weights in several other organs at 20 mg/kg-day. No chemical-related histopathological changes were noted in either scheduled-sacrifice or recovery-maintenance groups. Significant increase in RBC was observed in females receiving 20 mg/kg-day after the treatment but not after the recovery-maintenance period. Although increases in serum glutamate oxaloacetate transaminase (GOT) in males and total bilirubin in females were detected at 10 and 20 mg/kg-day after treatment, those were not considered to be chemical-induced because they were very slight and there was no dose-relationship. The authors considered the dose of 10 mg/kg-day as the NOAEL at which only the lowering of absolute testis weight was observed.

The toxicity of 2,4-DNP was also examined in young rats by Koizumi et al. (2001). Groups of 5 to 6-week old Sprague-Dawley rats (6/sex/dose) were administered 2,4-DNP at 0, 3, 10, 30 or 80 mg/kg-day by gastric intubation daily for 28 days, and killed after overnight starvation following the last treatment. Recovery-maintenance groups at the 0, 30 or 80 mg/kg-day were maintained for 2 weeks without chemical treatment and fully examined at 11-12 weeks of age. Rats were examined for general behavior, body weight, food consumption, urinalysis, hematology and blood biochemistry, necropsy finding, organ weights and histopathological finding. Clear toxic signs, such as decrease in locomotor activity, prone position, ptosis, panting, crawling position and salivation, were observed repeatedly during the dosing period at 80 mg/kg-day in both sexes, and two males and six females died in the same dose group. However, decrease in locomotor activity and salivation in the 30 mg/kg-day group were mostly observed only after the first dosing. The relative liver weights were increased in both sexes of the 80 mg/kg-day scheduled-sacrifice group, and this persisted through the recovery period. Relative organ weights for brain, kidneys and testes were increased only in 80 mg/kg-day males. On histopathological examination, mineralization of the corticomedullary junction in kidneys was observed in both sexes at 80 mg/kg-day in the scheduled-sacrifice and recovery groups, but the change was only statistically significant in males of the scheduled-sacrifice group. On hematological examination, increase in hemoglobin and hematocrit in the recovery period were observed, limited to 80 mg/kg-day males. Although blood chlorine levels were slightly decreased in 30 and 80 mg/kg-day males and total bilirubin was slightly increased in females receiving 10 mg/kg and more, no changes in histopathology or organ weights were observed at 30 mg/kg-day or lower. Prior to the this experiment, a dose-finding study in the same age group (4/sex/group) at doses of 0, 0.6, 2, 6, 20 or 60 mg/kg-day had been conducted. The study results from these animals after treatment for 14days were consistent with the main study. Thus, the authors considered 20 mg/kg-day from the dose-finding study as the NOAEL based on decrease in locomotor activity and salivation at 30 mg/kg-day.

Wulff et al. (1935) examined the effects of 2,4-DNP on the fertility, gestation, and fetal life of rats in an one-generation study. A group of 20 female rats (unknown strain) received 20 mg/kg 2,4-DNP 8 days prior the introduction of males. Nine females received no treatment and five females received 1% sodium bicarbonate solvent served as control. Dinitrophenol was administered intragastrically twice daily throughout cohabitation, and gestation until the respective litters were weaned. The daily average dose was estimated to be 40 mg/kg-day. The average number born in each litter was not affected by dinitrophenol treatment, and the treatment did not appreciably affect the body weight gains of mothers during pregnancy. Neonatal malformations were not detected. Among 2,4-DNP treated rats, however, 25% of the total number of pups were stillborn while only 6.8% of the pups were stillborn in the control group (two groups combined). In addition, the mortality during the nursing period of viable pups born to mothers administering 2,4-DNP was 30.9% as compared with 13.4% for young of control mothers. Two possible explanations for this latter phenomenon were offered by the authors: treated mothers neglected their pups while in a febrile state, and only the more vigorous of the offspring manage to reach the mother for nursing; or, a toxic agent was passed to the young through the milk. Data to distinguish between the two possibilities are not available. Based on developmental toxicity (stillbirth and mortality during lactation), this study provided a free standing LOAEL of 40 mg/kg-day.

Other Studies

Bowman (1967) has studied the effect of 2,4-DNP on the developing chick embryo in vitro. At 2,4-DNP concentrations of 18 mg/L or 370 mg/L a syndrome of abnormalities resulted consisting of degeneration and sometimes complete absence of neural tissue accompanied by a reduction in the number of somites. The 2,4-DNP concentrations used in this study are extremely high and the relevance of the experimental findings to the *in vivo* situation in mammals is not clear.

Genotoxicity data for 2,4-DNP were reviewed by ATSDR (1995). Test results were negative for 2,4-DNP in multiple assays for reverse mutation in *Salmonella typhimurium*, with or without metabolic activation. However, the two major metabolites of 2,4-DNP are mutagenic in *S. typhimurium* (and other systems), suggesting that the negative results for 2,4-DNP may indicate failure of the S9 activating system used in these assays to metabolize this chemical. Mixed results were reported for 2,4-DNP in studies of reverse mutation in *Escherischia coli*. There is little evidence that 2,4-DNP produces DNA damage. Assays for phase induction in *E. coli*, SOS response in *S. typhimurium*, unscheduled DNA synthesis in rat hepatocytes, and DNA damage (alkali elution) in Chinese hamster V79 cells were negative. DNA damage (alkali elution) was reported in mouse leukemia L1210 cells and human HeLa cells, but was associated with depletion of ATP. Depletion of ATP was also observed in studies showing decreases in DNA synthesis and mitotic index after exposure to 2,4-DNP. Therefore, positive findings in these studies probably reflects cytotoxicity (decreased cellular metabolic rate), rather than genotoxicity. *In vivo*, 2,4-DNP produced chromosomal aberrations in bone marrow cells of mice treated by intraperitoneal injection.

In a study designed to measure tumor promoting activity, Boutwell and Bosch (1959) examined the ability of 2,4-DNP to promote tumor formation following a single initiating dose

of dimethylbenzanthracene. The 2,4-DNP failed to promote skin tumors in mice in this experiment. In a similar experiment, Stenback and Garcia (1975) also examined the ability of 2,4-DNP to promote skin tumor formation in mice, and found no tumor promoting activity.

The existing review documents (U.S. EPA, 1984; ATSDR, 1995) and an updated literature search did not identify relevant studies regarding the carcinogenicity of 2,4-dinitrophenol in animals following oral exposure.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC ORAL RfD VALUES FOR 2,4-DINITROPHENOL

2,4-DNP is considered a classic uncoupler of oxidative phosphorylation and is widely used by biochemists to determine whether a given biochemical process is energy dependent. The toxic action of the dinitrophenol is generally attributed to their ability to uncouple oxidative phosphorylation. It prevents the utilization of the energy provided by cellular respiration and glycolysis by inhibiting the formation of high energy phosphate bonds. All energy dependent biochemical processes are therefore affected by the action of the compounds. The large number of clinical effects attributed to dinitrophenol toxicity result essentially from the shortcircuiting of metabolism in cells which absorb sufficient dinitrophenol. At concentrations higher than those necessary to uncouple oxidative phosphorylation, a number of inhibitory effects of the dinitrophenol isomers on certain enzymatic reactions may occur. The dinitrophenol may also act directly on the cell membrane, thus causing toxic effects on cells which do not depend on oxidative phosphorylation for their energy requirements. More detailed information on the mechanism of toxicity has been summarized by U.S. EPA (1980).

The database for 2,4-DNP toxicity is relatively comprehensive, and it covers human case studies and results from experimental exposure. In addition, the database also includes animals studies ranging from short-term studies, subchronic studies in dogs and rats, to a chronic study in rats, accompanied by developmental studies in mice and young rats, and an one-generation study in rats.

The toxicity of 2,4-DNP in humans ranges from mortality due to high dose exposure to minor effects such as gastrointestinal symptoms and cutaneous lesions due to therapeutic use of the compound as a weight reducing agent. The development of cataracts following the dinitrophenol therapy was first described by Horner et al. (1936), and similar response was also reported from treated animals. The length of time that 2,4-DNP was taken and the amount of the drug consumed varied widely among cataract victims. In 29 cases, the duration of treatment with the compound varied from 3 months to 24 months. Neither the length of treatment nor the total dose seemed to have any bearing on the occurrence of cataracts. The available data do not allow the calculation of a minimum effect level for 2,4-DNP-induced cataract formation in humans. Since cataractogenic activity in humans has been observed in a small proportion of patients receiving as little as 2 mg/kg-day dose of 2,4-DNP, this dose is considered as a LOAEL for cataract in humans after subchronic exposure to the chemical.

The formation of cataracts by acute exposure to 2,4-DNP has been reported in ducks and chickens treated with the compound. However, the experimental cataracts in the animals differ from DNP-induced human cataracts in that they can be formed in acute exposures and may appear in less than one hour. Furthermore, these lesions will disappear spontaneously in animals within 25 hours.

Subchronic studies in dogs and rats did not identify a specific target organ for 2,4-DNP, and a free-standing NOAEL of 8.6 mg/kg-day in dogs and a NOAEL of 18 mg/kg-day in rats based on decreased growth rate were identified (Spencer et al., 1948; Tainter et al., 1938). Similar to the subchronic studies, the chronic study in rats (Tainter et al., 1938) identified a NOAEL of 31 mg/kg-day based on significant decreases in body weight. There was no evidence of any toxic effect on the eyes in the rats treated chronically with 2,4-DNP at dose levels up to 187 mg/kg-day. Since the subchronic rat study (Spencer et al., 1948) did not include a dose at 30 mg/kg-day range, the subchronic NOAEL of 18 mg/kg-day from that study is considered consistent with the chronic NOAEL of 31 mg/kg-day (Tainter et al., 1938) because the latter study included smaller dose spacing in the experiment which allowed identification of a NOAEL higher than that from the subchronic study.

The toxicity of 2,4-DNP in developmental studies did not demonstrate more sensitive responses than the systemic effects observed in the subchronic or chronic studies. 2,4-DNP does not produce morphological defects in the offspring, but it could produce embryo toxicity at dose level of ≥ 13.6 mg/kg-day, and the same doses also produced overt toxic signs (hyperexcitability and hyperthermia) in the dams (Gibson, 1973). The developmental study provided a NOAEL of 7.7 mg/kg-day based on i.p. treatment dose. Short-term treatment (7 days) with 2,4-DNP in newborn rats resulted in decreased testis weight and body weight at the dose of 20 mg/kg-day, and the next lower dose of 10 mg/kg-day was identified as the NOAEL (Koizumi et al., 2001). 2,4-DNP treatment (28 days) in young rats (5-6 weeks old) resulted in decreases in locomotor activity and salivation at the dose level of ≥ 30 mg/kg-day (Koizumi et al., 2001), and this study identified a NOAEL of 20 mg/kg-day in young rats. Comparison of the effective doses in newborn and young rats suggested a less sensitivity to 2,4-DNP in young rats than newborn rats.

The one-generation reproductive study (Wulff et al., 1935) showed that 2,4-DNP treatment at dose level of 40 mg/kg-day resulted in increased stillbirth and mortality during lactation. It is not clear whether the mortality during lactation was due to toxicity in dams or fetuses exposed to the compound through milk. Therefore, this dose (40 mg/kg-day) is considered a free-standing LOAEL.

Based on all the data available, the cataracts developed in humans after therapeutic use of the compound as a weight reducing agent is considered the critical effect, and the estimated minimal dose of 2 mg/kg-day causing this effect is considered as the point of departure in deriving a provisional subchronic RfD. Using this point of departure is further supported by the relative rich data from animal studies. A **provisional subchronic RfD of $2x10^{-2}$ mg/kg-day** for 2,4-DNP is derived by applying a composite uncertainty factor of 100 (10 for the use of a LOAEL, and 10 to protect sensitive individuals) to the point of departure of 2 mg/kg-day. Because the database for 2,4-DNP included subchronic studies, chronic studies, developmental studies and an one-generation reproductive study, it is unlikely to identify more sensitive

responses from additional animal studies. Therefore, an uncertainty factor of 1 is used as the database factor. Because the critical effect in humans was observed after subchronic treatment of the compound, no extra uncertainty factor for exposure duration is needed for deriving a provisional subchronic RfD.

subchronic p-RfD = POD / UF
= (subchronic LOAEL) / (100)
= 2 mg/kg-day / 100
= 0.02 or $2x10^{-2}$ mg/kg-day

The current chronic RfD of 2E-3 mg/kg-day on IRIS (U.S. EPA, 1991) was based on the same critical effect and point of departure with an extra uncertainty factor of 10 to cover the extrapolation from subchronic to chronic duration. A chronic RfD of $2x10^{-3}$ mg/kg-day for 2,4-DNP was derived by applying to the human LOAEL of 2 mg/kg-day a composite uncertainty factor of 1000 (10 for the use of a LOAEL, 10 for extrapolation from subchronic to chronic duration, and 10 to protect sensitive individuals). The chronic RfD on IRIS is still valid.

Chronic RfD = POD / UF
= (subchronic LOAEL) / (1000)
= 2 mg/kg-day / 1000
= 0.002 or $2x10^{-3}$ mg/kg-day

Confidence in the principal study is low. Higher study confidence is precluded because the principal study only describes anecdotal data which provides limited formation in the dosing and exposure duration, minimal data reporting, and the lack of reliable data on no effect levels for the critical effect in critical study. Confidence in the database is high because the database for 2,4-DNP toxicity not only includes experimental studies in humans, but also covers relative comprehensive studies in animals including short-tem studies, subchronic studies in multiple species, a chronic study, developmental studies in pregnant mice and young rats, as well as a one-generation study. Therefore, it is unlikely to identify other more sensitive responses from additional animal studies. Overall confidence in the subchronic p-RfD values is medium, as the strengths in the database, particularly the supportive data from comprehensive animal studies, somewhat outweigh the low confidence in the principal human study. A chronic p-RfD based on the same point of departure with an additional uncertainty factor to cover the extrapolation from subchronic to chronic duration. The overall confidence for the chronic p-RfD would be the same as the one for subchronic p-RfD. The using of the subchronic data as the point of departure for chronic p-RfD is appropriate because neither the length of treatment nor the total dose seems to have any bearing on the occurrence of critical effect.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC INHALATION RfC VALUES FOR 2,4- DINITROPHENOL

No data were located for the subchronic or chronic inhalation toxicity of 2,4-DNP in humans or animals. Due to the lack of data, no provisional RfC was derived for 2-4-DNP.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR 2,4- DINITROPHENOL

Weight-of-Evidence Descriptor

No studies were located examining associations between cancer and exposure of humans to 2,4-DNP. Thus, there were inadequate human data to assess the carcinogenicity of 2,4-DNP.

Data examining the potential for 2,4-DNP to produce cancer in animals were restricted to several mouse skin tumor assays that found no DNP-induced increases in incidence of skin tumors. U.S. EPA guidelines (2005) indicated that, in order to classify the compound as not likely to be carcinogenic to humans, no increased incidence of neoplasms should be found in at least two-well designed and well-conducted animal studies of adequate power and dose in different species. Thus, the available animal data for 2,4-DNP were not sufficient to classify them as providing no evidence of carcinogenicity. Additional well-conducted testing in other animal species with long-term exposure, preferably via oral and inhalation exposure, is necessary to provide reasonable assurance as to whether 2,4-DNP may or may not be carcinogenic in animals or humans.

Mixed results in genotoxicity of 2,4-DNP were reported in several short-term mutagenesis assays in bacteria, and in *in vitro* and *in vivo* mammalian systems. The majority of the *in vitro* genotoxicity studies showed negative responses with some exceptions in DNA damage in mouse leukemia cells and human HeLa cells, although the positive findings in these studies probably reflects cytotoxicity rather than genotoxicity. An *in vivo* study produced chromosomal aberrations in bone marrow cells.

Following U.S. EPA (2005) guidelines for compounds with inadequate human data and inadequate animal data, 2,4-DNP was classified as having *inadequate information to assess carcinogenic potential*.

Quantitative Estimates of Carcinogenic Risk for 2,4-DNP

Due to inadequate information to assess carcinogenic potential, a quantitative cancer risk estimate for neither an oral slope factor nor an inhalation unit risk could be derived for 2,4-DNP.

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12-13-2004

Provisional Peer Reviewed Toxicity Values for

2,6-Dinitrotoluene
(CASRN 606-20-2)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose

MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

12-13-2004

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2,6 -DINITROTOLUENE (CASRN 606-20-2)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions (or the EPA HQ Superfund Program) sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

The HEAST (U.S. EPA, 1997) lists subchronic and chronic oral RfD values of 1E-2 mg/kg-day and 1E-3 mg/kg-day, respectively, for 2,6-dinitrotoluene based on a 13-week gavage study in dogs (Lee et al., 1976). The assessment was based on a NOAEL of 4 mg/kg-day for neurotoxicity, blood alterations, and liver and kidney histopathology. An uncertainty factor of 3000 (10 for animal to human extrapolation, 10 for intraspecies diversity, 10 for less-than-lifetime study, and 3 for limited database, including lack of developmental and reproductive studies) was applied (Dourson and Stara, 1983). The source document for this derivation was a Health Advisory for 2,4- and 2,6-Dinitrotoluene (U.S. EPA, 1992). The RfD is included in the Drinking Water Standards and Health Advisories list (U.S. EPA, 2002). There is no RfD on IRIS (U.S. EPA, 2003). The HEAST does not include an RfC assessment for 2,6-dinitrotoluene due to lack of data, and no RfC assessment for 2,6-dinitrotoluene is available on IRIS (U.S. EPA, 2003). The HEAST (U.S. EPA, 1997) indicates that a quantitative cancer assessment for a

mixture of 2,4- and 2,6-dinitrotoluene is available on IRIS (U.S. EPA, 2003). The source document for the cancer assessment was a Health and Environmental Effects Profile (HEEP) for Dinitrotoluene (U.S. EPA, 1986) that assigned the 2,4 and 2,6-dinitrotoluene mixture to weight of evidence group B2 (probable human carcinogen) and derived an oral slope factor of 6.8E-1 $(mg/kg\text{-}day)^{-1}$. In addition to the HEEP previously mentioned, a HEA (U.S. EPA, 1987) for 2,4- and 2,6-dinitrotoluene is included in the CARA list (U.S. EPA, 1991b, 1994).

A Toxicological Profile for 2,4- and 2,6-dinitrotoluene is available from ATSDR. ATSDR (1998) derived an intermediate-duration oral MRL of 0.004 mg/kg-day for 2,6-dinitrotoluene based on hematological effects in the dog study by Lee et al. (1976). The MRL was derived by applying an uncertainty factor of 1000 to 4 mg/kg-day, which was considered by ATSDR to be a LOAEL for mild extramedullary hematopoiesis in the spleen. Occupational exposure limits are available for dinitrotoluene (mixed isomers) that include a TLV-TWA of 0.2 mg/m^3 recommended by ACGIH (2002), a 8-hour PEL-TWA of 1.5 mg/m^3 promulgated by OSHA (2002), and a REL of also 1.5 mg/m^3 established by NIOSH (2002). These values are intended to protect against cardiovascular and reproductive effects of the dinitrotoluene mixture. IARC (1996) placed 2,6-dinitrotoluene in weight of evidence group 2B (possibly carcinogenic to humans) based on sufficient evidence in animals and inadequate evidence in humans. NTP (2002) has not studied 2,6-dinitrotoluene. No Environmental Health Criteria Document is available for 2,6-dinitrotoluene (WHO, 2002). Literature searches were conducted from 1985 through 2004 for studies relevant to the derivation of provisional toxicity values for 2,6-dinitrotoluene. Databases searched included: TOXLINE, MEDLINE, CANCERLIT, TSCATS, RTECS, CCRIS, DART, EMIC/ EMICBACK, HSDB, and GENETOX.

REVIEW OF PERTINENT DATA

Human Studies

No data are available regarding humans exposed solely to 2,6-dinitrotoluene. Most of the information available regarding exposure to dinitrotoluenes in humans involves occupational exposure to 2,4-dinitrotoluene or to technical grade dinitrotoluene (TGDNT, approximately 76% 2,4-dinitrotoluene and 19% 2,6-dinitrotoluene). In occupational settings, the routes of exposure are primarily inhalation and dermal contact. Acute exposure to high amounts of dinitrotoluenes is expected to produce methemoglobinemia, a characteristic feature of exposure to nitroaromatic compounds in general. Methemoglobin decreases the oxygen carrying capacity of the blood. A small amount of methemoglobin is normally present in the blood (approximately 1%), but it is constantly being reduced by enzymes in the red cell. Methemoglobin can reach up to 25% without giving apparent symptoms; levels of 35-50% result in mild symptoms such as dyspnea upon exertion and headaches, and levels exceeding 70% are probably lethal.

The U.S. EPA (1986) summarized early data on subjects occupationally exposed mainly to 2,4-dinitrotoluene and stated that a number of signs and symptoms were reported, including headache, vertigo, fatigue, dizziness, weakness, nausea, vomiting, dyspnea, drowsiness, arthralgia, insomnia, tremor, paralysis, unconsciousness, chest pain, shortness of breath, palpitation, anorexia, weight loss, and an unpleasant metallic taste in the mouth. Medical examination of the workers showed impaired reflexes, nystagmus, tremors, pallor, cyanosis, anemia, leukocytosis, hypertension, dermatitis, leukopenia and hepatitis or jaundice.

Studies of men occupationally exposed to TGDNT at dinitroluene or toluene diamine plants showed no significant differences in sperm counts or morphology, follicle stimulating hormone levels, or fertility of the workers, or incidence of miscarriage in their wives (ATSDR, 1998). A retrospective cohort mortality study of munition workers who were exposed to either 2,4-dinitrotoluene or TGDNT at two different manufacturing plants reported significant increases in death rates due to ischemic heart disease and residual disease of the circulatory system (congestive heart failure, cardiac arrest, and arteriosclerosis) (Levine et al., 1986). Such increases occurred more than 15 years after employment started. Furthermore, there appeared to be an association between heart disease and intensity of exposure to dinitrotoluene. No significant increases in mortality from malignant neoplasms as a group or from particular cancers were noted in this study. An additional study conducted at one of these plants reported an excess of cancer of the biliary tract, liver, and gall-bladder in workers exposed to a mixture of 98% 2,4-dinitrotoluene and 2% 2,6-dinitrotoluene in comparison with both the United States population and an internal unexposed group (Stayner et al., 1993). However, this finding was based on only 6 cases, and an exposure duration-response analysis could not be done because few workers had more than five years of exposure to dinitrotoluene. A more recent study of miners from the former German Democratic Republic exposed to TGDNT found a significant increase in urothelial cancers confined predominantly to a high-exposure category group (Brüning et al., 1999).

Animal Studies

Characteristic signs of intoxication with dinitrotoluene in animals include central nervous system depression, respiratory depression, and ataxia (U.S. EPA, 1986). U.S. EPA (1986) and ATSDR (1998) list the following oral LD_{50}s for 2,6-dinitrotoluene from various studies: 535 and 795 mg/kg for male and female CD rats, respectively; 180 mg/kg for male Sprague-Dawley rats; 621 and 807 mg/kg for male and female CD mice, respectively; and, 1000 mg/kg for CF-1 mice.

Few longer-term studies with 2,6-dinitrotoluene were located in the available literature, and some of them were designed primarily to evaluate the carcinogenic potential of 2,6-dinitrotoluene. The oral RfD listed in the HEAST (U.S. EPA, 1997) is based on a study by Lee et al. (1976) in dogs. In that study, groups of beagle dogs (4/sex/dose level) were given 2,6-dinitrotoluene (>99% pure) in gelatin capsules at doses of 0, 4, 20, or 100 mg/kg-day for 4 or 13 weeks. Endpoints monitored included clinical signs, body weight, food consumption,

hematology and clinical chemistry parameters and serum electrolytes, organ weights, and gross and microscopic evaluation of tissues and organs. Some dogs were removed from treatment at weeks 4 and 13 and placed on a control diet for 4 weeks to evaluate reversibility of the effects. All dogs in the high-dose group died between weeks 2 and 8. The signs exhibited by these dogs consisted of listlessness, incoordination, lack of balance, pale gums, dark urine, and weakness, particularly of the hind limbs; tremors were seen occasionally. Terminal signs seen in some dogs included yellow gums and darkened sclera. Gross necropsy showed little body fat, dehydration, and jaundice. Two female dogs from the mid-dose group died on week 9. A Fisher Exact test conducted by SRC comparing death in the control and mid-dose group yielded a *p* value of 0.233, indicating a non-statistically significant difference. However, the deaths may have been compound related, as gross necropsy showed emaciation and jaundice, and group sizes were too small for the statistical test to have much power to detect an effect. In general, the dogs in the mid-dose group showed signs similar to those seen in the high-dose group, but in milder form. In addition, the signs of toxicity in the mid-dose group were not seen until week 4.

No significant treatment-related effects occurred in the low-dose group other than mild splenic hematopoiesis in some dogs; however, animals at the mid-dose and high-dose levels showed clear signs of toxicity (neurological, hematological and liver histopathology) and the incidence and severity of the effects were dose-related. The extramedullary hematopoiesis observed at the low-dose appeared to be reversible even at the higher doses depending upon the length of exposure and post-exposure recovery period. Therefore, based on the reversibility of the mild effects with cessation of exposure, the low-dose of 4 mg/kg-day is designated the NOAEL.

No significant alterations in body weight were seen in control and low-dose animals, but dogs in the mid-dose group began to lose weight on week 4 or 5, which correlated with the toxicity signs mentioned above (Lee et al., 1976). The high-dose dogs lost weight from the first week of treatment. Food consumption correlated with weight changes. Control and low-dose group dogs showed mild fluctuations in hematology and clinical chemistry parameters which were considered to be of no toxicological significance by the authors. However, mid-dose animals showed significant effects, including anemia characterized by decreases in hematocrit and hemoglobin with a compensatory reticulocytosis. Small amounts of methemoglobin were seen at week 8 and Heinz bodies at week 13. Serum alanine aminotransferase (ALT) activity was increased at weeks 8 and 13. One of the females that died in week 9 was severely anemic, with large amounts of Heinz bodies and methemoglobin, and elevated serum ALT, aspartate aminotransferase (AST) and alkaline phosphatase (AP). Blood analysis done on week 2 in high-dose dogs showed severe effects, including a 66% reduction in RBC and signs of immature erythrocytes. Also evident was leukocytosis, with increased percentage of neutrophils and decreased percentage of lymphocytes, and increased serum AP and ALT activities. Laboratory data from dogs in the mid-dose group treated for 4 or 13 weeks showed recovery after 4 weeks, but high-dose dogs treated for 4 weeks did not recover until week 19.

No significant alterations in organ weights were seen in the low-dose groups compared to the control group (Lee et al., 1976). Treatment-related histological alterations in the mid- and high-dose groups after 4 weeks of treatment included extramedullary hematopoiesis in the liver and spleen, bile duct hyperplasia, degeneration and/or subacute inflammation in the liver, and degeneration and/or depression of spermatogenesis in the testes. The incidence and severity of these lesions were generally dose-related. Lymphoid depletion in the spleen and lymph node, and involution of the thymus were also seen in high-dose animals. A female dog from the low-dose group had several graafian follicles, but no corpora lutea. This female also had mild extramedullary hematopoiesis in the spleen. Since this was seen in dogs treated for 13 weeks at this dose level and at higher dose levels, these alterations were considered compound-related. Treatment for 13 weeks with the mid or high dose of 2,6-dinitrotoluene caused similar lesions in the liver and spleen. It also caused kidney effects consisting of dilated tubules, foci of inflammation, degeneration, yellow pigment and /or casts in the tubules. The high dose also caused lesions in the testes, lymph nodes and thymus. The effects at 13 weeks were usually more numerous and more severe than those seen at 4 weeks. Also compound-related was the finding of mild extramedullary hematopoiesis and lymphoid depletion in the spleen of some dogs from the low dose group. In dogs treated for 4 weeks and allowed to recover there were lesser amounts of extramedullary hematopoiesis and testicular toxicity. Two dogs given the high dose and allowed to recover for 19 weeks showed complete recovery. Dogs treated for 13 weeks did not show full recovery, as one dog in the mid-dose group still had various lesions in the liver, kidney, and testes and a low-dose female dog still had minimal bile duct hyperplasia. To determine whether treatment with 2,6-dinitrotoluene causes an allergic reaction, the authors measured its effects on serum IgE levels. The results revealed no apparent change in serum IgE concentration. Based on the effects on body weight, hematological and neurological effects, and histopathology, the dose level of 4 mg/kg-day is considered the study NOAEL. Mild splenic hematopoiesis seen in some dogs at his dose level was not considered to be adverse. The 20 mg/kg-day dose level is the LOAEL, but it could also be considered a FEL for the death of two female dogs on week 9. The signs of emaciation and jaundice seen in these dogs upon necropsy are consistent with those seen in the high-dose dogs and are likely compound-related.

Lee et al. (1976) also conducted a similar study in rats. Groups of CD rats (16/sex/dose level) were fed diets containing 2,6-dinitrotoluene at 0, 0.01, 0.05, or 0.25% for up to 13 weeks. According to the investigators, the diet provided 0, 7, 35, or 145 mg of test material/kg-day to male rats and 0, 7, 37, or 155 mg/kg-day to female rats. Treatment with 2,6-dinitrotoluene did not cause overt neuromuscular signs as in dogs, but high-dose rats were less active. They also had rough coats and signs of malnutrition. There were no unscheduled deaths. Body weights were markedly and consistently reduced in the mid- and high-dose males and females throughout the exposure period. At 13 weeks, body weights were 20-30% lower than controls in mid-dose rats and 30-55% lower than controls in high-dose rats. Body weights were also mildly reduced in low-dose males and females for much of the study, but the difference from controls was not considered to be toxicologically significant (generally less than 10%). The decreases in body weight were associated with corresponding decreases in food consumption. No significant

and/or consistent treatment-related effects were seen in the low-dose rats. Mid-dose rats showed extramedullary hematopoietic activity in the spleen and/or liver, bile duct hyperplasia, and/or depression of spermatogenesis and atrophy of the testes, and some rats had elevated serum ALT. In addition to these changes, the high-dose rats exhibited methemoglobinemia, Heinz bodies, anemia, and compensatory reticulocytosis. In general, the effects in the high-dose rats were more severe and occurred earlier than in the mid-dose rats. There appeared to be some adaptation in the high-dose group during the treatment period, as judged by the increasing amounts of food consumption and decreasing degree of anemia from week 4 to week 13, but the tissue lesions, particularly in the testes, worsened during the course of treatment. Only partial recovery of the tissue lesions was seen after the 4-week recovery periods. As seen in dogs, 2,6-dinitrotoluene did not increase serum IgE concentrations. Based on the changes in body weight, hematology, and histopathological lesions, the dose level of 7 mg/kg-day can be considered a NOAEL and 35 mg/kg-day the study LOAEL.

In another study of similar design, Lee et al. (1976) fed albino Swiss mice (16/sex/dose level) a diet containing 0, 0.01, 0.05, or 0.25% 2,6-dinitrotoluene for up to 13 weeks. According to the authors, the corresponding intakes of test material were 0, 11, 51, or 289 mg/kg-day for males and 0, 11, 55, or 299 mg/kg-day for females. No compound-related effects were observed in the low-dose group. Several unscheduled deaths occurred during the study, including 2 among the controls (week 12), 3 in the low-dose group (weeks 1, 3, and 13), 9 in the mid-dose group, and 14 in the high-dose group; all high-dose males died before week 9. The authors stated that in the mid- and high-dose groups most of the deaths were due to 2,6-dinitrotoluene. The exact cause of death was not discussed, but most dead mice were usually of low body weight, frequently with significant weight losses a week or two before death. In the mid- and high-dose groups, food consumption was lower than in controls. Blood analyses in the mid- and high-dose groups revealed a number of statistically significant changes relative to the controls at the respective time intervals; however, the authors stated that the changes were mild, inconsistent, and not related to 2,6-dinitrotoluene. Marked aspermatogenesis was observed in all males from the high-dose group, and depressed spermatogenesis was seen in one male from the mid-dose group treated for 4 weeks and in two males from the low-dose group treated for 4 or 13 weeks. Bile duct hyperplasia occurred in the only mouse that survived treatment with the high dose of 2,6-dinitrotoluene for 13 weeks and in two mice fed the mid-dose for 13 weeks. Bile duct hyperplasia was also present in two high-dose mice treated for 4 weeks and allowed to recover for 4 weeks, suggesting that this lesion develops slowly. The investigators also indicate that extramedullary hematopoiesis in the liver and spleen was seen more often in mice treated with 2,6-dinitrotoluene than in the controls and that generally, the incidence and severity were dose-related. No testicular lesions were observed in mice treated for 4 weeks and allowed to recover for 4 weeks. Whether this would also happen following 13 weeks of treatment is unknown, since no high-dose males survived longer than 8 weeks. There was partial recovery of the bile duct hyperplasia after the 4-week recovery period, but extramedullary hematopoiesis continued to occur in the liver and/or spleen. Based on the testicular effects in male mice, decreased food consumption, and incidence and severity of extramedullary hematopoiesis in

mid- and high-dose group, the dose of 11 mg/kg-day can be considered a NOAEL and 51 mg/kg-day a LOAEL.

Goldsworthy et al. (1986) conducted a study to evaluate the influence of various diets on the hepatocarcinogenicity of 2,6-dinitrotoluene. Limited information regarding non neoplastic effects is available from this study. Groups of Fischer 344/CrlBR male rats (30/group) were fed diets that provided 0, 0.6-0.7, or 3.0-3.5 mg 2,6-dinitrotoluene/kg-day for up to 12 months (the test material was 99.9% pure). Interim sacrifices were conducted at various times for evaluation of liver weight and neoplastic nodules in the liver. All groups receiving the high-dose of 2,6-dinitrotoluene gained approximately 10% less weight than their respective controls. Liver weights were not significantly altered throughout the study with respect to the control groups, except for the high-dose group, which showed multiple gross lesions (tumors) at 12 months. No further information was provided regarding non neoplastic effects. Hence, this study cannot be used to derive any non-cancer benchmarks.

In another carcinogenicity study, groups of male Fischer 344/CrlBR rats (28/dose level) were fed a diet that provided 0, 7, or 14 mg 2,6-dinitrotoluene/kg-day for 52 weeks (Leonard et al., 1987). The authors stated that purified 2,6-dinitrotoluene was used, but the actual purity was not specified. Body weights were checked every two weeks throughout the study. Some hepatic microsomal and cytosolic enzyme activities, phenotypic markers of neoplastic nodules, were measured from animals killed after 4 and 26 weeks of treatment. At the end of the treatment period, the liver and lungs were removed and weighed, and the liver was prepared for histological evaluation. Serum ALT and γ-glutamyl transferase (GGT) activities were also determined. At week 26 of treatment, terminal body weight in the low- and high-dose rats was decreased by 5% and 10%, respectively, relative to controls. Absolute liver weight was increased by 9.3% and 18.7%, and relative liver weight was increased by 15% and 49%, in the low- and high-dose groups, respectively. Serum ALT activity was reduced, although not significantly, whereas serum GGT activity was increased 6-fold and 18-fold in the low- and high-dose groups, respectively. Similar, but much more pronounced effects were seen after 52 weeks of treatment. At this time, body weight was reduced by 18% and 32% in the low- and high-dose groups, respectively, relative to controls, whereas absolute liver weight in the same groups was increased 2-fold and 4-fold. Microscopic evaluation of the liver revealed hepatocyte degeneration and vacuolation in the majority of the treated animals, but the effects did not appear to be dose-related. These changes were only occasionally seen in controls. Over 90% of the treated animals had acidophilic and basophilic foci; no foci were apparent in controls. No specific mention was made of non neoplastic effects in the lungs. No NOAEL can be defined in this study. Based on the changes in body weight, liver weight, and liver pathology, the study LOAEL is 7 mg/kg-day.

Other Studies

Information summarized by IARC (1996) indicates that 2,6-dinitrotoluene is weakly mutagenic in *Salmonella typhimurium* strain TA98 without metabolic activation and in TA1535 and TA1537 with rat liver S9. 2,6-Dinitrotoluene did not induce morphological transformation in Syrian hamster embryo cells, but induced DNA strand breaks in rat hepatocytes *in vitro*. IARC (1996) also states that 2,6-dinitrotoluene did not induce gene mutation to 6-thioguanine resistance in Chinese hamster ovary cells with or without metabolic activation, and that administration of 2,6-dinitrotoluene to rats *in vivo* induced unscheduled DNA synthesis in hepatocytes. Lee et al. (1976) reported that dosing rats with 35-37 mg of 2,6-dinitrotoluene/kg-day for either 6 or 13 weeks caused an increased number of chromatid breaks and gaps in peripheral lymphocytes and the same dose for 13 weeks also caused an increase in tetraploids in kidney cultures. Lee et al. (1976) also reported that 2,6-dinitrotoluene was not mutagenic in the specific locus mutation test using Chinese hamster ovaries.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC ORAL RfD VALUES FOR 2,6-DINITROTOLUENE

Lee et al. (1976) conducted a 13-week subchronic oral study with 2,6-dinitrotoluene in dogs administered the test compound daily in gelatin capsules; the doses tested were 0, 4, 20, and 100 mg/kg-day. No significant treatment-related effects occurred in the low-dose group other than mild splenic hematopoiesis in some dogs. Animals given the mid- and high-dose levels showed clear signs of toxicity (neurological, hematological, and liver histopathology) and the incidence and severity of the effects were dose-related. All dogs from the high-dose group died between weeks 2 and 8 and two females from the mid-dose group died on week 9. A comparison of the incidence of death between the mid-dose group and control group (2/8 vs. 0/8; includes males and females) using the Fisher Exact test yielded a p value of 0.233, which is not statistically significant, but the group sizes may have been too small for the test to detect an effect. However, the toxic effects which may have led to the death of the two females, particularly emaciation, suggest that lethality was compound-related and that the dose level of 20 mg/kg-day should be considered a FEL. NOAELs of 7 and 11 mg/kg-day were defined in similar studies in rats and mice, respectively, also conducted by Lee et al. (1976). The corresponding LOAELs were 35 and 51 mg/kg-day. Limited additional information on non cancer endpoints is available from two 12-month oral studies of the carcinogenicity of 2,6-dinitrotoluene (Goldsworthy et al., 1986; Leonard et al., 1987). In the former, doses of 2,6-dinitrotoluene of 3.0-3.5 mg/kg-day, but not 0.6-0.7 mg/kg-day, produced an approximately 10% reduction in body weight gain and induced liver tumors. In the Leonard et al. (1987) study, the lowest dose tested, 7 mg/kg-day, significantly reduced body weight gain and increased absolute liver weight, and induced histological changes in the liver indicative of pre-neoplastic effects. No developmental studies of 2,6-dinitrotoluene were located. The only information regarding reproductive effects of 2,6-dinitrotoluene is that from Lee et al. (1976), who reported

adverse testicular effects in dogs, rats, and mice in 13-week studies. The highest reliable NOAEL in the literature reviewed is 4 mg/kg-day from the Lee et al. (1976) study in dogs and can serve as basis for derivation of a provisional subchronic and chronic RfD.

A **provisional subchronic RfD of 0.01 mg/kg-day** is derived by applying an uncertainty factor of 300 (10 to extrapolate from dogs to humans, 10 to protect sensitive individuals and 3 for database limitations, including lack of reproductive or developmental studies) to the NOAEL of 4 mg/kg-day, as follows:

subchronic p-RfD = NOAEL / UF
= 4 mg/kg-day / 300
= 0.01 mg/kg-day or 1E-2 mg/kg-day

A **provisional chronic RfD of 0.001 mg/kg-day** is similarly derived by applying an uncertainty factor of 3000 (10 each for intraspecies variability, interspecies extrapolation, extrapolation from subchronic to chronic data, and 3 for a deficient database, including lack of reproductive or developmental studies) to the NOAEL of 4 mg/kg-day as follows:

p-RfD = NOAEL / UF
= 4 mg/kg-day / 3000
= 0.001 mg/kg-day or 1E-3 mg/kg-day

Confidence in the key study is medium because although a variety of endpoints were evaluated (clinical signs, hematology, gross and histological pathology), the number of animals per group (4) constitute a small sample size. Confidence in the database is medium because there are supporting subchronic studies in rats and mice, but, at the same time, there is a lack of lifetime and developmental/reproductive studies. Reproductive studies would be especially relevant since the subchronic studies found testicular and sperm effects in dogs, rats, and mice. Medium confidence in the provisional subchronic and chronic RfD values follows.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC INHALATION RfC VALUES FOR 2,6-DINITROTOLUENE

No information was located that could be used to derive provisional inhalation RfC values for 2,6-dinitrotoluene. No relevant studies were found in animals. Workers with occupational exposure to 2,6-dinitrotoluene generally were exposed to the technical grade mixture, which consists primarily of the 2,4-dinitrotoluene isomer, had dermal as well as inhalation exposure, and did not have their exposure to 2,6-dinitrotoluene quantified.

DERIVATION OF A PROVISIONAL CARCINOGENICITY ASSESSMENT FOR 2,6-DINITROTOLUENE

A cancer assessment, including derivation of an oral slope factor, is available for a mixture of 2,4-dinitrotoluene (98% by weight) and 2,6-dinitrotoluene (2% by weight) on IRIS (U.S. EPA, 2002b). Such a slope factor derived from a mixture of these two isomers cannot be used to extrapolate to the carcinogenicity of either individual isomer, due to the fact that the potency of the isomers may be extremely different. In the absence of carcinogenicity data (potency) on pure 2,6-DNT, one cannot develop a provisional oral slope factor.

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Provisional Peer Reviewed Toxicity Values for

2-Chlorophenol
(CASRN 95-57-8)

Superfund Health Risk Technical Support Center
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Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value

RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2-CHLOROPHENOL (CASRN 95-57-8)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and

circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

A chronic reference dose (RfD) value of 5E-3 mg/kg-day is available for 2-chlorophenol on IRIS (U.S. EPA, 1988a) and in the Drinking Water Standards and Health Advisories list (U.S. EPA, 2004). The HEAST (U.S. EPA, 1997) lists a subchronic RfD for 2-chlorophenol of 5E-2 mg/kg-day. Both RfD values were based on a no-observed-adverse-effect level (NOAEL) of 5 mg/kg-day for reproductive effects in a drinking water study that exposed rats to 2-chlorophenol for 10 weeks prior to mating and during mating, gestation and weaning (Exon and Koller, 1982). Uncertainty factors of 100 and 1000 were used to derive the subchronic and chronic RfDs, respectively. The source documents for the RfD assessments included a Drinking Water Criteria Document (DWCD) (U.S. EPA, 1986a), a Health Effects Assessment (HEA) (U.S. EPA, 1987a), and two Health and Environmental Effects Documents (HEEDs) (U.S. EPA, 1987b, 1990). The Chemical Assessments and Related Activities (CARA) lists (U.S. EPA, 1991, 1994) do not include any additional relevant EPA documents. The Agency for Toxic Substances and Disease Registry (ATSDR, 1999) and the World Health Organization (WHO, 1989) have assessed the health effects of chlorophenols, but did not derive any oral risk assessment values specifically for 2-chlorophenol.

An RfC for 2-chlorophenol is not available on IRIS (U.S. EPA, 1988a) nor in the HEAST (U.S. EPA, 1997). The Agency for Toxic Substances and Disease Registry (ATSDR) and the World Health Organization (WHO) have not derived any inhalation risk assessment values for 2-chlorophenol. Occupational exposure limits for 2-chlorophenol have not been derived by the American Conference for Governmental Industrial Hygienists (ACGIH), the National Institute

for Occupational Safety and Health (NIOSH) or the Occupational Safety and Health Administration (OSHA).

A cancer assessment for 2-chlorophenol is not available on IRIS (U.S. EPA, 1988a). The HEEDs (U.S. EPA, 1987b, 1990) assigned 2-chlorophenol to U.S. EPA (1986b) Cancer Group D (not classifiable as to human carcinogenicity); this classification is also included in the Drinking Water Standards and Health Advisories list (U.S. EPA, 2004). The carcinogenicity of 2-chlorophenol has not been assessed by NTP or IARC.

Literature searches were conducted from the 1960's through August, 2006 for studies relevant to the derivation of provisional toxicity values for 2-chlorophenol. Data bases searched included: TOXLINE/TOXCENTER (including BIOSIS, NTIS and Chemical Abstracts subfiles), MEDLINE (including PubMed cancer subset), TSCATS/TSCATS 2, CCRIS, DART/ETIC, GENETOX, HSDB, RTECS, and Current Contents.

REVIEW OF PERTINENT DATA

Human Studies

Relevant information regarding the toxicity of 2-chlorophenol in humans was not located.

Animal Studies

Oral Exposure. In a 14-day study performed in conjunction with EPA, groups of 12 male and 12 adult female CD-1 ICR mice were administered 2-chlorophenol in corn oil by gavage in doses of 0, 35, 69 or 175 mg/kg-day (Borzelleca, 1983; Borzelleca et al., 1985). The highest dose level was approximately 50% of the acute oral LD_{50} of 347 and 345 mg/kg in male and female CD-1 mice, respectively. Endpoints evaluated during the study included clinical observations, body weight (days 1, 8 and 15), and food and water intake. Endpoints evaluated at the end of the treatment period included hematology [red blood cells (RBC), total and differential white blood cells (WBC), platelets, hematocrit (Hct), hemoglobin (Hgb) and coagulation], serum chemistry [lactate dehydrogenase (LDH), alkaline phosphatase (ALP), aspartate aminotransferase (AST), alanine aminotransferase (ALT), blood urea nitrogen (BUN), bilirubin, protein, glucose, cholesterol, albumin/globulin, phosphorus, potassium, calcium, sodium and chloride], hepatic microsomal activities (cytochrome P_{450}, cytochrome b_5, protein, aminopyrine demethylase, aniline hydroxylase, and arylhydrocarbon hydroxylase), immune response and behavioral measurements. The earlier report of the study (Borzelleca, 1983) implies that the immunology endpoints included cell-mediated response (Delayed-type hypersensitivity (DTH) response to sheep RBC, response to concanavalin A), humoral response [splenic Immunoglobulin mu (IgM) antibody forming cells (AFC) to sheep RBC, serum antibody levels to sheep RBC, lymphocyte response to lipopolysaccharide (LPS)], and reticuloendothelial system (RES) function (vascular clearance and uptake of ^{51}Cr sheep RBC). The Borzelleca (1983) report also implies that the behavioral endpoints included inverted screen test, swimming endurance, locomotor activity, pain sensitivity, olfactory sensitivity, passive avoidance learning, and forepaw grip strength. Other endpoints included sister-chromatid exchange (bone marrow

and/or testes, not otherwise specified), *in vitro* fertilization capability (penetration of ova, fertilization, blastula formation), absolute and relative organ weights, and gross pathology. Histopathological examinations were not performed. The results of this study are qualitatively reported in tabular summaries. Effects included 100% mortality at 175 mg/kg-day, hyperactivity at 35 and 69 mg/kg-day, reduced body weight at 69 mg/kg-day, and reduced brain, liver and spleen weights (effect levels not indicated); additional information on these effects was not reported. No biologically or statistically significant compound-related adverse effects were reported for the other endpoints as indicated by the authors. The 100% mortality in the high-dose animals indicates that 175 mg/kg-day was a FEL for short-term repeated gavage exposures in mice. The authors (Borzelleca et al., 1985) referred to the effects at the lower doses as "slight toxic effects", but apparently concluded that they were not biologically significant, indicating that 69 mg/kg-day was a NOAEL. Results of acute studies reported by Borzelleca et al. (1985) include an ED_{50} of 63 mg/kg for reversible motor impairment in mice exposed to a single oral dose of 2-chlorophenol; additional information was not provided.

Gavage studies (10-day and 90-day) of 2-chlorophenol in Sprague-Dawley rats were conducted by the EPA (Daniel et al., 1993). In the 10-day study, groups of 10 male and 10 female 8-week-old Sprague-Dawley rats were administered 2-chlorophenol in corn oil by daily gavage at doses of 0, 13, 64, 129 or 257 mg/kg-day. The highest dose level was approximately 38% of the reported acute LD_{50} of 670 mg/kg for a rat. Endpoints evaluated during the study included clinical signs (observed for physiological and behavioral responses and mortality), body weight and food and water consumption. Evaluations at the end of the exposure period included hematology [RBC, WBC, Hct, Hgb and mean corpuscular volume (MCV)], serum chemistry (ALP, AST, ALT, LDH, cholesterol, BUN, creatinine, glucose, and calcium), absolute and relative organ weights (brain, liver, spleen, lungs, thymus, kidneys, adrenal glands, heart, and gonads), and gross pathology. Comprehensive histological examinations were performed in the control and high-dose groups; target organs were also histologically evaluated at the lower dose levels. Tissues that were examined included liver, kidneys, urinary bladder, heart, aorta, skin, skeletal muscle, bone, sciatic nerve, spleen, thymus, lymph nodes, respiratory tract (nasal turbinates, trachea, lung with bronchi), gastrointestinal tract (esophagus, stomach, duodenum, jejunum, ileum, cecum, colon, rectum), endocrine system (adrenals, pancreas, pituitary, thyroid/parathyroid), and reproductive system (testes, epididymis, seminal vesicles, prostate, preputial gland, ovaries, uterus, clitoral gland).

There were no treatment-related deaths, significant clinical observations or significant changes in food or water consumption or body weight gain (Daniel et al., 1993). The hematology evaluations found significantly ($p \leq 0.05$) increased RBC count (12% higher than controls) and Hct (28% higher than controls) in the high-dose (257 mg/kg-day) males; these effects were not clearly dose-related and there were no significant changes in hematologic values in females. Serum chemistry changes that were statistically significant included increased glucose levels in females at 129 and 257 mg/kg-day (45 and 42% higher than controls, respectively) and males at 257 mg/kg-day (21% higher than controls); decreased ALP in females at 129 and 257 mg/kg-day (15 and 16% lower than controls); and decreased AST, cholesterol, and LDH in males at 257 mg/kg-day (25, 27 and 55% lower than controls, respectively). Serum LDH values were significantly decreased in females at 64 and 129 mg/kg-day, but not at 257 mg/kg-day. The only serum chemistry changes that appeared to be dose-related were the

increased glucose and decreased ALP in female rats, but the authors reported that these values were within the normal ranges for laboratory rats. Statistically significant organ weight changes consisted of decreases in absolute kidney and heart weights in females at 129 mg/kg-day, but not at other dose levels, and decreases in absolute and relative lung weights in females at all dose levels; quantitative data were not reported. Necropsy findings included enlarged mandibular lymph nodes, reddened lungs and reduced thymus size in all groups of both sexes; these were minimal to mild changes not considered to be treatment-related by the authors. The histological examinations similarly showed lymphoid hyperplasia, mild congestion of the lungs, and mild thymic atrophy in all groups; these effects did not appear to be treatment-related to the authors because they were not significant in severity or incidence (data not reported). Histopathological changes in kidneys, heart, lungs or other tissues were not reported. The lack of any clear treatment-related or biologically significant hematology, clinical chemistry, organ weight or pathological changes indicates that the highest dose level, 257 mg/kg-day, is a NOAEL for 10-day gavage exposure in male and female rats although it is difficult to ascertain the significance of the reported effects due to a lack of data reporting.

In the 90-day study, groups of 10 male and 10 female 8-week-old Sprague-Dawley rats were administered 2-chlorophenol in corn oil by daily gavage at doses of 0, 17, 50, or 150 mg/kg-day (Daniel et al., 1993). Study endpoints were the same as in the 10-day study summarized above; evaluations included clinical signs, body weight, food and water consumption, hematology, serum chemistry (with the addition of triglycerides, total protein, albumin and globulin), organ weights and gross pathology in all groups, and histopathology in the control and high-dose groups. There were no clinical signs of toxicity, unscheduled deaths, or significant changes in food or water consumption or body weight gain. Hematology changes that were statistically significant included increased RBC count in females at 17 and 150 mg/kg-day (3 and 6% higher controls), but not at 50 mg/kg-day; increased Hct in females at 150 mg/kg-day (5% higher than controls); and increased MCV in males at 150 mg/kg-day (3% higher than controls). Serum chemistry changes that were statistically significant included decreased ALP in males at 50 and 150 mg/kg-day (31 and 28% less than controls), decreased AST in males at 50 and 150 mg/kg-day (22 and 19% less than controls), decreased ALT in males at 50 and 150 mg/kg-day (18 and 18% less than controls), and increased glucose at 50 mg/kg-day (16% higher than controls; similar increases occurred at 17 and 150 mg/kg-day but were not statistically significant). Although statistically significant changes were observed for these and several other hematology and clinical chemistry indices, no responses were clearly dose-related, consistent between sexes or, according to the authors, outside normal ranges or biologically significant. There were no clear effects on organ weights; the only statistically significant changes were increased relative liver weight in females at 17 mg/kg-day, increased absolute spleen weight in males at 17 and 50 mg/kg-day, and increased absolute brain weight in males at 50 mg/kg-day; quantitative data were not reported. There were no gross or histopathological changes in either sex. The lack of any clear treatment-related or biologically significant hematology, clinical chemistry or organ weight changes, as well as the lack of any pathological effects, indicates that the highest dose level, 150 mg/kg-day, is a NOAEL for 90-day gavage exposure in rats.

The oral toxicity of 2-chlorophenol was also assessed in 18-day studies with preweanling rats and in 14- and 28-day studies with juvenile rats (Hasegawa et al., 2005). Preweanling Sprague-Dawley SPF rats were administered 2-chlorophenol in olive oil by gavage on postnatal

days (PNDs) 4-21 in dose-finding and main studies. In the 18-day dose-finding study with preweanling rats, groups of 4 males and 4 females were exposed to dose levels of 0, 20, 100 or 500 mg/kg-day. General behavior and body weight were evaluated during the study, and hematology, blood chemistry, gross pathology and organ weights were evaluated on PND 22; histopathology was not assessed. Although not specifically reported, it is assumed that the scope of these evaluations was the same as in the main study with newborn rats summarized below. Effects were limited to 100% mortality by the 9th day of dosing at 500 mg/kg-day; clinical signs were not observed at 20 and 100 mg/kg-day, and no other results were reported. This study identified a FEL of 500 mg/kg-day for lethality in preweanling rats. The next lowest dose level of 100 mg/kg-day is a NOAEL based on the lack of clinical signs and systemic effects, but confidence in this effect level is low due to the small numbers of animals and lack of histological examinations.

In the main 18-day study with preweanling rats, groups of 12 male and 12 female Sprague-Dawley SPF rats were administered 2-chlorophenol in olive oil by gavage in doses of 0, 8, 50 or 300 mg/kg-day on PNDs 4-21 (Hasegawa et al., 2005). Half of the animals were sacrificed on PND 22, and the remaining 6 rats/sex/group were observed without treatment for the following 9 weeks and then sacrificed (on PND 85). Endpoints evaluated during the study included general behavior, body weight and postnatal developmental parameters, including surface righting and visual placing reflex for reflex ontogeny, fur appearance, incisor eruption and eye opening for external development, and preputial separation, vaginal opening and estrous cycle for sexual development. Comprehensive hematology and blood biochemistry evaluations were conducted at the end of the treatment period on PND 22 (6 rats/sex/dose) and end of the observation period on PND 85 (6 rats/sex/dose). Hematology indices included RBC, Hct, Hgb, MCV, mean corpuscular hemoglobin, mean corpuscular hemoglobin concentration, total and differential WBC, platelet count, and reticulocyte count. Blood biochemistry indices included total protein, albumin, albumin/globulin ratio, glucose, total cholesterol, triglycerides, phospholipid, total bilirubin, BUN, creatinine, AST, ALT, ALP, γ-glutamyl transpeptidase, calcium, inorganic phosphorus, sodium, potassium and chloride. Prothrombin time, activated thromboplastin time, and urine indices (color, pH, occult blood, protein, glucose, ketone bodies, bilirubin, urobilinogen, sediment, volume and osmotic pressure) were evaluated only at the end of the observation period. Organ weights (brain, pituitary, thymus, thyroids, heart, lungs, liver, spleen, kidneys, adrenals, testes, epididymides, ovaries and uterus) and histopathology (organs that were weighed as well as macroscopically abnormal organs) were evaluated on PND 22 (6 rats/sex/dose); it was not indicated if these evaluations were performed on PND 85.

Effects included tremors in 11/12 males and 12/12 females at 300 mg/kg-day; the tremors appeared within 5 minutes of dosing and disappeared within 4 hours in most animals. At 50 mg/kg-day, 1/12 females showed tremors once from 15-30 minutes following dosing on treatment day 9. No tremors were observed in males at 50 mg/kg-day or in either sex at 0 or 8 mg/kg-day. The only other reported effects occurred at 300 mg/kg-day; these consisted of other signs of neurotoxicity (hypoactivity in 2/12 males and 3/12 females and abnormal gait in 1/12 males and 1/12 females), transiently decreased body weight in both sexes (additional information not reported), and histological changes in the kidneys (slight to moderate basophilic renal tubules in 4/6 males and 5/6 females) with increases in relative kidney weight (8% in males and 4% in females). The biological significance of the basophilic renal tubular changes was not discussed.

No results were reported for the 9-week observation period. The 300 mg/kg-day dose is a FEL for preweanling rats based on the occurrence of tremors in 23/24 of the exposed males and females; other signs of neurotoxicity (hypoactivity and abnormal gait) were also observed at this dose level. The next lowest dose of 50 mg/kg-day is a NOAEL because tremors were only observed in 1/12 females once on exposure day 9; the incidence is not statistically different from the control group (0/12) and the occurrence was isolated. Additionally, there were no clinical signs of neurotoxicity in the males exposed to 50 mg/kg-day, or in the 4 males and 4 females exposed to 100 mg/kg-day in the dose-finding study summarized above.

The studies with juvenile rats included a 14-day dose-finding study and a 28-day main study (Hasegawa et al., 2005). In the 14-day dose-finding study, 5-week-old male and female Sprague-Dawley SPF rats were administered 2-chlorophenol in olive oil by gavage in doses of 0, 100, 200 or 500 mg/kg-day; group sizes were 3 per sex at 500 mg/kg-day and were not reported for the other dose levels. General behavior, body weight and food consumption were evaluated during the study, and hematology, blood chemistry, gross pathology and organ weights were evaluated the day after the last treatment; histopathology was not assessed. Although not specifically reported, it is assumed that the scope of these evaluations was the same as in the study with newborn rats summarized above. The only information regarding the results is a statement that no toxic signs were observed, indicating that 500 mg/kg-day is a NOAEL in juvenile rats. Confidence in this effect level is low due to the apparent small numbers of animals and lack of histological examinations.

In the 28-day main study, groups of 12 male and 12 female 5- to 6-week old Sprague-Dawley SPF rats were exposed to 2-chlorophenol in olive oil by gavage in doses of 0, 8, 40, 200 or 1000 mg/kg-day (Hasegawa et al., 2005). It appears that half of the animals were sacrificed following the last treatment and the remaining 6 rats/sex/group were observed without treatment for the following 2 weeks and then sacrificed. Evaluations included general behavior, body weight, food consumption, urinalysis, hematology, blood biochemistry, gross pathology, organ weights and histopathology. Although not specifically reported, it is implied that the scope and schedule of these evaluations are the same as in the 18-day study with preweanling rats summarized above. The only effects in this study were clinical signs of neurotoxicity and histological changes in the liver in most animals only at 1000 mg/kg-day. The clinical signs occurred sporadically in both sexes within 3 hours of dosing and included tremors (4/12 males and 5/12 females), hypoactivity (8/12 males and 5/12 females) and abnormal gait (4/12 males and 7/12 females). The liver effects consisted of slight centrilobular hypertrophy of hepatocytes (6/6 males and 5/6 females); the authors indicated that this suggested a compensatory response for hepatic metabolism. None of the animals showed basophilic renal tubules as observed in the preweanling rats exposed to 300 mg/kg-day on PNDs 4-21 (see above). No results were reported for the 2-week observation period. This study identified a FEL of 1000 mg/kg-day based on the clinical signs of neurotoxicity; the NOAEL is 200 mg/kg-day.

Additional information on effects of repeated oral exposures to 2-chlorophenol is available from a series of reproductive toxicity, immunotoxicity and carcinogenicity studies in Sprague-Dawley rats that were exposed prenatally, postnatally, or both pre- and postnatally to concentrations of 0, 5, 50 or 500 ppm 2-chlorophenol in drinking water (Exon and Koller, 1982, 1983a,b, 1985). Offspring produced in the reproductive study were used in the immunotoxicity

and carcinogenicity studies. In the reproductive study, groups of 12-14 females were exposed to the treated drinking water from 3 weeks of age through breeding (to untreated males) at 90 days of age and subsequently until 3 weeks post-parturition (Exon and Koller, 1982, 1983b, 1985). Table 1 shows the statistically significant reproductive endpoints that were reported by Exon and Koller (1982). The values found in Exon and Koller (1983b, 1985) agree with each other but are slightly different from those found in Exon and Koller (1982), and differ in their statistical evaluation. The reason for the differences is unknown. Maternal and pup weight, percent conception, litter size, and number of stillbirths were evaluated at parturition. Pup survival, body weight and hematology (red and white cell counts, hemoglobin, packed cell volume, and mean corpuscular volume) were evaluated at weaning.

Table 1. Reproductive effects of 2-Chlorophenol in Rats

Effect	Dose (ppm)			
	0	**5**	**50**	**500**
Litter Size (mean ± SD)	11.4 ± 1.2 n=12	11.7 ± 3.5 n=12	10.1 ± 2.3 n=12	9.2 ± 4.3[b] n=14
Stillborn (incidence)	0/91	2/105	0/91	6/110[b]

[a] Female rats were exposed to 2-chlorophenol in drinking water from 3 weeks of age through mating at 90 days of age and subsequently through pregnancy and lactation.
[b]Significantly different from control group ($p \leq 0.05$).
Source: Exon and Koller (1982)

Statistically significant ($p \leq 0.05$) changes included 19% reduced mean litter size (live and stillborn pups) at 500 ppm (9.2 ± 4.3 compared to 11.4 ± 1.2 in controls) and 5% increased incidence of stillbirths at 500 ppm (6/110 compared to 0/91 in controls) (Exon and Koller, 1982).

Based on the evidence of decreased litter size and an increase in stillbirth incidence, this study identified a NOAEL of 50 ppm and a LOAEL of 500 ppm for reproductive toxicity. The conversion factor for converting the amount of 2-chlorophenol ingested in drinking water (ppm) to a dose (mg/kg-day) was calculated by dividing the reference water consumption of 0.031 L/day for female Sprague Dawley rats in a subchronic study by the corresponding reference body weight in female Sprague Dawley rats (0.031 L/day/0.204 kg = 0.15 L/kg-day) (U.S. EPA, 1988b). Thus, the 5, 50 and 500 ppm doses correspond to estimated drinking water doses of 0.75, 7.5 and 75 mg/kg-day, respectively, and the NOAEL and LOAEL correspond to 7.5 and 75 mg/kg-day, respectively.

In the immunotoxicity studies, offspring from female rats described in the above studies that were exposed to 0, 5, 50 or 500 ppm 2-chlorophenol in drinking water from 3 weeks of age through mating at 90 days until 3 weeks post-parturition were continued on treatment for 10 weeks (Exon and Koller, 1983a) or 15 weeks (Exon and Koller, 1985), at which time immune responses were evaluated. Tests were conducted for humoral immunity (measured as the ratio of serum Immunoglobulin gamma (IgG) antibody levels to bovine serum albumin or keyhole limpet hemocyanin), cell-mediated immunity (measured as delayed-type hypersensitivity response in ears injected with oxazolone), and macrophage function (measured as the ability of peritoneal exudate cells to phagocytize sheep red blood cells *in vitro*) in 4 male and 4 female offspring from each exposure group. Body, liver, spleen, and thymus weights were also evaluated in these

offspring. There were no statistically significant ($p \leq 0.05$) differences between the treated and control groups for any of the immune responses or other end points, indicating that a NOAEL of 500 ppm was identified. Using conversion factors of 0.14 and 0.15 L/kg-day based on subchronic values for water consumption and body weight in male and female Sprague Dawley rats (U.S. EPA, 1988b), respectively, the NOAEL of 500 ppm identified in these studies corresponds to estimated drinking water doses of 70 mg/kg-day in males and 75 mg/kg-day in females.

In the carcinogenicity studies (Exon and Koller, 1983b, 1985), groups of 24-32 male and 24-28 female rats received combined pre- and postnatal exposures to 0, 5, 50 or 500 ppm of 2-chlorophenol in drinking water. Three-week-old females were exposed continuously through mating (90 days of age), pregnancy and lactation, and the offspring received treated drinking water from weaning for 24 months. All rats were observed daily for gross signs of morbidity, and moribund or tumor-bearing rats were sacrificed. Body weight was measured monthly in all rats, and hematology (RBC, WBC, Hct, Hgb and MCV) was evaluated every 2 weeks (Exon and Koller, 1983b) or every 2 months (Exon and Koller, 1985) in 5 males and 5 females per group. Gross and microscopic examinations of major organs and tumor tissues were conducted in all animals. There were no effects on body weight at 15 weeks (Exon and Koller, 1985) or 7 months (Exon and Koller 1983b), the only times for which data were reported. A significant decrease in body weight ($p \leq 0.10$) was observed at 7 months in females at doses of 5 and 500ppm (7.6 and 5.2% less than controls respectively). Exon and Koller (1985) noted that red blood cell count, packed cell volume and blood hemoglobin concentrations were "generally increased" in both sexes at 500 ppm. These effects were most evident after 14 months of exposure, when the RBC, packed cell volume (PCV) and hemoglobin values were 15, 19 and 16% higher than controls ($p \leq 0.05$), respectively; no other quantitative hematology data were reported. In an earlier report of interim (15-month) findings, however, Exon and Koller (1983b) indicated that 2-chlorophenol did not affect any of the measured hematology parameters. Noncancer histopathologic observations were not reported. Although there were no clear treatment-related or biologically significant body weight or hematology changes, the lack of noncancer histopathology data precludes identification of a NOAEL or LOAEL for chronic toxicity. There were no statistically significant ($p \leq 0.10$) differences between exposed and control groups in tumor incidence, latency or type in either sex. Incidences of total tumors in the 0, 5, 50 and 500 ppm groups were 13, 17, 8 and 18% in males, and 5, 0, 13, and 18% in females, respectively; no other incidence data were reported.

Inhalation Exposure. Relevant information regarding the inhalation toxicity of 2-chlorophenol in animals was not located.

Other Studies

Co-carcinogenicity and Tumor Promotion. In a co-carcinogenicity study (Exon and Koller, 1983b, 1985), groups of 24-32 male and 24-28 female Sprague-Dawley rats were exposed prenatally, postnatally, or both pre- and postnatally to 0, 5, 50 or 500 ppm 2-chlorophenol in drinking water, with prenatal exposure to the known carcinogen ethylnitrosourea (ENU). Comparison groups received prenatal exposure to ENU alone; comparisons were not made to offspring unexposed to ENU or 2-chlorophenol. Rats were exposed to ENU as its precursors,

ethylurea (0.316% in feed) and sodium nitrite (1 ppm in drinking water), on days 14-21 of gestation. Prenatal exposure to 2-chlorophenol involved exposing 3-week-old females through mating (90 days of age) and pregnancy; the dams were not exposed during lactation, and the offspring were observed without treatment from weaning for 24 months. Postnatal exposure to 2-chlorophenol involved exposing offspring from unexposed dams to the treated water from weaning for 24 months. Combined pre- and postnatal exposure to 2-chlorophenol involved exposing 3-week-old females continuously through mating (90 days of age), pregnancy and lactation, and subsequent exposure of the offspring to the treated water from weaning for 24 months. Histological examinations were performed on major organs and grossly observed tumors, but data were only reported for total tumors.

Male offspring of rats treated with ENU and combined pre- and postnatal exposure to 2-chlorophenol, at all treatment levels, had significantly ($p \leq 0.10$) increased incidences of total tumors when compared to the group exposed to ENU alone (Table 2). Significantly higher incidences of total tumors also occurred in male offspring exposed to ENU and 2-chlorophenol given prenatally at 5 and 500 ppm (but not 50 ppm), male offspring exposed to ENU and 2-chlorophenol given postnatally at 5 ppm, and female offspring exposed to ENU and 2-chlorophenol given prenatally or postnatally at 500 ppm. Tumor latency (mean days to tumor) was significantly decreased in rats exposed to ENU with combined pre- and postnatal exposure to 2-chlorophenol at all treatment levels when compared to the group exposed to ENU alone. Although total tumor incidence was increased and time-to-tumor latency was decreased in all groups of male rats with combined pre- and postnatal exposure to 2-chlorophenol compared with those exposed to ENU alone, interpretation of the findings is complicated by a high tumor incidence in the group exposed to ENU alone, lack of a dose-response relationship, and lack of similar effects in females (Table 2). The authors concluded that the results suggest that 2-chlorophenol may act as a co-carcinogen or promoter of carcinogenesis.

Table 2. Tumor Incidence and Latency in Rats Exposed Pre- and Postnatally to 2-Chlorophenol with Prenatal Exposure to ENU (Exon and Koller, 1983b)

2-Chlorophenol (ppm) (Pre-and Postnatal + ENU)	Total Tumor Incidence (%)			No. Rats/Group		Days to Tumor (mean ± SE)
	Total	Male	Female	Male	Female	
Unexposed	3	7	0	30	30	422 ± 40
ENU only	58	54	63	28	24	302 ± 16
5	85[a]	92[a]	79	24	24	245 ± 14[a]
50	63	75[a]	50	24	24	256 ± 17[a]
500	68	77[a]	60	30	30	259 ± 14[a]

[a]$p \leq 0.10$ compared to ENU positive control group by chi-square test (incidence data) or analysis of variance (least-square means) (latency data).

The skin tumor-promoting ability of 2-chlorophenol was assessed in 2- to 3-month old female albino Sutter mice (Boutwell and Bosch, 1959). When 25µl of a 20% solution of 2-chlorophenol in benzene was applied to shaved back skin twice weekly for 15 weeks following initiation with a single 25µl application of 0.3% DMBA (9,10-dimethyl-1,2-benz[a]anthracene) in benzene, 31/35 mice survived compared to 15/20 similarly initiated vehicle control mice. Of the survivors, 61% had skin papillomas compared to 7% in controls, and 10% had skin

carcinomas compared to 0% in controls. When 2-chlorophenol was applied as a 20% solution in dioxane to uninitiated mice twice weekly for 12 weeks, 28/30 mice survived; 46% of the survivors had papillomas and 0% developed carcinomas. A dioxane-treated vehicle control group was not reported.

Genotoxicity. A limited amount of information is available on the genotoxicity of 2-chlorophenol. 2-Chlorophenol did not induce reverse mutations in *Salmonella typhimurium* strains TA98, TA100, TA1535 and TA1537 when tested with or without exogenous metabolic activation (Haworth et al., 1983). 2-Chlorophenol did not induce DNA-repairing genes (*umuDC*) in *S. typhimurium* TA1535/pSK1002 (Ono et al., 1992), or DNA damage in *Escherichia coli* as shown by the induction of prophage lambda (DeMarini et al., 1990), when tested with or without exogenous metabolic activation. Sister-chromatid exchanges were not increased in mice that were exposed to 2-chlorophenol in corn oil by gavage in doses of 35-175 mg/kg-day for 14 days (Borzelleca et al., 1985); bone marrow and testicular cells (specific cell types not indicated) were examined.

DERIVATION OF A PROVISIONAL SUBCHRONIC ORAL RfD FOR 2-CHLOROPHENOL

Subchronic RfD

Information relevant to the derivation of a subchronic oral RfD for 2-chlorophenol is available from one 14-day study in mice (Borzelleca, 1983; Borzelleca et al., 1985) and several studies in rats ranging in exposure duration from 10 days to approximately 16-21 weeks (Daniel et al., 1993; Exon and Koller, 1982, 1983a, 1985; Hasegawa et al., 2005). The preponderance of these studies used gavage exposure and showed frank toxic effects, particularly mortality and clinical signs of neurotoxicity, as summarized in Table 3. The gavage studies identified FELs of 175 mg/kg-day for mortality in mice exposed for 14 days (Borzelleca, 1983; Borzelleca et al., 1985), 300 mg/kg-day for overt neurotoxicity (tremors) and 500 mg/kg-day for mortality in preweanling rats exposed for 18 days on PNDs 4-21 (Hasegawa et al., 2005), and 1000 mg/kg-day for overt neurotoxicity (tremors, hypoactivity and abnormal gait) in rats exposed for 28 days (Hasegawa et al., 2005). Although these are generally well-designed studies with comprehensive evaluations that included clinical signs, body weight, hematology, clinical chemistry, organ weights, histology and, in the study with preweanling rats, postnatal developmental indices, they did not identify more subtle indicators of toxicity and actual data were not supplied in some instances. NOAELs in the gavage studies were 69 mg/kg-day in mice exposed for 14 days (Borzelleca, 1983; Borzelleca et al., 1985), 50 and 100 mg/kg-day in preweanling rats exposed for 18 days on PNDs 4-21 (Hasegawa et al., 2005), 150 mg/kg-day in rats exposed for 90 days (Daniel et al., 1993), and 200 mg/kg-day in rats exposed for 28 days (Hasegawa et al., 2005).

Table 3. Summary of Effect Levels from Oral Toxicity Studies of 2-Chlorophenol

Species	Exposure Duration	NOAEL[a]	LOAEL[a]	FEL[a]	Effects	Reference
mouse	14 days (gavage)	69	ND	175	100% mortality at 175 mg/kg-day. No biologically significant effects at 69 mg/kg-day[b,c].	Borzelleca, 1983; Borzelleca et al., 1985
rat	10 days (gavage)	257	ND	ND	No clear treatment-related or biologically significant effects[b].	Daniel et al., 1993
rat	90 days (gavage)	150	ND	ND	No clear treatment-related or biologically significant effects[b,d].	Daniel et al., 1993
rat	18 days (PND 4-21) (gavage)	100	ND	500	100% mortality at 500 mg/kg-day. No effects at 100 mg/kg-day but small numbers of rats were tested. Dose-finding study with no histology[b].	Hasegawa et al., 2005
rat	18 days (PND 4-21) (gavage)	50[e]	ND	300	Tremors in 23/24 males and females at 300 mg/kg-day. No clear treatment-related effects at 50 mg/kg-day[b,d].	Hasegawa et al., 2005
rat	14 days (gavage)	500	ND	ND	No clinical signs or other effects but small numbers of rats were tested. Dose-finding study with no histology[b].	Hasegawa et al., 2005
rat	28 days (gavage)	200	ND	1000	Tremors, hypoactivity, abnormal gait and centrilobular hepatocellular hypertrophy at 1000 mg/kg-day. No reported effects at 200 mg/kg-day[b,d].	Hasegawa et al., 2005
rat	16 weeks[f] (drinking water)	7.5	75	ND	Reduced litter size (19%) and increased incidence of stillbirths.	Exon and Koller, 1982, 1985
rat	16-21 weeks[g] (drinking water)	75	ND	ND	No effects on immune responses[h] or body, liver, spleen or thymus weights. Other endpoints not evaluated.	Exon and Koller, 1983a, 1985

ND = not determined
[a]mg/kg-day
[b]Endpoints included clinical signs, body weight, hematology, serum chemistry, organ weights and gross pathology.
[c]Endpoints included immune responses and behavioral tests.
[d]Endpoints included histopathology.
[e]The only reported effect was tremors in 1/12 females that occurred once on treatment day 9.
[f]Female rats were exposed from 3 weeks of age through mating to untreated males at 90 days of age and subsequently through pregnancy and lactation.
[g]Offspring of female rats that were exposed from 3 weeks of age through mating to untreated males at 90 days of age and subsequently through pregnancy and lactation were continued on treatment for 10-15 weeks.
[h]Tests for humoral immunity, cell-mediated immunity and macrophage function were conducted.

Drinking water studies (Exon and Koller, 1982, 1983a and b, 1985) investigated reproductive and immunological toxicity in rats. There were no effects on immune function in rats that were exposed to 75 mg/kg-day via maternal drinking water during gestation and lactation and subsequently by direct consumption for 10-15 weeks (Exon and Koller, 1983a, 1985). Exposure to 75 mg/kg-day in drinking water during pregnancy and lactation significantly ($p \leq 0.05$) affected litter size (19% reduced) and stillbirths (5% increased) in rats (Exon and Koller 1982, 1985); no effects on litter size occurred at 7.5 mg/kg-day. Therefore, reproductive toxicity as evidenced by decreased litter size and an increase incidence in stillbirths was chosen for the development of the subchronic RfD for 2-chlorophenol based on a NOAEL of 7.5 mg/kg-day (Exon and Koller, 1982).

The NOAEL of 7.5 mg/kg-day is divided by a composite uncertainty factor of 1000 to derive a provisional **subchronic RfD of 8E-3 mg/kg-day**, as follows:

sRfD	=	NOAEL / UF
	=	7.5 mg/kg-day / 1000
	=	**0.0075 or 8E-3 mg/kg-day**

The composite UF of 1000 includes a factor of 10 for animal-to-human extrapolation, 10 for interindividual variability and 10 for database deficiencies.

The animal-to-human UF of 10 reflects a factor of three ($10^{1/2}$) for pharmacokinetic differences across species and a factor of three ($10^{1/2}$) for pharmacodynamic considerations.

The intraspecies UF of 10 is used to account for variation in sensitivity within human populations because there is limited information on the degree to which humans of varying gender, age, health status or genetic makeup might vary in the disposition of, or response to, the chemical.

An UF for extrapolation from a LOAEL to a NOAEL is not necessary because a NOAEL was chosen for the point of departure for the derivation for the sRfD.

The UF of 10 for database deficiencies is applied due to the lack of comprehensive reproductive and developmental toxicity studies, including a two-generation reproductive toxicity study and a subchronic study in mice (see below).

Confidence in the key study is low because a limited number of reproductive/ developmental endpoints (maternal and pup weight, percent conception, litter size and number of stillborn) were evaluated and the adequacy of the reporting is marginal. Confidence in the database is also low. The database includes 18-day, 28-day and 90-day studies in rats that assessed systemic toxicity and postnatal developmental toxicity at doses that include the range of those tested in the key study. Deficiencies in the database include the lack of comprehensive reproductive and developmental toxicity studies (especially important because reproductive effects have been identified as critical for this chemical) and a subchronic toxicity study longer than 14 days in duration in mice, which appeared to be more sensitive than rats to the subchronic effects of the chemical. In addition, a two-generation reproductive toxicity study is not

available. Considering the levels of confidence in the key study and data base and the lack of supporting data for the critical effects, confidence in the provisional RfD is low.

FEASIBILITY OF DERIVING PROVISIONAL SUBCHRONIC AND CHRONIC INHALATION RfC VALUES FOR 2-CHLOROPHENOL

No information is available on the subchronic or chronic inhalation toxicity of 2-chlorophenol, precluding derivation of RfC values for this chemical.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR 2-CHLOROPHENOL

Weight-of-evidence Classification

Information regarding the carcinogenicity of 2-chlorophenol mainly consists of the negative results of a drinking water study in which rats were exposed to 0, 5, 50 or 500 ppm via maternal consumption during pregnancy and lactation and subsequently by direct consumption for 24 months (Exon and Koller 1983b, 1985). There were no significant increases in tumor incidence, latency or type in either sex, but a definitive conclusion regarding carcinogenicity is precluded by the use of marginal numbers of animals for a cancer bioassay (24-32/sex/dose level) and the apparent lack of a MTD, because the only observed effects (body weight and hematology changes) were not clearly treatment-related or biologically significant.

The ability of 2-chlorophenol to act as a promoter or co-carcinogen was investigated in a study with the known carcinogen ENU (Exon and Koller 1983b, 1985). Male rats that were exposed to 0, 5, 50 or 500 ppm of 2-chlorophenol in drinking water via maternal consumption during pregnancy and lactation and subsequently by direct consumption for 24 months, combined with prenatal exposure to ENU, had increased total tumor incidences and decreased time-to-tumor latencies compared to rats exposed to ENU alone. Another study found that dermal application of 2-chlorophenol promoted the formation of DMBA-initiated skin tumors in mice (Boutwell and Bosch, 1959).

2-Chlorophenol has been studied in several short term *in vitro* and *in vivo* animal studies. 2-Chlorophenol did not induce reverse mutations or DNA-repair in *S. typhimurium* (Haworth et al., 1983; Ono et al., 1992), DNA damage in *E. coli* (DeMarini et al., 1990), or sister-chromatid exchanges in orally-exposed mice (Borzelleca et al., 1985).

In accordance with current EPA cancer guidelines (U.S. EPA, 2005), the available data are inadequate for an assessment of human carcinogenic potential.

Quantitative Estimates of Carcinogenic Risk

Derivation of quantitative estimates of cancer risk for 2-chlorophenol is precluded by the lack of data demonstrating carcinogenicity associated with 2-chlorophenol exposure.

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9-18-2007

Provisional Peer Reviewed Toxicity Values for

2-Methylnaphthalene
(CASRN 91-57-6)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose

PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2-METHYLNAPHTHALENE (CASRN 91-57-6)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).
2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.
3. Other (peer-reviewed) toxicity values, including:
   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

The U.S. Environmental Protection Agency's (EPA) Integrated Risk Information System (IRIS) (U.S. EPA, 2003) for 2-Methylnaphthalene (2-MN) included an RfD of $4x10^{-3}$ mg/kg-day based on a $BMDL_{05}$ of 3.5 mg/kg-day and an uncertainty factor of 1000. IRIS also included a carcinogenicity assessment that concluded data were inadequate to assess human carcinogenic potential. ATSDR (2005) derived a chronic MRL of $4x10^{-2}$ mg/kg-day based on a $BMDL_{05}$ of 4.3 mg/kg-day in mice (Murata et al., 1997) and an uncertainty factor of 100. ATSDR also had derived an MRL of $7x10^{-2}$ mg/kg-day for chronic duration oral exposure to 1-MN based on a LOAEL of 71.6 mg/kg-day for increased incidence of alveolar proteinosis in mice (Murata et al., 1993) and an uncertainty factor of 1000.

Updated literature searches for oral noncancer data were conducted from 1983 to 2007. The databases searched were TOXLINE, MEDLINE, CANCERLIT, CCRIS, TSCATS, HSDB, RTECS, GENETOX, DART/ETICBACK, and EMIC/EMICBACK.

This document has passed the STSC quality review and peer review evaluation indicating that the quality is consistent with the SOPs and standards of the STSC and is suitable for use by registered users of the PPRTV system.

REVIEW OF THE PERTINENT LITERATURE

Human Studies

No relevant human studies were found in the literature.

Animal Studies

Lifetime Exposure

The chronic toxicity of 2-MN was investigated in mice by Murata et al. (1997). Groups of 50 male and 50 female B6C3F1 mice were given diets containing 0, 0.075, or 0.15% 2-MN for 81 weeks. Food consumption and body weight were recorded throughout the experimental period. At necropsy organ weights were recorded for brain, liver, kidney, heart, spleen, lungs, testes, pancreas, thymus, and salivary glands. Gross pathology and histopathology were conducted for these tissues and for adrenals, trachea, stomach, large and small intestines, seminal vesicles, ovaries, uterus, vagina, mammary glands, skeletal muscle, eye, Harderian glands, spinal cord, bone, skin, and other tissues with abnormal appearance. A complete clinical chemistry examination was performed, including hematology, serology, and enzyme analysis. Incidence data were statistically evaluated using a Fisher's exact test and analysis of variance. Continuous endpoints (organ weights, blood, and serum parameters) were evaluated using a multiple comparison post-test with the Dunnett procedure.

Average 2-MN intakes of 50.3 (males) and 54.3 (females) mg/kg-day were calculated from food consumption data reported in Murata et al. (1997) for the 0.075% 2-MN dose group. Similarly, 2-MN intakes for the 0.15% 2-MN dose group were 107.6 (males) and 113.8 (females) mg/kg-day.

Animals at the high dose exhibited slight growth retardation over the entire experimental period. Compared with control animals, final body weights were reduced by 4.5% for females and 7.5% for males. Only the male body weight reductions were statistically significant ($p<0.01$). Survival was not affected by 2-MN treatment. Pulmonary alveolar proteinosis (PAP) was reported in both treatment groups. PAP was characterized by the appearance of foamy cells in the alveoli and the accumulation of protein and lipid in the lungs. On gross examination, the protenosis appeared as white nodules, 1-5 mm in diameter. Microscopically, the alveolar lumens contained acidophilic amorphous material, foamy cells, and cholesterol crystals. The incidence of PAP was 42.9% among males at 50.3 mg/kg-day and 55.1% among females at 54.3 mg/kg-day; in the high-dose group, the incidence was 46.9% for males and 45.8% for females. The fraction of lung volume affected for individual treated or control animals was not reported. Incidence of this effect in the control animals was 8.2% for males and 10% for females; the effects in control animals were less pronounced than those in the treatment groups. The authors stated that this effect had not been observed previously in more than 5000 B6C3F1 mice housed in the same room and speculated that the control mice may have been exposed to volatilized 1-MN and 2-MN from the treatment groups housed in the same room for this experiment. The authors also concluded that 2-MN was not carcinogenic in this study, although some results were equivocal. In particular, there appeared to be an increase in the incidence of lung tumors. Incidence of lung adenomas and adenocarcinomas, combined, was significantly increased (10/49 vs. 2/49 controls; $p<0.05$) in male mice at 50.3 mg/kg-day; the increase (6/49) was not significant at the 107.6 mg/kg-day dose. Because they noted association between tumorigenesis and PAP, the authors concluded that PAP was not a risk factor for carcinogenesis in the mouse.

A study by the same group (Murata et al., 1993) investigated the effect of 1-MN in the same strain of mice. Although the study results were published four years apart, the two studies were conducted at the same time and utilized the same control group. The nominal dose groups and endpoints were the same in both studies. The actual exposure levels were somewhat higher for 1-MN (approximately 73 mg/kg-day at 0.075% and 142 mg/kg-day at 0.15%). Results for 1-MN were similar to those for 2-MN, with PAP occurring in both treatment groups. The incidence, however, was slightly lower in the 1-MN treated mice (46% in both males and females at 0.075% 1-MN, and 38 and 35% in males and females, respectively, at 0.15% 1-MN). Unlike 2-MN, this study concluded 1-MN was a lung carcinogen (adenomas and adenocarcinomas) for B6C3F1 mice.

Less-than-Lifetime Exposure

A subchronic 2-MN dietary study in B6C3F1 mice was briefly reported in Murata et al. (1997). This study was preliminary to the chronic study to determine the chronic dosing regimen. Groups of ten mice of each sex each were fed 2-MN for 13 weeks at dietary concentrations of 0, 0.0163, 0.049, 0.147, 0.44, or 1.33%. Estimated doses were: 0, 29.4, 88.4, 265, 794, or 2400 mg/kg-day for males and 0, 31.8, 95.6, 287, 859, or 2600 mg/kg-day for females, respectively. Approximate average doses (across genders) were 0, 31, 92, 276, 827, or 2500 mg/kg-day, respectively (U.S. EPA, 2003). Growth retardation was reported at the three highest dose levels, but was attributed to food refusal. The authors reported no histopathological lesions in any organs of the control or treated animals, although it was unclear whether the lungs were examined. Based on this study, a subchronic NOAEL of 2500 mg/kg-day could be established, because growth retardation accompanied by reduced food consumption in the absence of other effects was not considered an adverse effect.

In a number of studies (Reid et al., 1973; Mahvi et al., 1977; Tong et al., 1981; Griffin et al., 1981, 1982; Warren et al., 1982), intraperitoneal (IP) injection of 2-MN or naphthalene resulted in lung lesions (Clara cell necrosis) similar to those observed in the long-term dietary studies of Murata et al. (1993, 1997).

PAP also was observed in mice following dermal exposure to a mixture of 1-MN and 2-MN for 30 weeks (Murata et al., 1992). A 100% incidence of PAP was observed in 15 B6C3F1 female mice treated dermally with 119 mg MN/kg twice a week. No lesions were observed in the control animals, which were exposed to the acetone vehicle only.

Developmental/Reproductive

No relevant reproductive or developmental data were found in the literature.

Toxicokinetics and Toxicodynamics

Some evidence suggested that mice may be a sensitive species for the type of lung toxicity induced by the methylnaphthalenes. Mice were far more sensitive than rats to acute lung effects arising from exposure to dichloroethylene (Chieco et al., 1981; Krijgsheld et al., 1984), bromobenzene (Reid et al., 1973), butylated hydroxytoluene (Kehrer & Witschi, 1980),

naphthalene (Reid et al., 1973; O'Brien et al., 1985), and 2-MN (Griffin et al., 1982). For naphthalene, Buckpitt and Franklin (1989) suggested that the selective lung cytotoxicity in mice may be a result of the high degree of stereoselectivity with which naphthalene is epoxidated in the mouse lung (in vitro microsomal incubations). Rats and humans did not show the same stereoselectivity (Buckpitt and Bahnson, 1986). Together, these data suggested that mice exposed to naphthalene might be more sensitive than humans for this particular endpoint. This conclusion should be considered somewhat speculative, however, particularly because subchronic oral naphthalene studies in mice did not produce lung effects at dose levels producing other adverse effects (142 mg/kg-day for decreased body weight, 286 mg/kg-day for mortality [BCL, 1980b]; 133 mg/kg-day for decreased organ weights [Shopp et al., 1984]). There was, however, a suggestion that tolerance could be developed for this effect in mice (Shopp et al., 1984). Also, the role of metabolic activation in the toxicity of the methylnaphthalenes was less clear than for naphthalene (Griffin and Franklin, 1982; Buckpitt et al., 1984; Buckpitt and Franklin, 1989). Much less was known about species differences in the metabolism of methylnaphthalenes, so no firm conclusions could be made regarding the potential for unique susceptibility mouse to 2-MN-induced lung toxicity. More extensive discussions of the metabolism of naphthalene and the methylnaphthalenes were found in the Toxicological Review of Naphthalene on IRIS (U.S. EPA, 2003) and in Buckpitt and Franklin (1989).

DERIVATION OF PROVISIONAL SUBCHRONIC OR CHRONIC ORAL RfD VALUES FOR 2-METHYLNAPHTHALENE

Fitzhugh and Buschke (1949) evaluated the ability of 2-methylnaphthalene to induce cataract formation in rats. While no cataracts were found in a group of 5 weanling F344 rats fed a diet of 2% 2-MN (equivalent to 2000 mg/kg-day) for at least 2 months, cataracts were detected in rats fed an equivalent concentration of naphthalene. Evaluation of this study was limited by the lack of experimental details. In this study, 2000 mg/kg-day was an apparent NOAEL for cataract formation.

Evaluation of the Murata et al. (1997) subchronic data was limited by inadequate reporting of study results. It appeared that very few potential endpoints were considered. In its evaluation of these data, IRIS (U.S. EPA, 2003) concluded that 92 mg/kg-day and 276 mg/kg-day (averaged between genders) were the NOAEL and LOAEL, respectively, for reduced weight gain in rats, apparently rejecting the study authors' attribution of these effects to food refusal. However, the study report did not clearly identify what organs were examined or other potential effects were considered. This raised the possibility that other effects might have resulted from subchronic dosing that were not observed. Because very few details of the data or methods for the subchronic study were reported by Murata et al. (1997) and because it was unclear whether the reduced weight gain resulted from treatment with 2-MN, these data were considered inadequate for derivation of a subchronic p-RfD. As a result, the chronic RfD of **$4x10^{-3}$ mg/kg-day** on IRIS was selected as the subchronic p-RfD.

The IRIS chronic RfD (U.S. EPA, 2003) was based on a $BMDL_{05}$ of 3.5 mg/kg-day for 5% extra risk of pulmonary alveolar proteinosis in male and female mice exposed to 2-MN in the diet for 81 weeks (Murata et al., 1997). A total UF of 1000 was applied to this effect level: 10

for interspecies differences (UF_A: animal to human); 10 for intraspecies variation (UF_H: human variability); and 10 for deficiencies in the database (UF_D).

The subchronic p-RfD for 2-MN was calculated using the same factors as follows:

$$\begin{aligned} \text{subchronic p-RfD} &= BMDL_{05} \div UF \\ &= 3.5 \text{ mg/kg-day} \div 1000 \\ &= 0.004 \text{ mg/kg-day} = 4 \times 10^{-3} \text{ mg/kg-day} \end{aligned}$$

In the derivation of the chronic RfD, IRIS (U.S. EPA, 2003) noted that, in addition to the uncertainties noted above, there was model uncertainty owing to the lack of actual dose-response information or mode of action information near a dose where the point of departure was estimated. The responses in 2-MN exposed animals suggested a continuation of the plateau into the lower exposure region, so using a linear model might have provided a higher benchmark dose than was appropriate. In addition, while BMDS was used to generate a lower bound on the estimated benchmark dose, the lower bound probably described too narrow a confidence limit on the benchmark dose. This was because the uncertainty in the data set could not be adequately described without the high dose responses.

CONFIDENCE IN THE SUBCHRONIC ORAL RFD

The principal study for the p-RfD (Murata et al., 1997) examined a comprehensive number of endpoints, including extensive histopathology, and tested two dietary dose levels using sufficient numbers (50/gender/group) of B6C3F1 mice. Confidence in the study was medium because there was potential confounding from possible inhalation exposure of controls to volatilized 2-MN and 1-MN. This added some uncertainty to the dose-response relationship between oral exposure to 2-MN and pulmonary alveolar proteinosis described by the results. Confidence in the oral toxicity database was low. No epidemiology studies or case reports were located which examined the potential effects of human exposure to 2-MN. Only mice had been examined in adequate animal studies on toxicity from repeated exposure to 2-MN. No assays of developmental toxicity, reproductive toxicity, or neurotoxicity following oral exposure to 2-MN were available. Confidence in the oral RfD was low, principally due to the low confidence in the database.

FEASIBILITY OF DERIVING PROVISIONAL SUBCHRONIC OR CHRONIC INHALATION RfC VALUES FOR 2-METHYLNAPHTHALENE

A provisional inhalation RfC could not be derived for 2-MNe because data on adverse health effects following inhalation exposure were lacking for humans and animals. Without sufficient pharmacokinetic data and information to rule out portal-of-entry effects, there was no basis to support a route-to-route extrapolation from the oral data, even if they otherwise were considered sufficient.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR 2-METHYLNAPHTHALENE

Weight-of-Evidence Descriptor

Using the draft revised guidelines for carcinogen risk assessment (U.S. EPA, 1999), the IRIS assessment (U.S. EPA, 2003) concluded the data were inadequate for an assessment of human carcinogenic potential of 2-MN. This conclusion was based on the absence of data concerning the carcinogenic potential of 2-MN in humans, by any route of exposure, and limited, equivocal oral evidence in animals. Updated literature searches for this assessment identified no relevant data other than those already considered for the IRIS assessment. Based on the revised guidelines for carcinogen risk assessment (U.S. EPA, 2005), the equivalent carcinogenicity descriptor would be "*Inadequate Information to Assess Carcinogenic Potential*."

Quantitative Estimates of Carcinogenic Risk

Quantitative estimates of cancer risk for 2-MN could not be derived because no data demonstrating carcinogenicity associated with 2-MN exposure were identified.

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Provisional Peer Reviewed Toxicity Values for

2-Nitrophenol
(CASRN 88-75-5)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2-NITROPHENOL (CASRN 88-75-5)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and

circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

Neither a reference dose (RfD), reference concentration (RfC), nor carcinogenicity assessment is available for 2-nitrophenol in the Integrated Risk Information System (IRIS) database (U.S. EPA, 2007), the Health Effects Assessment Summary Table (HEAST) (U.S. EPA, 1997), or the Drinking Water Standards and Health Advisories list (U.S. EPA, 2006). The Chemical Assessments and Related Activities (CARA) database (U.S. EPA, 1991, 1994a) lists a Health Effects Assessment (HEA) (U.S. EPA, 1987) and a Health and Environmental Effects Profile (HEEP) (U.S. EPA, 1985) for Nitrophenols in which limited toxicity data for 2-nitrophenol are available. An Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile for Nitrophenols (2-Nitrophenol and 4-Nitrophenol) (ATSDR, 1992) also includes only limited toxicity data for 2-nitrophenol. Neither the American Conference of Governmental Industrial Hygienists (ACGIH, 2006), the National Institute of Occupational Safety and Health (NIOSH, 2006) nor the Occupational Safety and Health Administration (OSHA, 2006) has adopted occupational exposure limits for 2-nitrophenol. Health assessments for 2-nitrophenol are not available from CalEPA (2006) or the International Agency for Research on Cancer (IARC, 2006). Pertinent data was found for 2-nitrolphenol after examining the Concise International Chemical Assessment Document (CICAD) for mononitrophenols (WHO, 2000). Relevant information for 2-nitrophenol from the National Toxicology Program (NTP, 2006) is limited to genotoxicity assays.

Literature searches covering the time period 1960's to August, 2006 were conducted in PUBMED, TOXLINE, and DART/ETIC to identify information relevant to 2-nitrophenol. TOXCENTER was searched for the time period August, 2001 to August 2006. Databases

searched without date limitations included TSCATS/TSCATS2, CCRIS, GENETOX, HSDB and RTECS. Search of Current Contents encompassed May to August, 2006.

REVIEW OF PERTINENT DATA

Human Studies

No data were located regarding the toxicity or carcinogenicity of 2-nitrophenol in humans following oral or inhalation exposure.

Animal Studies

Oral Exposure. Available repeated-dose oral studies consist of two limited 28-day gavage studies (Andrae et al., 1981; Koerdel et al., 1981; both in German) performed to evaluate OECD guideline 407 and a range-finding developmental toxicity study (IRDC, 1990).

Andrae et al. (1981) administered 2-nitrophenol to groups of Sprague-Dawley rats (10/sex/dose) at gavage doses of 0, 70, 210 or 630 mg/kg-day for 28 days. Because the original German report of this study was not available, information from the CICAD for mononitrophenols (WHO, 2000) was used to summarize the findings. Mid- and high-dose animals exhibited what was described by the WHO (2000) as locomotor inhibition for approximately 2 hours postdosing. Mortality rates were 1/10 in mid-dose males and 4/10 and 6/10 in high-dose males and females, respectively. Gross and histopathological examinations revealed pale liver in 7/20 low-dose rats (not reported by sex), hydropic liver cell swelling in 4/10 and 0/10 high-dose males and females, respectively, and vascular congestion of the liver in all high-dose male and female rats that died prior to terminal sacrifice. Fatty degeneration of the liver was noted in 6/20 control animals, 14/20 low-dose and 13/20 mid-dose rats, but not in high-dose rats. Other treatment-related effects, noted only at the highest dose level, included significantly increased alanine aminotransferase activity in males (data not reported), increased nephrosis in 2 and 5 males and females, respectively, testicular atrophy (1 male) and decreased spermatogenesis (2 males), and follicular atresia (4 females). This report did not contain information on hematological effects. WHO (2000) concluded that a NOAEL could not be determined for this study due to "unclear effects in the liver."

Koerdel et al. (1981) administered 2-nitrophenol to groups of rats (5/sex/dose) at gavage doses of 0, 22, 67 or 200 mg/kg-day for 28 days. The summary from WHO (2000) was used as the source of study details because the original study was not available. Reported treatment-related effects included decreased food intake in high-dose males and mid- and high-dose females, non-significantly depressed final body weight in all dosed animals, decreased absolute liver and kidney weights in mid-dose groups, increased relative testes weight in low- and mid-dose males (decreased in high-dose males) and increased absolute and relative adrenal weight in all dosed groups. Hematology, clinical chemistry and histopathological examinations gave no indication of treatment-related effects. The study did not show a clear dose-response relationship for any of the endpoints examined.

In a range-finding developmental toxicity study, groups of Charles River COBS CD rats (5 dams/group) were administered 2-nitrophenol (in corn oil) at gavage doses of 0, 50, 125, 250, 500, or 1000 mg/kg-day on days 6-15 of gestation (IRDC, 1990). Body weights were determined during the treatment period and clinical signs were noted. Uterine examinations were performed on gestation day 20. A single high-dose dam died, but cause of death was not determined. Excessive salivation was observed in two high-dose dams. Mean maternal body weight gains in the 0, 50, 125, 250, 500 and 1000 mg/kg-day dose groups were 8, 7, 5, 6, 1 and -8 grams, respectively, for the initial 4 days of treatment (gestation days 6-9) and 52, 56, 54, 55, 45 and 39 grams, respectively, for the entire treatment period (gestation days 6-15). The appearance and behavior of the 50 mg/kg-day group of dams were comparable to the control group. Dose-related increases in the incidence of yellow staining around the nose, mouth and anogenital area were observed at doses ≥125 mg/kg-day. Dose-related increases in the incidence of darkly colored urine (probably due to the presence of the test chemical) occurred at doses ≥250 mg/kg-day. An increase in the number of early resorptions was observed in the highest dose group (2.3 versus 1.2 in controls), resulting in mean postimplantation loss of 13.8% compared to 8.2% in controls (statistical significance not reported). Among dams surviving until necropsy, no biologically significant treatment-related effects were seen. There were no biologically significant treatment-related effects on mean number of viable fetuses, implantations or *corpora lutea*. No data on hematological parameters were included in this study. This study assessed a limited number of potential adverse endpoints and is therefore of limited usefulness for risk assessment.

Inhalation Exposure. Available information for repeated inhalation exposure is restricted to results of a single 28-day study (Hazleton Laboratories, 1984). Groups of 7-week-old Sprague-Dawley rats (15/sex/group) were exposed to 2-nitrophenol vapors at target concentrations of 0, 5, 30 or 60 mg/m^3 for 6 hours/day, 5 days/week for 4 weeks. All rats were subjected to ophthalmoscopic examinations prior to initiation of exposures and immediately preceding terminal sacrifice. Each animal was observed twice daily (pre- and postexposure during the week; morning and afternoon on weekends) for mortality and morbidity. Clinical signs and body weights and weight gains were assessed throughout the study. Following the 11th and 20th exposures, blood was collected by orbital sinus puncture from 10 rats/sex/group and analyzed for methemoglobin concentrations. At termination of the study (day 29), blood was collected via the abdominal aorta from 10 anesthetized rats/sex/group for hematology and serum chemistry. At necropsy, all rats were subjected to comprehensive gross examinations and organ weights were recorded. Comprehensive histopathological examinations were performed on 10 rats/sex in the 0 and 60 mg/m^3 exposure groups. Nasal turbinates were examined histopathologically in 10 rats/sex of each exposure group.

Overall mean analytical concentrations deviated from the target concentrations by 0.0, +8.3 and +2.5% for the 5, 30 and 60 mg/m^3 exposure groups, respectively (Hazleton Laboratories, 1984). The aerosol content of the exposure chambers was not significantly different from that present in room air. No significant exposure-related ocular lesions were apparent in any of the rats. No animals died during the study. No apparent exposure-related trends in clinical signs were apparent with the exception of yellow stains on the fur of all 2-nitrophenol exposed animals. There were no statistically significant exposure-related effects on mean body weight or weight gain. A statistically significant increase in methemoglobin

levels was noted in male and female rats of the 5 mg/m^3 group analyzed on day 15 of the study. However, when animals were analyzed on day 28, the methemoglobin levels were similar to controls. No statistically significant increases were found in the higher dose groups. The change, compared with controls, in methemoglobin levels in treated animals of the low dose groups, while exhibited statistical significance, was not considered biologically significant. Hematology and clinical chemistry findings were unremarkable. Gross pathology revealed no consistent exposure-related trends. Small increases in liver weight, liver/brain weight ratio and spleen/brain weight ratio were seen in the 5 mg/m^3 group females, but were not observed in females at higher doses or in any of the treated males. Histopathological examinations revealed squamous metaplasia in epithelium of the nasoturbinates and maxilloturbinates in 1/10, 0/10, 10/10 and 10/10 male rats and 1/10, 1/10, 9/10 and 10/10 female rats of the 0, 5, 30 and 60 mg/m^3 exposure groups, respectively. No other apparent exposure-related effects were observed. On the basis of the nasal lesions, this study identified a NOAEL of 5 mg/m^3 and a LOAEL of 30 mg/m^3 for 2-nitrophenol in rats.

Other Studies

Limited genotoxicity data are available for 2-nitrophenol. The chemical produced negative results in the Ames test with *Salmonella typhimurium* strains TA98, TA100, TA1535, TA1537 and TA1538 both in the presence and absence of rat liver S9 metabolic activation (Chiu et al., 1978; Dellarco and Prival, 1989; Haworth et al., 1983; Kawai et al., 1987; Koerdel et al., 1981; Massey et al., 1994; Shimizu and Yano, 1986; Suzuki et al., 1983). 2-Nitrophenol did not induce DNA breakage in λ phage DNA (Yamada et al., 1987) or increase reversions from streptomycin dependence to independence in *Escherichia coli* strain Sd-4-73 (Szybalski, 1958). Negative results were reported for mutagenic activity in post-meiotic and meiotic germ cells of male *Drosophila melanogaster* exposed to 2-nitrophenol via feeding (400-500 ppm) or injection (2500 or 5000 ppm) (Foureman et al., 1994).

2-Nitrophenol did not exhibit skin tumor-promoting action in mice receiving dermal applications of a 20% solution twice weekly for 12 weeks (Boutwell and Bosch, 1959).

In rats and mice administered single oral doses of 2-nitrophenol, calculated LD_{50} values were 2830 and 1300 mg/kg, respectively (Vernot et al., 1977). No information was located regarding the toxicity of 2-nitrophenol following acute inhalation exposure.

FEASIBILITY OF DERIVING PROVISIONAL SUBCHRONIC AND CHRONIC RfD VALUES FOR 2-NITROPHENOL

Oral studies of 2-nitrophenol are limited to two 28-day studies from the German literature available only as brief summaries in WHO (2000) and a range-finding developmental toxicity study. None of these studies appear to have been adequate to derive NOAEL or LOAEL values. The lack of adequate oral data for humans or animals precludes the derivation of a provisional subchronic or chronic RfD for 2-nitrophenol.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC RfC VALUES FOR 2-NITROPHENOL

Subchronic p-RfC

Results of the only available repeated exposure (28-day) inhalation study of 2-nitrophenol (Hazleton Laboratory, 1984) provide marginally adequate information in rats to derive a provisional subchronic RfC for 2-nitrophenol. This study identified significantly increased incidences of squamous metaplasia of the nasal epithelium in rats as the critical effect following 4 weeks of exposure to 2-nitrophenol vapors for 6 hours/day, 5 days/week. The lowest concentration of 2-nitrophenol associated with squamous metaplasia of the nasal epithelium was 30 mg/m^3 in both male and female rats; the associated NOAEL was 5 mg/m^3. Because the NOAEL and LOAEL represent essentially 0 and 100% response, respectively, it is not feasible to apply meaningful benchmark dose analysis to the data set. Therefore, the NOAEL of 5 mg/m^3 was selected as the point of departure for deriving a subchronic RfC for 2-nitrophenol.

The NOAEL of 5 mg/m^3 from intermittent exposure was adjusted to account for a continuous exposure scenario as follows:

$NOAEL_{[ADJ]}$ = NOAEL x 6 hours/24 hours x 5 days/7days
$NOAEL_{[ADJ]}$ = 5 mg/m^3 x 6/24 x 5/7 = 0.89 mg/m^3

According to U.S. EPA (1994b) methodology for respiratory effects of a category 1 gas (a systemic toxicant without significant portal of entry (lung) effects), such as 2-nitrophenol the $NOAEL_{[HEC]}$ (human equivalent concentration) is calculated by multiplying the $NOAEL_{[ADJ]}$ for upper respiratory effects by the regional gas dose ratio for extrathoracic effects ($RGDR_{ET}$). The default $RGDR_{ET}$ is calculated according to the following equation:

$$RGDR_{ET} = \frac{\left[\frac{\dot{V}_E}{SA_{ET}}\right]_A}{\left[\frac{\dot{V}_E}{SA_{ET}}\right]_H}$$ (Equation 4-18; U.S. EPA 1994b)

where:

$\dot{V}_E$ = minute volume (cm^3/minute)
SA_{ET} = surface area of the extrathoracic region (cm^2), and
A, H = subscripts denoting laboratory animal and human, respectively.

Default surface area values for the extrathoracic respiratory region are 15 cm^2 for the rat and 200 cm^2 for the human (U.S. EPA (1994b). For the male Sprague-Dawley rat, a reference inhalation rate of 0.27 m^3/day (270,000 cm^3/day; U.S. EPA, 1988, standard default) produces a minute volume of 187.5 cm^3/min (270,000 cm^3/day ÷ 1440 min/day). The default minute volume for the human is 13,800 cm^3/min (13.8 L/min or 20 m^3/day; U.S. EPA, 1994b). Therefore:

$$RGDR_{PU} = \frac{\left[\frac{187.5}{15}\right]_A}{\left[\frac{13{,}800}{200}\right]_H} = 0.1812$$

The $NOAEL_{[HEC]}$ is derived as follows:

$$NOAEL_{[HEC]} = NOAEL_{[ADJ]} \times RGDR_{ET} = 0.89 \text{ mg/m}^3 \times 0.1812 = 0.1613 \text{ mg/m}^3$$

The **subchronic p-RfC of 5E-4 mg/m^3** based on squamous metaplasia of the nasal epithelium in rats (Hazleton Laboratories, 1984) is derived by dividing the $NOAEL_{[HEC]}$ of 0.16 mg/m^3 by a composite uncertainty factor (UF) of 300, which includes factors of 3 for interspecies extrapolation, 10 for interindividual human variability and 10 for data base deficiencies.

A 3-fold UF is used to account for uncertainty in extrapolating from laboratory animals to humans (i.e., interspecies variability). No information is available regarding the toxicity of 2-nitrophenol in humans. No comparative information is available regarding the toxicokinetics or toxicodynamics of 2-nitrophenol in animals and humans. However, the default dosimetric calculation for deriving an HEC accounts for the uncertainty in the variability in toxicokinetics of humans and rats. A 3-fold UF is applied to account for uncertainty in species differences for toxicodynamics (U.S. EPA, 1994b).

A 10-fold UF is used to account for variation in sensitivity among members of the human population (i.e., interindividual variability). This UF was not reduced due to the lack of human inhalation exposure data.

A 10-fold UF is used to account for uncertainty associated with data base deficiencies. A single 28-day inhalation toxicity study in one animal species (rat) is available (Hazleton Laboratories, 1984). The data base lacks studies of subchronic and chronic toxicity, inhalation neurotoxicity, developmental toxicity and reproductive toxicity (including 2-generation reproductive toxicity). Although the principal study (Hazleton Laboratories, 1984) was only a 28-day study (less than subchronic duration), the minor nature of the effects observed suggests that the 10-fold database UF is adequate to capture the uncertainties associated with use of the less-than-subchronic study in this instance.

Confidence in the principal study (Hazleton Laboratories, 1984) is low-to-medium. The study included comprehensive gross and histopathologic assessments. A major limitation of this study is the less-than-subchronic study duration of 28 days. Confidence in the data base is low because the data base lacks studies of subchronic and chronic toxicity, inhalation neurotoxicity, and developmental and reproductive toxicity (including 2-generation reproductive toxicity). Reflecting low-to-medium confidence in the principal study and low confidence in the data base, confidence in the provisional subchronic RfC is low.

Chronic p-RfC

The lack of adequate subchronic or chronic inhalation data for humans or animals precludes the derivation of a provisional chronic RfC for 2-nitrophenol. Use of the 28-day study (Hazleton Laboratories, 1984) was rejected because of uncertainties in exposure duration and toxicokinetics and dynamics in humans, and a lack of reproduction/developmental studies and which would result in five areas of uncertainties. According to the uncertainty in hematological effects which could become apparent in a chronic study, the database is insufficient to support derivation of chronic p-RfC (U.S. EPA, 1994b).

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR 2-NITROPHENOL

Weight-of-Evidence Descriptor

No information was located regarding the carcinogenicity of 2-nitrophenol in humans. No lifetime assessments were located regarding the carcinogenicity of inhaled or ingested 2-nitrophenol in animals. 2-Nitrophenol did not exhibit skin tumor-promoting action in mice receiving dermal applications twice weekly for 12 weeks (Boutwell and Bosch, 1959). Available genotoxicity assays of 2-nitrophenol indicate that the chemical is not genotoxic (Chiu et al., 1978; Dellarco and Prival, 1989; Foureman et al., 1994; Haworth et al., 1983; Kawai et al., 1987; Koerdel et al., 1981; Massey et al., 1994; Shimizu and Yano, 1986; Suzuki et al., 1983; Szybalski, 1958; Yamada et al., 1987). In accordance with U.S. EPA (2005) cancer guidelines, there is *inadequate information to assess carcinogenic potential* for 2-nitrophenol, based on the lack of human or animal carcinogenicity data.

Quantitative Estimates of Carcinogenic Risk

There are no human or animal data from which to derive an oral slope factor or inhalation unit risk for 2-nitrophenol.

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Hierarchy of toxicity information: IRIS, PPRTV, ATSDR, Cal EPA, and HEAST		Blue text = PPRTV attached	— = No info			
Chemical	**CASRN**	**RfD**	**RfC**	**CSF_o**	**CSF_i**	**Notes**
Trimethylbenzene, 1,2,4-	95-63-6	PPRTV: no value		PPRTV: no value	—	IUR - PPRTV: no value
Trimethylbenzene, 1,3,5-	108-67-8	—	—	—	—	
Dichlorobenzene, 1,4-	106-46-7	ATSDR		CalEPA	CalEPA	
Chlorophenol, 2-	95-57-8		PPRTV: no value		—	IUR - PPRTV: no value
Hexanone, 2-	591-78-6	—	—		—	
Methylnaphthalene, 2-	91-57-6		IRIS Discussion			
Methylphenol, 2-	95-48-7		IRIS Message			
Nitrophenol, 2-	88-75-5	PPRTV: no value	Decision pending		—	IUR - PPRTV: no value
DDT, 4,4-(Dichlorodiphenyltrichloroethane, 4,4-)	50-29-3		—			
Chloroaniline, 4-	106-47-8		—		—	
Methylphenol, 4-	106-44-5	—	—			
Nitrophenol, 4-	100-02-7	—	IRIS Message		—	
Acenapthylene	208-96-8	—	—			
Acetone	67-64-1		ATSDR			
Aluminum	7429-90-5			PPRTV: no value	—	IUR - PPRTV: no value
Arsenic	7440-38-2		CalEPA			
Barium	7440-39-3		HEAST			
Benzo(a)pyrene	50-32-8				CalEPA	
Bis(2-ethylhexyl)phthalate	117-81-7		—			
Bromodichloromethane	75-27-4		—		CalEPA	
Cadmium	7440-43-9		—			
Chloroform	67-66-3		ATSDR			
Copper	7440-50-8	HEAST	—			
Cyanide	57-12-5		—			
Delta-BHC (delta-Hexachlorocyclohexane; delta-HCH)	319-86-8	—	—			
Dibenzofuran	132-64-9	PPRTV: Appendix	PPRTV: no value			
Dieldrin	60-57-1		—			
Endosulfan Sulfate	1031-07-8	—		PPRTV: no value	—	
Endrin Aldehyde	7421-93-4		—	—	—	

Endrin Ketone	53494-70-5		—	—	—	
Ensdosulfan I (alpha-Endosulfan; Thiodan I)	959-98-8		—	—	—	
Ensdosulfan II (beta-Endosulfan; Thiodan II)	33213-65-9		—	—	—	
Heptachlor	76-44-8		—			
Heptachlor epoxide	1024-57-3		—			
Hexachlorobenzene	118-74-1		IRIS Message			
Manganese	7439-96-5			—		
Methylene chloride	75-09-2		ATSDR			
Molybdenum	7439-98-7		—			
Naphthalene	91-20-3				CalEPA	
Nickel	7440-02-0		ATSDR	—	CalEPA	
n-Nitroso-di-n-propylamine	621-64-7	—	—		CalEPA	
Phenanthrene	85-01-8	—	—			
Phenol	108-95-2		CalEPA			
Silver	7440-22-4		—			
Strontium	7440-24-6		—		—	
Styrene	100-42-5				—	
Tetrachlorethylene	127-18-4		ATSDR			
Thallium	7440-28-0		—		—	
Vanadium	7440-62-2		—	—	—	
Zinc	7440-66-6		—			

Superfund Technical Support Center

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April 16, 2008

Michael Sivak
U.S. EPA, Region 2

ASSISTANCE REQUESTED: PPRTVs for 4,4'-DDD, Acenaphthene, Aldrin, Aluminum, Ammonia, and Benzo(a)anthracene (Onondaga Lake)

ENCLOSED INFORMATION:

Attachment 1: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR p,p'-DICHLORODIPHENYLDICHLOROETHANE (p,p'-DDD) (CASRN 72-54-8)**

Attachment 2: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ACENAPHTHENE (CASRN 83-32-9) Derivation of a Chronic Inhalation RfC**

Attachment 3: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ACENAPHTHENE (CASRN 83-32-9) Derivation of an Oral Slope Factor**

Attachment 4: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ACENAPHTHENE (CASRN 83-32-9) Derivation of a Provisional Inhalation Unit Risk**

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Attachment 5: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ALDRIN (CASRN 309-00-2)**

Attachment 6: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ALUMINUM (CASRN 7429-90-5)**

Attachment 7: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR AMMONIA (CASRN 7664-41-7)**

Attachment 8: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR BENZ[a]ANTHRACENE (CASRN 56-55-3)**

BE ADVISED: *Unless specifically indicated to have been peer reviewed, it is to be noted that the attached Provisional Toxicity Value Paper(s) have not been through the U.S. EPA's formal review process; therefore, they do not represent a U.S. EPA verified assessment.*

If you have any questions regarding this transmission, please contact the STSC at (513) 569-7300.

Attachments (8)

cc: STSC Files

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8-13-2007

Provisional Peer Reviewed Toxicity Values for

p,p'-Dichlorodiphenyldichloroethane (*p,p'*-DDD)
(CASRN 72-54-8)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose

PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR *p,p'*-DICHLORODIPHENYLDICHLOROETHANE (*p,p'*-DDD) (CASRN 72-54-8)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and

circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

No verified chronic reference dose (RfD) or reference concentration (RfC) for *p,p'*-dichlorodiphenyldichloroethane (*p,p'*-DDD) is available on the U.S. Environmental Protection Agency's (EPA) Integrated Risk Information System (IRIS) (U.S. EPA, 2007), Drinking Water Standards and Health Advisories list (U.S. EPA, 2006) or Health Effects Assessment Summary Tables (HEAST) (U.S. EPA, 1997). The U.S. EPA's Chemical Assessments and Related Activities (CARA) list (U.S. EPA, 1991, 1994) does not indicate any documents relating to the noncancer health effects of *p,p'*-DDD. The Agency for Toxic Substances Disease and Registry (ATSDR, 2002) prepared a toxicological profile for dichlorodiphenyltrichloroethane (DDT), dichlorodiphenyldichloroethylene (DDE) and DDD. ATSDR did not develop any Minimal Risk Levels (MRLs) for *p,p'*-DDD, but no explanation was provided. The American Conference of Governmental Industrial Hygienist (ACGIH, 2006), Occupational Safety and Health Administration (OSHA, 2006) and National Institute for Occupational Safety and Health (NIOSH, 2006) have not adopted occupational exposure limits for *p,p'*-DDD. A NIOSH Special Occupational Hazard Review document, two International Agency for Research on Cancer monographs (IARC, 1974, 1991), the National Toxicology Program status report (NTP, 2006) and two World Health Organization documents (WHO, 1979, 1989) were consulted for relevant information.

A cancer weight-of-evidence classification and an oral slope factor for *p,p'*-DDD are available on IRIS (U.S. EPA, 2007). The cancer assessment, verified in 1988, classifies *p,p'*-DDD in category B2 (probable human carcinogen) under U.S. EPA (1986) Guidelines for Carcinogen Assessment, based on lung tumors in female mice, lung and liver tumors in male

mice, and thyroid tumors in male rats after dietary exposure. IRIS (U.S. EPA, 2007) reports an oral slope factor of 0.24 per mg/kg-day, and drinking water unit risk of 6.9 E-6 per µg/L, based on liver tumors in male mice exposed via the diet by Tomatis et al. (1974). The IRIS carcinogenicity assessment for *p,p'*-DDD is derived from the Hazard Assessment Report on DDT, DDD and DDE (U.S. EPA, 1980) and Carcinogen Assessment Group's Calculation of the Carcinogenicity of Dicofol (Kelthane), DDT, DDE, and DDD (TDE) (U.S. EPA, 1985a). IRIS does not report an inhalation unit risk for *p,p'*-DDD. *p,p'*-DDD is not included in the NTP's 11th Report on Carcinogens (NTP, 2005). IARC (1991) classifies DDT and associated compounds (including *p,p'*-DDD) in Group 2B (possibly carcinogenic to humans), citing inadequate evidence in humans, but sufficient evidence in animals for the carcinogenicity of DDT. The present document does not include a cancer assessment for *p,p'*-DDD, as one is available on IRIS.

To identify toxicological information pertinent to the derivation of provisional toxicity values for *p,p'*-DDD, references from the 2002 ATSDR Toxicological Profile for DDT, DDE and DDD were screened for publications pertinent to the toxicity of *p,p'*-DDD. Update searches were conducted in January, 2007 for literature dating from 2001 to 2007 using the following databases: MEDLINE, TOXLINE Special, and DART/ETIC (2001-2007); BIOSIS (2000-2007); TSCATS, CCRIS, GENETOX, HSDB, RTECS (not date limited); and Current Contents (previous 6 months).

REVIEW OF PERTINENT DATA

Human Studies

Human studies of *p,p'*-DDD include one subchronic study with a human volunteer (Morgan and Roan, 1971), several studies of occupational exposure to technical grade DDT, which contains *p,p'*-DDD (Kolmodin et al., 1969; Laws et al., 1967, 1973; Morgan and Lin, 1978; Morgan et al., 1980; Ortelee, 1958; Poland et al., 1970; Wong et al., 1984), and several investigations of associations between reproductive effects and *p,p'*-DDD levels in biological fluids (Saxena et al., 1980, 1981, 1983; Pines et al., 1987; Dalvie et al., 2004; Pant et al., 2004; Perry et al., 2006). Due to the low number of study subjects, concurrent exposures to other chemicals, and difficulty in distinguishing between biological levels of *p,p'*-DDD resulting from exposure and levels resulting from human metabolism of DDT or DDE, data from the available human studies were not considered useful for derivation of provisional toxicity values.

In a study of the toxicokinetics of DDT and its metabolites (including *p,p'*-DDD), an adult male volunteer ingested 5 mg/day of *p,p'*-DDD for 81 days (Morgan and Roan, 1971). The pesticide was mixed with vegetable oil, emulsified with gum arabic and water and taken with meals (no further detail on dosing was provided). Assuming a reference body weight of 70 kg (U.S. EPA, 1988a), the intake of *p,p'*-DDD was 0.071 mg/kg-day. Before, during and after the treatment period, the man was given a battery of hematological and clinical biochemical tests (frequency and nature of testing not reported). No abnormalities were detected. Serum and adipose levels of *p,p'*-DDD rose steadily during the exposure period, peaking at exposure termination at almost 80 ppb in serum and more than 4 ppm in adipose (based on visual

examination of data presented graphically). After exposure was withdrawn, levels in both serum and adipose declined rapidly. Measurements taken 180 days after exposure termination showed no detectable *p,p'*-DDD in serum and levels reduced to almost 1 ppm in adipose. Although no adverse effects on hematological and clinical chemistry endpoints were observed, details of the test endpoints, frequency, and results were not reported, and other endpoints were not assessed; thus the administered dose cannot be considered a NOAEL. Furthermore, the study was conducted on only one volunteer, limiting the usefulness of the data.

Several epidemiology studies of workers exposed to technical grade DDT were located (Kolmodin et al., 1969; Laws et al., 1967, 1973; Morgan and Lin, 1978; Morgan et al., 1980; Ortelee, 1958; Poland et al., 1970; Wong et al., 1984). Technical grade DDT consists of a mixture of *p,p'*-DDT (77.1%), *o,p'*-DDT (14.9%), *p,p'*-DDE (4.0%), *p,p'*-DDD (0.3%), *o,p'*-DDE (0.1%), *o,p'*-DDD (0.1%) and unidentified compounds (3.5%) (U.S. EPA, 1980). Exposure was primarily via the inhalation and dermal routes, but some oral exposure probably occurred as well. In most of the studies, workers were exposed to a variety of other compounds in addition to technical grade DDT. Because of the mixed exposures, these studies do not provide any useful information on health effects of *p,p'*-DDD in humans.

Measurements of *p,p'*-DDD in biological fluids have been used to evaluate potential effects on female reproductive function. Saxena et al. (1980, 1981, 1983) studied the levels of organochlorine insecticides in maternal blood and placenta in cases of stillbirth, premature labor and delivery, spontaneous abortion, and normal full-term delivery among patients in India. The levels of *p,p'*-DDD in maternal blood, placentas and cord blood of stillbirths were not significantly different from the levels in normal full-term deliveries (Saxena et al., 1983); however, there were few participants in this study (9 stillbirths and 27 full-term deliveries). Maternal blood and placental levels of *p,p'*-DDD were significantly ($p<0.001$) higher in cases of preterm labor and spontaneous abortion when compared with full-term deliveries; levels of *p,p'*-DDT, *p,p'*-DDE, lindane, and aldrin were also significantly higher (Saxena et al., 1980, 1981). However, due to the small numbers of study participants (<25 cases and $\leq$25 controls) and the confounding role of other pesticides, a causal relationship between *p,p'*-DDD and reproductive effects cannot be established from these data. As reported in an abstract, Perry et al. (2006) evaluated the association between serum levels of DDT and its metabolites (not specified) with urinary levels of progesterone and estrogen, and menstrual cycle characteristics in 287 newly-married women who were trying to conceive. Data were collected from each woman for 1 year or until conception. After adjustment for potential confounders, increased serum *p,p'*-DDD levels were associated with decreased urinary levels of pregnanediol-3-glucuronide across all menstrual cycle days; however, the authors did not present statistical analysis of the results. No other associations with *p,p'*-DDD were reported in the abstract. In these studies (Saxena et al., 1980, 1981, 1983; Perry et al., 2006), it is not known whether the *p,p'*-DDD detected in the subjects was derived from direct exposure to *p,p'*-DDD or from metabolism of DDT or DDE. In addition, since the subjects in these studies also had detectable levels of other compounds (including DDT and its other metabolites), the degree to which the observed effects can be attributed to *p,p'*-DDD is uncertain.

Because there are indications that *p,p'*-DDD may have antiandrogenic effects, several studies have examined the association between male reproductive function and *p,p'*-DDD in

biological fluids. Pines et al. (1987) studied the possible associations between organochlorine insecticide exposures and reproductive function in men by comparing concentrations of these compounds in the serum of 29 infertile and 14 fertile men from the general Israeli population. Serum concentrations of *p,p'*-DDD alone or in combination with *p,p'*-DDT and *p,p'*-DDE were statistically significantly ($p \leq 0.05$) higher in infertile men than in fertile men. Correlations between semen characteristics (sperm count, motility, morphology) and the serum concentrations of these compounds, however, were not significant. Dalvie et al. (2004a) evaluated the effects of DDT and its metabolites on semen, fertility and sexual function in a cross-sectional study of 60 anti-malaria workers in South Africa. There were no statistically significant associations between serum levels of *p,p'*-DDD and sperm count, density or morphology; self-reported problems with sexual function; prevalence of genital abnormalities on physical examination; or number of pregnancies fathered. In a companion study, Dalvie et al. (2004b) reported that levels of estradiol and testosterone were significantly ($p \leq 0.05$) increased with higher serum levels of *p,p'*-DDD. Pant et al. (2004) compared levels of *p,p'*-DDD and other chlorinated pesticides in the semen of 45 fertile and 45 infertile men in India. Levels of *p,p'*-DDD, *p,p'*-DDE, total DDT and various isomers of hexachlorocyclohexane (HCH) were significantly ($p < 0.05$) higher in the semen of infertile than fertile men. Semen levels of *p,p'*-DDD were 78% higher in infertile men. Correlation analysis showed that *p,p'*-DDD levels in semen of infertile men were significantly correlated with higher levels of fructose (a marker for seminal vesicle secretion). Infertile men had higher levels of fructose than fertile men and the authors suggested that the higher fructose was indicative of underutilization of fructose due to biochemical defects. As with other studies using biological levels of *p,p'*-DDD as a measure of exposure, it is not possible to associate any of the observed effects on male reproductive function with exposure to *p,p'*-DDD.

In summary, the available human studies do not provide conclusive evidence for an association between *p,p'*-DDD exposure and reproductive or hormonal effects. In all of these studies, the participants had measurable levels of other chlorinated compounds, including DDE and DDT. Further, when *p,p'*-DDD levels in biological fluids are used as a surrogate for exposure, it is not possible to determine whether the levels result from direct exposure to *p,p'*-DDD or from metabolism of DDT and/or DDE. As a consequence, none of the human studies is suitable for use in deriving provisional toxicity values.

Animal Studies

Oral Exposure

Subchronic Exposure — In preparation for a chronic cancer bioassay, NCI (1978) conducted a range-finding dietary toxicity study of DDD in Osborne-Mendel rats and B6C3F1 mice. Technical grade DDD (60% *p,p'*-DDD) in corn oil was mixed with feed and administered *ad libitum* to groups of 5 male and 5 female rats per concentration for 6 weeks, followed by a 2-week observation period. The test material contained 19 impurities contributing 40% of the total dose; none of the impurities were identified. The major analytical peak comprising 60% of the test material was assumed to be *p,p'*-DDD. Diets containing 0, 562, 1000, 1780, 3160 or 5620 ppm technical grade DDD were fed to rats (corresponding to *p,p'*-DDD doses of 0, 29, 52, 93,

166 or 295 mg/kg-day in males, and 0, 32, 57, 101, 179 or 319 mg/kg-day in females[1] after adjustment for 60% purity). Only mortality and body weight changes were evaluated; no animals were necropsied.

No deaths were observed in rats exposed to *p,p'*-DDD concentrations up to 3160 ppm; no information was reported on mortality at 5620 ppm (NCI, 1978). Mean body weights were reduced in male rats exposed to 1780 ppm (9% lower than controls) and 3160 ppm (10% lower), and in female rats exposed to 1000 ppm (39% lower) and 1780 ppm (4% lower); neither statistical analysis nor raw data were presented. No data on body weight changes at other doses were reported. This study did not provide sufficient information to establish effect levels.

Groups of 5 male and 5 female mice were exposed to dietary *p,p'*-DDD for 6 weeks, followed by a 2-week observation period (NCI, 1978); test material and study protocol were as described above for rats (NCI, 1978). Mice received diets containing 0, 251, 398, 631, 1000 or 1590 ppm (0, 27, 43, 68, 108 or 172 mg/kg-day *p,p'*-DDD in males, and 0, 29, 47, 74, 117 or 186 mg/kg-day *p,p'*-DDD in females[2] after adjustment for 60% purity). Mortality was observed in male mice of all but the 631 ppm exposure group (data and details not reported); no deaths occurred among control males (NCI, 1978). Mortality was also observed in female mice exposed to 1000 and 1590 ppm but not in other groups (data not reported). *p,p'*-DDD did not affect body weights in the exposed mice; mean body weight gain in male and female mice exposed to concentrations up to 631 ppm exceeded weight gain in controls (details not reported). This study did not provide sufficient information to establish effect levels.

Banerjee et al. (1996) evaluated the effects of dietary *p,p'*-DDD exposure on humoral and cell-mediated immune response in Wistar rats. Groups of 8-12 male rats were given either the control diet or a diet containing 200 ppm *p,p'*-DDD (99% pure) for 6 weeks (equivalent to about 18 mg/kg-day[3]), during which general condition, food consumption and body weights were recorded weekly. Half of each group was immunized by subcutaneous administration of 3 mg ovalbumin three weeks before the end of the exposure period; the other half was left unstimulated. At the end of the exposure period, rats were sacrificed and blood samples collected. The liver, spleen and thymus from each animal were removed and weighed. The humoral immune response was quantified by measuring immunoglobulin levels (IgM and IgG), estimating the albumin/globulin ratio and measuring the ovalbumin antibody titer by ELISA. Cell-mediated response was assessed *in vivo*, by quantifying the delayed type hypersensitivity reaction (measuring footpad thickness after ovalbumin challenge) and *in vitro* by measuring leukocyte and macrophage migration inhibition. The latter tests assess whether chemical exposure results in suppression of lymphokine production.

Exposure to *p,p'*-DDD had no effect on mortality, food intake, body weight, or relative liver or thymus weights, but significantly ($p<0.05$) reduced relative spleen weight by 14%; absolute spleen weights were not reported (Banerjee et al., 1996). With regard to humoral

[1] Based on reference values for food consumption and body weight (U.S. EPA, 1988a); doses given are for pure *p,p'*-DDD after adjustment for 60% purity.
[2] Based on reference values for food consumption and body weight (U.S. EPA, 1988a); doses given are for pure *p,p'*-DDD after adjustment for 60% purity.
[3] Based on reference values for food consumption and body weight (U.S. EPA, 1988a).

immune responses, treatment with *p,p'*-DDD had no effect on the serum albumin/globulin ratio, but significantly ($p<0.05$) reduced the levels of IgG, IgM and the titer of anti-ovalbumin antibody in serum by 15, 24 and 35%, respectively, compared to controls. Treatment with *p,p'*-DDD significantly reduced cell-mediated immune responses; delayed type hypersensitivity reactions (increase in footpad thickness) and tests of inhibition of migration of leucocytes and macrophages were suppressed by 24%, 24% and 25% (respectively) compared to controls. In this study, the only dose tested (18 mg/kg-day) is a minimal LOAEL for evidence of immunosuppression and potential effects on spleen weight in rats; no NOAEL can be identified from these data. The LOAEL is considered minimal because the impact of the observed changes on immune function is not certain.

Chronic Exposure — Tomatis et al. (1974) evaluated the carcinogenicity of *p,p'*-DDD (and *p,p'*-DDE separately) in CF-1 mice treated via the diet for a lifetime. The authors administered *p,p'*-DDD in the diet (250 ppm) to 60 male and 60 female mice (6-7 weeks old) for up to 123 weeks; 101 male and 97 female mice were maintained on a control diet. The test compound was 99% pure and was dissolved in acetone prior to being mixed with powdered food and converted to pellets. It is not clear whether the control diet contained acetone. A dietary concentration of 250 ppm corresponds to an estimated *p,p'*-DDD dose of about 43 mg/kg-day (for both males and females) based on reference values for food consumption and body weight of mice (U.S. EPA, 1988a). Groups of four animals (sex not specified) were sacrificed either between weeks 65 and 74 of treatment or between weeks 94 and 118 of treatment for analysis of *p,p'*-DDD levels in the liver and interscapular fat (and sometimes in liver tumors and kidney; details not provided). All animals dying spontaneously or killed humanely were necropsied; remaining animals were sacrificed at 130 weeks of age. Histopathology evaluation was restricted to the lungs, heart, thymus, liver, kidneys, spleen, brain and any organs with gross abnormalities.

Survival was not affected by *p,p'*-DDD (Tomatis et al., 1974). Survival to 90 weeks was 76 and 72% in treated males and females, compared with 67 and 73% in control males and females, respectively. There were no clinical signs of toxicity among mice treated with *p,p'*-DDD. The authors reported neither a statistical comparison of body weights nor raw data; however, based on visual evaluation of body weight curves (covering the period from the 3rd through 14th month of age), body weights of the treated males were depressed by more than 10% relative to controls over the entire period of observation; body weights of treated females were unaffected by treatment. The only other possible effect was a 5-fold increase in the incidence of myocardial necrosis in males, although the overall incidence was small (3/59 in treated animals vs. 1/98 in controls). No statistical analysis was presented by the authors. A post-hoc Fisher's Exact test was performed on the response data with a p-value of 0.15. Although not statistically significant by standard definitions, the 5-fold increase is still suggestive of an effect. The only dose of *p,p'*-DDD tested, 43 mg/kg-day, is a LOAEL for body weight depression and suggestive of myocardial necrosis in male mice in this study.

The authors noted that the incidence of lung tumors was increased over controls in *p,p'*-DDD-exposed mice of both sexes; in addition, the incidence of hepatomas was increased in male mice (Tomatis et al., 1974). This study was used in the derivation of the oral slope factor for *p,p'*-DDD (U.S. EPA, 2007).

NCI (1978) conducted a carcinogenicity bioassay of *p,p'*-DDD in Osborne-Mendel rats and B6C3F1 mice. Technical grade DDD (60% *p,p'*-DDD) in corn oil was mixed with feed at varying concentrations and administered *ad libitum*. The test material contained 19 impurities, contributing 40% of the total dose; none of the impurities were identified. Nominal concentrations, durations of exposure at these concentrations, and weighted average concentration and dose estimates are given in Table 1. As the table indicates, the exposure concentration was increased once in rats and twice in mice, as the animals tolerated the exposures well. Rats were observed for 34 or 35 weeks after exposure termination and prior to sacrifice. Mice were observed for 13 to 15 weeks after the 78-week exposure period and prior to sacrifice. Weighted average exposure concentrations shown in Table 1 are averaged over the 78-week exposure period and do not take into account the post-exposure observation period. Weighted average dose estimates shown in the table are doses of *p,p'*-DDD after adjustment for purity.

Body weight and food consumption measurements, clinical observations and palpations for masses were conducted weekly for 10 weeks and monthly thereafter; mortality checks were performed daily (NCI, 1978). Necropsy was performed on all animals, but organ weights were not recorded. Histopathologic examination was initially limited to control animals, animals with visible tumors and at least 10 males and females with no gross pathological findings from each group. Later in the study, the protocol was altered to include tissues from other animals; however, the authors did not indicate how the other animals were selected, how many were included or when the protocol change was initiated. Nearly 30 tissues were subjected to microscopic examination. The authors noted that tissues were not examined from some animals that died early and that some animals were missing, cannibalized or in an advanced state of autolysis, precluding histopathologic examination. Incidence of lesions was reported using the number of animals for which that specific tissue was examined as the number at risk, except where lesions were observed grossly or could appear at multiple sites (e.g., lymphoma), in which cases the number of animals necropsied was used.

The authors reported that, beginning during week 30 and continuing through termination of the exposure period, treated rats exhibited a slightly greater incidence of clinical signs of toxicity (hunched appearance and urine staining; data not reported) (NCI, 1978). Prior to 30 weeks and during the recovery period, there was no treatment-related effect on the incidence of clinical signs (data not reported), according to the authors. *p,p'*-DDD treatment did not significantly affect probability of survival in either sex. There were clear treatment-related reductions in body weight, but the authors did not present statistical comparisons of group mean body weights or raw data. Based on graphical presentation of the data, the greatest differences from control weights occurred between weeks 60 and 75, when the mean body weights were about 10% and 20% lower than controls in low- and high-dose males (respectively) and about 20% and 30% lower in low- and high-dose females. Treatment with *p,p'*-DDD had no significant effect on the incidence of nonneoplastic lesions in rats in any tissue examined. A NOAEL cannot be determined from this study. The low dose (39 mg/kg-day in females) is a LOAEL for depression of body weight gain and clinical signs of toxicity. The LOAEL is for the mixture. A LOAEL for *p,p'*-DDD cannot be established from this study.

Table 1. Group Sizes, Dietary Concentrations and Dose Estimates for NCI (1978) Cancer Bioassay for *p,p'*-DDD

Group	Group Size	Nominal Concentration (mg/kg)	Duration at this Concentration (weeks)	Untreated Duration (weeks)	Weighted Average Concentration Technical grade DDD[a] (mg/kg)	Weighted Average Daily Dose *p,p'*-DDD[b] (after adjustment for purity) (mg/kg-day)
Male Rats						
Control	20	0		111		0
Low Dose	50	1400 1750 0	23 55	 34	1647	69
High Dose	50	2800 3500 0	23 55	 35	3294	138
Female Rats						
Control	20	0		111		0
Low Dose	50	850 0	78	 35	850	39
High Dose	50	1700 0	78	 35	1700	79
Male Mice						
Control	20	0		90		0
Low Dose	50	315 375 425 0	5 11 62	 13	411	42
High Dose	50	630 750 850 0	5 11 62	 14	822	85
Female Mice						
Control	20	0		90		0
Low Dose	50	315 375 425 0	5 11 62	 14	411	43
High Dose	50	630 750 850 0	5 11 62	 15	822	85

[a] Calculated by the authors as the sum of concentration x time averaged over 78 weeks.
[b] Calculated using weighted average concentration and reference values for body weight and food consumption from U.S. EPA (1988a); doses adjusted for 60% purity.
Source: NCI, 1978.

The authors reported treatment-related increases in the incidence of thyroid follicular-cell neoplasms in rats treated with *p,p'*-DDD (NCI, 1978). No other treatment-related effects on neoplasm frequency were observed. This study was evaluated as part of the IRIS cancer assessment, but was not used in deriving the oral slope factor.

In mice, *p,p'*-DDD treatment had no significant effect on probability of survival in either sex. Clinical signs occurred with the same frequency in treated and control animals. Exposure to *p,p'*-DDD had no effect on male body weight throughout the treatment period, but dose-related depression of body weight was observed in female mice after week 30. The authors did not present statistical comparisons of group mean body weights or raw data. Based on graphical presentation of the data, the body weight reduction peaked at about 14% in the high-dose group between weeks 60 and 75; in the low-dose group, body weight decrements appeared to be less than 10% throughout the study. Treatment did not significantly increase the incidence of neoplastic or nonneoplastic lesions in any tissue in either sex. The low dose of 42 mg/kg-day *p,p'*-DDD is a NOAEL and the high dose of 85 mg/kg-day *p,p'*-DDD is a LOAEL for body weight depression in female mice.

Inhalation Exposure

There are no data on the effects in laboratory animals of *p,p'*-DDD exposure via inhalation.

Other Studies

Adrenal Effects — Cueto and Brown (1958) fractionated technical grade DDD and tested the fractions and isolates, delivered in gelatin capsules, for adrenocorticolytic activity in male dogs (breed not specified). A single dog received 80 mg/kg-day of purified *p,p'*-DDD for 29 days and another the same dose for 80 days; a third dog was treated with 200 mg/kg-day for 30 days and a fourth dog was left untreated for 100 days as a control. The endpoints examined included general appearance, periodic tests of adrenal activity and, after necropsy, examination of adrenal histopathology. No other organ system was evaluated. Treatment with *p,p'*-DDD at either dose level had no effect on the physical state of the dogs. In tests of adrenal activity administered after 4 and 20 days of treatment, the dog treated with 200 mg/kg-day of *p,p'*-DDD and the control dog exhibited the same effects in response to an injection of adrenocorticotropic hormone: there were similar decreases in the eosinophil count and similar increases in the plasma level of 17-hydroxycorticosteroids. At termination, no treated dogs showed evidence of adrenal histopathology.

In a similar study, Powers et al. (1974) fed technical grade DDD (characterized by the authors as 90% *p,p'*-DDD and 5-8% *o,p'*-DDD, other impurities unspecified) dissolved in corn oil and administered in gelatin capsules to mixed groups of mongrel and purebred beagle dogs. The dogs were given doses of either 100 or 200 mg/kg for varying time periods up to 30 days. Control groups (mongrels and beagles) of various sizes were maintained. Upon sacrifice, the adrenal glands were weighed (in some cases) and/or examined with light and electron microscopy. The authors reported histopathology findings in the adrenals of treated dogs, including degenerative vacuolation, especially in the inner cortex, mitochondrial swelling,

cellular necrosis and dilatation of smooth endoplasmic reticulum. Because the test material in this study included *o,p'*-DDD and potentially other contaminants, it is not possible to determine whether any of the adrenal affects are attributable to *p,p'*-DDD exposure.

Mechanistic — A number of studies have investigated the hormonal activities of DDT and related compounds. When Gellert et al. (1972) injected groups of 11 or 12 mature ovariectomized Sprague-Dawley rats with 0.1 or 10 mg/day of *p,p'*-DDD in DMSO for 7 days, there was no effect on uterine weight, uterine histology, cytology of vaginal smears or serum levels of luteinizing hormone or follicle stimulating hormone. In castrated male Brl Han: WIST Jcl (GALAS) rats treated with 8, 40 or 200 mg/kg-day *p,p'*-DDD via gavage for 10 days, either with or without testosterone propionate, treatment with 200 mg/kg *p,p'*-DDD and testosterone propionate resulted in significant decreases in seminal vesicle and bulbocavernosus/levator ani muscles, indicating antiandrogenic activity (Yamasaki et al., 2004). In *in vitro* assays, *p,p'*-DDD did not competitively inhibit binding of 17β-estradiol to the estrogen receptor, but competitively inhibited binding of a synthetic androgen (R1881) to the rat androgen receptor (Kelce et al., 1995). In *in vitro* assays using yeast reporter gene systems, *p,p'*-DDT was unable to activate expression of the estrogen receptor gene or the androgen receptor gene at concentrations below 10^{-4} M (Gaido et al., 1997). Using an *in vitro* human hepatoma cell reporter gene system, Maness et al. (1998) found that *p,p'*-DDD did not stimulate expression of the human androgen receptor (hAR) gene, but did inhibit androgen-dependent expression of the hAR gene. *p,p'*-DDD gave positive results in an androgen receptor binding assay (Yamasaki et al., 2004). The results of these experiments suggest that *p,p'*-DDD has antiandrogenic activity, but no estrogenic activity.

Limited evidence suggests that *p,p'*-DDD binds to lung tissues and can be cytotoxic to lung cells. When Lund et al. (1989) intravenously injected radiolabeled *p,p'*-DDD into mice, autoradiography of solvent-extracted, whole-body sections revealed specific covalent binding in the alveoli of the lung, in the lateral nasal gland and the salivary glands. The results of the *in vivo* study suggest that pulmonary binding of *p,p'*-DDD can occur after intravenous exposure. An *in vitro* experiment in the same paper demonstrated that *p,p'*-DDD irreversibly bound to protein following incubation with S-9 fractions from murine lung or liver. The authors concluded that covalent binding of *p,p'*-DDD in the lung was the result of *in situ* bioactivation. In an *in vitro* study, Nichols et al. (1992) incubated lung cells isolated from rabbits with *p,p'*-DDD, with or without 1-aminobenzotriazole (1-ABT - a suicide substrate inhibitor of cytochrome P-450 monooxygenases). Cytotoxicity of *p,p'*-DDD to Clara cells especially and to alveolar type II cells and alveolar macrophages to a lesser degree, was dependent on the presence of functional cytochrome P-450. Subsequently, Nichols et al. (1995) evaluated potential mechanisms for bioactivation of *p,p'*-DDD in cultured Clara cells of rabbits and a transformed human bronchial epithelial cell line (BEAS-2B). Both cell types were vulnerable to *p,p'*-DDD-mediated cytotoxicity and were protected by co-incubation with 1-ABT, the inhibitor to cytochrome P-450. In another experiment, Nichols et al. (1995) found that cytotoxicity was reduced when human BEAS-2B cells, rabbit Clara cells, or rabbit pulmonary microsomes were incubated with *p,p'*-DDD that had a deuterium substitution at the C-1 position. The results indicated that the cytotoxicity of *p,p'*-DDD may be caused by its oxidation at C-1 mediated by cytochrome P-450 in the lung.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC ORAL RfD VALUES FOR *p,p'*-DDD

None of the human studies of *p,p'*-DDD are suitable for derivation of provisional oral RfD values. The database includes several epidemiological studies of workers exposed to technical grade DDT (a mixture that includes a small percentage of *p,p'*-DDD), as well as studies evaluating the potential association between biological measurements of *p,p'*-DDD and reproductive or hormonal effects. It is not possible to clearly attribute any effects reported in these studies to direct exposure to *p,p'*-DDD due to the confounding effects of concomitant exposure to other organochlorine compounds (especially DDT and its other metabolites), and because it is not possible to determine whether *p,p'*-DDD measured in biological tissues resulted from exposure to *p,p'*-DDD or from metabolism of DDT or DDE to *p,p'*-DDD in the human body.

There are no suitable long-term general toxicity animal studies for derivation of a provisional RfD. The Tomatis et al. (1974) study is designed primarily as a carcinogenicity bioassay, with very sparse detail on noncancer effects. Furthermore, the LOAEL of 43 mg/kg-day is very high compared to closely-related compounds. Chronic LOAELs for related compounds are 0.25 mg/kg-day (*p,p'*-DDT; U.S. EPA, 1985b), 4.0 mg/kg-day (Cueto and Brown, 1958) and 12 mg/kg-day (NCI, 1978), with the latter two being FELs (mortality). Given the low LOAELs and FELs for closely related compounds, the potential is high that a well-designed *p,p'*-DDT chronic study would produce a much lower LOAEL. As a result, the Tomatis study is judged to be inadequate for assessment of long-term noncancer toxicity.

Studies suitable for use in deriving provisional RfD values include a chronic study in mice (Tomatis et al., 1974) and a 6-week immunotoxicity study in rats (Banerjee et al., 1996). Summaries of these studies and comparisons with the LOAEL values from the chronic NCI (1978) study are shown in Table 2. The usefulness of data from the NCI (1978) subchronic and chronic feeding studies for p-RfD derivation is compromised by the low purity of the technical grade DDD tested. Only 60% of the product was *p,p'*-DDD and at least 19 impurities (unspecified) were present in the remaining 40%. The chronic data are further compromised by the substantial adjustments in administered dietary level during the study and by the long post-treatment observation period, during which recovery from or reversal of effects could have occurred. The two studies in dogs (Cueto and Brown, 1958; Powers et al., 1974) are not suitable for p-RfD derivation due to the small number of animals used, limited endpoints evaluated and, in some cases, post-treatment observation periods allowing for reversal of effects.

The only remaining study, Banerjee et al. (1996), is a 6-week immunotxicity study that does not cover the required general toxicity endpoints. Although the study was adequate for its purpose and establishes the lowest LOAEL for *p,p'*-DDD, by itself, it does not qualify as the basis for either a subchronic or chronic p-RfD. The oral noncancer database is inadequate for derivation of p-RfDs. Neither of the two studies available for p-RfD derivation included more than one dose level, precluding benchmark dose modeling of the effects.

Table 2. Summary of Available Oral Noncancer Dose-Response Information Suitable for p-RfD Derivation and Comparison with LOAELs from NCI (1978) Chronic Studies

Species	Sex	Dose (mg/kg-day)	Exposure Duration	NOAEL (mg/kg-day)	LOAEL (mg/kg-day)	Responses	Comments	Reference
Rats	M	0, 18 mg/kg-day	6 weeks	NA	18	Immunosuppression (reduced humoral and cell-mediated immunity) and decreased relative spleen weight. Minimal LOAEL.	Endpoints included clinical signs, body weight, selected organ weights, and immunotoxicity parameters.	Banerjee et al., 1996
Mice	M,F	0, 43 mg/kg-day	123 weeks	NA	43	Body weight depression in males.	Endpoints included survival, clinical signs, body weight, and histopathology of selected organs.	Tomatis, 1974
Rats	M,F	0, 69, 138 mg/kg-day (M) or 0, 39, 79 mg/kg-day (F)	78 weeks, followed by 34-35 weeks observation	NA	39	Depression of body weight gain and clinical signs of toxicity in females.	Test article only 60% pure. Prolonged observation period may have allowed for recovery from toxic effects. Not suitable for p-RfD derivation.	NCI, 1978
Mice	M,F	0, 42, 85 mg/kg-day (M) or 0, 43, 85 mg/kg-day (F)	78 weeks, followed by 13-15 weeks observation	42	85	Depression of body weight gain in females.	Test article only 60% pure. Prolonged observation period may have allowed for recovery from toxic effects. Not suitable for p-RfD derivation.	NCI, 1978

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC INHALATION p-RfC VALUES FOR *p,p'*-DDD

No studies specifically investigating the effects of inhaled *p,p'*-DDD in humans or animals were located. Thus, provisional RfCs were not derived for *p,p'*-DDD.

DERIVATION OF A PROVISIONAL CARCINOGENICITY ASSESSMENT FOR *p,p'*-DDD

A cancer assessment, including an oral slope factor, is available for *p,p'*-DDD on IRIS (U.S. EPA, 1988b).

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11-30-2001

Provisional Peer Reviewed Toxicity Values for

Acenaphthene
(CASRN 83-32-9)

Derivation of an Oral Slope Factor

Superfund Health Risk Technical Support Center
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Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ACENAPHTHENE (CASRN 83-32-9)
Derivation of an Oral Slope Factor

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional

Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

No oral slope factor for acenaphthene is listed on IRIS (U.S. EPA, 2001), in the HEAST (U.S. EPA, 1997), or in the Drinking Water Standards or Health Advisories List (U.S. EPA, 2000). The CRAVE workgroup (U.S. EPA, 1993, 1995) assigned acenaphthene to Group D, not classifiable as to human carcinogenicity, based on no human data and no animal studies pertinent to carcinogenicity; accordingly, no oral slope factor was derived. The CARA lists (U.S. EPA, 1991a, 1994) include an Ambient Water Quality Criteria document (AWQCD) for acenaphthene (U.S. EPA, 1980), an AWQCD addendum (U.S. EPA, 1989), and a Health Effects Assessment document (HEA) for polycyclic aromatic hydrocarbons (U.S. EPA, 1984). In addition, a Health Effects Assessment document for acenaphthene (U.S. EPA, 1987) is available (although not listed on CARA). All four documents reported a lack of data regarding chronic exposure or carcinogenicity for acenaphthene. Acenaphthene was not discussed in a Drinking Water Criteria Document for polycyclic aromatic hydrocarbons (U.S. EPA, 1991b). A Toxicological Profile for polycyclic aromatic hydrocarbons (ATSDR, 1995) contained no data regarding carcinogenicity for acenaphthene, and no data are listed by IARC (2001). An NTP status report (NTP, 2001), an Environmental Health Criteria document on polycyclic aromatic hydrocarbons (WHO, 1998), a review of health effects of aromatic hydrocarbons (Cavender, 1994), and a Multimedia Document for Polycyclic Aromatic Hydrocarbons produced by SRC for EPA (SRC, 1992) were consulted for relevant information. Literature searches were conducted from 1989 to December 2000 for studies relevant to the derivation of an oral slope factor for acenaphthene. The

databases searched were: TOXLINE, MEDLINE, CANCERLIT, RTECS, GENETOX, HSDB, CCRIS, TSCATS, EMIC/EMICBACK, and DART/ETICBACK.

REVIEW OF THE PERTINENT LITERATURE

Human Studies

No studies were located in the literature search regarding carcinogenicity in humans following oral exposure to acenaphthene.

Animal Studies

Previously reviewed studies of oral exposure to acenaphthene, being ≤90 days, are not of sufficient duration to evaluate potential carcinogenicity (U.S. EPA, 1980, 1984, 1987, 1989, 2001). No additional studies were located in the literature search regarding carcinogenicity in animals following oral exposure to acenaphthene.

Other Studies

Genotoxicity studies previously reviewed by the U.S. EPA (1980, 1984, 1987, 1989, 1993, 2001) or the WHO (1998) reported inconsistent, but mostly negative, results for acenaphthene. Updated literature searches identified additional relevant genotoxicity studies for acenaphthene. Acenaphthene tested negative in studies using *Salmonella typhimurium* strains TA98 and TA100 without S-9 activation (Kangsadalampai et al., 1996; Sasaki et al., 1995) and strains TA97, TA98, TA100, TA1535, and TA1537 with S-9 activation (Zeigler er al., 1992). Acenaphthene was negative with S-9 metabolic activation in the SOS chromotest, a genotoxicity assay using *Escherichia coli* strain PQ37 (Mersch-Sunderman et al., 1993).

Chaloupka et al. (1994) evaluated hepatic enzyme induction, as methoxyresorufin *O*-demethylase (MROD) activity, following acenaphthene injection in 15-day-old nursing male B6C3F1 mouse pups. Acenaphthene did not bind to the aryl hydrocarbon (Ah) receptor or to the 4S carcinogen-binding protein, suggesting that the induction of hepatic Cyp1a2 gene expression by tricyclic PAHs, such as acenaphthene, is independent of the Ah receptor pathway.

DERIVATION OF A PROVISIONAL ORAL SLOPE FACTOR FOR ACENAPHTHENE

Human and animal data are inadequate to evaluate the potential carcinogenicity of acenaphthene by the oral route. Acenaphthene is categorized in Group D, not classifiable as to human carcinogenicity, which precludes derivation of an oral slope factor.

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11-30-2001

Provisional Peer Reviewed Toxicity Values for

Acenaphthene
(CASRN 83-32-9)

Derivation of an Inhalation Unit Risk

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ACENAPHTHENE (CASRN 83-32-9) Derivation of an Inhalation Unit Risk

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided

in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

No inhalation unit risk for acenaphthene is listed on IRIS (U.S. EPA, 2001) or in the HEAST (U.S. EPA, 1997). The CRAVE workgroup (U.S. EPA, 1993, 1995) assigned acenaphthene to Group D, not classifiable as to human carcinogenicity, based on no human data and no animal studies pertinent to carcinogenicity; accordingly, no inhalation unit risk was derived. The CARA lists (U.S. EPA, 1991, 1994) include a Health Effects Assessment document (HEA) for polycyclic aromatic hydrocarbons (U.S. EPA, 1984). In addition, a Health Effects Assessment document for acenaphthene (U.S. EPA, 1987) is available (although not listed on CARA). Both HEAs indicate that no chronic inhalation or carcinogenicity data are available for acenaphthene. No information regarding carcinogencity of acenaphthene is listed by the ACGIH (2000), NIOSH (2000), OSHA (1999), or IARC (2001). A Toxicological Profile for polycyclic aromatic hydrocarbons (ATSDR, 1995) contained no data regarding inhalation exposure or carcinogenicity for acenaphthene. An NTP status report (NTP, 2001), an Environmental Health Criteria document (WHO, 1998), a review on the health effects of aromatic hydrocarbons (Cavender, 1994), and a Multimedia Document for Polycyclic Aromatic Hydrocarbons produced by SRC for EPA (SRC, 1992) were consulted for relevant information. Literature searches were conducted from 1989 to December 2000 for studies relevant to the derivation of an inhalation unit risk for acenaphthene. The databases searched were: TOXLINE, MEDLINE, CANCERLIT, RTECS, GENETOX, HSDB, CCRIS, TSCATS, EMIC/EMICBACK, and DART/ETICBACK.

REVIEW OF THE PERTINENT LITERATURE

Human Studies

No studies were located in the literature search regarding health effects in humans following inhalation exposure to acenaphthene.

Animal Studies

A subchronic rat inhalation study by Reshetiuk et al. (1970) was considered inadequate for cancer assessment because of incomplete reporting of methods and results (U.S. EPA, 1984, 1987). Reshetiuk et al. (1970) exposed male white rats (number, strain, controls not reported) to 12 ± 1.5 mg/m^3 of acenaphthene vapors 4 hours/day, 6 days/week for 5 months. Chronic aspecific pneumonia, including circulatory alterations (undefined), was observed and described: altered reflexes in the upper airways, desquamation of alveolar epithelium, and focal bronchitis accompanied by hyperplasia and metaplasia. An increase in the concentration of nucleic acids in the liver was observed. No further details of this study were reported.

No additional inhalation studies were located in the literature search.

Other Studies

Genotoxicity studies previously reviewed by the U.S. EPA (1984, 1987, 1993, 2001) or the WHO (1998) reported inconsistent, but mostly negative, results for acenaphthene. Updated literature searches identified additional relevant genotoxicity studies for acenaphthene. Acenaphthene tested negative in studies using *Salmonella typhimurium* strains TA98 and TA100 without S-9 activation (Kangsadalampai et al., 1996; Sasaki et al., 1995) and strains TA97, TA98, TA100, TA1535, and TA1537 with S-9 activation (Zeigler er al., 1992). Acenaphthene was negative with S-9 metabolic activation in the SOS chromotest, a genotoxicity assay using *Escherichia coli* strain PQ37 (Mersch-Sunderman et al., 1993).

Chaloupka et al. (1994) evaluated hepatic enzyme induction, as methoxyresorufin *O*-demethylase (MROD) activity, following acenaphthene injection in 15-day-old nursing male B6C3F1 mouse pups. Acenaphthene did not bind to the aryl hydrocarbon (Ah) receptor or to the 4S carcinogen-binding protein, suggesting that the induction of hepatic Cyp1a2 gene expression by tricyclic PAHs, such as acenaphthene, is independent of the Ah receptor pathway.

DERIVATION OF A PROVISIONAL INHALATION UNIT RISK FOR ACENAPHTHENE

Human and animal data are inadequate to evaluate the potential carcinogenicity of acenaphthene by the inhalation route. Acenaphthene is categorized in Group D, not classifiable as to human carcinogenicity, which precludes derivation of an inhalation unit risk.

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11-30-2001

Provisional Peer Reviewed Toxicity Values for

Acenaphthene
(CASRN 83-32-9)

Derivation of a Chronic Inhalation RfC

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ACENAPHTHENE (CASRN 83-32-9) Derivation of a Chronic Inhalation RfC

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional

Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

No RfC for acenapthene is listed on IRIS (U.S. EPA, 2001) or in the HEAST (U.S. EPA, 1997). An RfC for acenaphthene has not been reviewed by the RfD/RfC workgroup (U.S. EPA, 1995). The CARA lists (U.S. EPA, 1991, 1994) include a Health Effects Assessment document (HEA) for polycyclic aromatic hydrocarbons (U.S. EPA, 1984). In addition, a Health Effects Assessment document for acenaphthene (U.S. EPA, 1987) is available (although not listed on CARA). Both HEAs indicate that no chronic inhalation data are available for acenaphthene. A Toxicological Profile for polycyclic aromatic hydrocarbons does not derive any inhalation MRLs for acenaphthene (ATSDR, 1995, 2000). Exposure limits for acenaphthene are not listed by the ACGIH (2000), NIOSH (2000), or OSHA (1999). Acenaphthene is not listed by IARC (2001). An NTP status report (NTP, 2001), an Environmental Health Criteria document (WHO, 1998), a review on the health effects of aromatic hydrocarbons (Cavender, 1994), and a Multimedia Document for Polycyclic Aromatic Hydrocarbons produced by SRC for EPA (SRC, 1992) were consulted for relevant information. Literature searches were conducted from 1989 to December 2000 for studies relevant to the derivation of an RfC for acenaphthene. The databases searched were TOXLINE, MEDLINE, CANCERLIT, RTECS, GENETOX, HSDB, CCRIS, TSCATS, EMIC/EMICBACK, and DART/ETICBACK.

REVIEW OF THE PERTINENT LITERATURE

Human Studies

No studies were located regarding health effects in humans following inhalation exposure to acenaphthene.

Animal Studies

A subchronic rat inhalation study by Reshetiuk et al. (1970) is considered inadequate because of incomplete reporting of methods and results. Reshetiuk et al. (1970) exposed male white rats (number, strain, controls not reported) to 12 ± 1.5 mg/m^3 of acenaphthene vapors 4 hours/day, 6 days/week for 5 months. Chronic aspecific pneumonia, including circulatory alterations (undefined), was observed and described: altered reflexes in the upper airways, desquamation of alveolar epithelium, and focal bronchitis accompanied by hyperplasia and metaplasia. An increase in the concentration of nucleic acids in the liver was observed. No further details of this study were reported.

No additional inhalation studies were located in the literature search.

Other Studies

Beach et al. (1992) evaluated the effect of acenaphthene on respiration in mitochondria isolated from beef heart. A dose-response relationship was observed for the inhibition of specific partial electron transport reactions, suggesting that impairment of cellular respiration may be the mechanism of cellular toxicity of acenaphthene.

DERIVATION OF A PROVISIONAL RfC FOR ACENAPHTHENE

No provisional RfC can be derived for acenaphthene because of a lack of appropriate human or animal data.

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ACGIH (American Conference of Governmental Industrial Hygienists). 2000. TLVs® and BEIs®: Threshold Limit Values for Chemical Substances and Physical Agents, Biological Exposure Indices. ACGIH, Cincinnati, OH.

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3-14-2005

Provisional Peer Reviewed Toxicity Values for

Aldrin
(CASRN 309-00-2)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms

bw - body weight
cc - cubic centimeters
CD - Caesarean Delivered
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CNS - central nervous system
cu.m - cubic meter
DWEL - Drinking Water Equivalent Level
FEL - frank-effect level
FIFRA - Federal Insecticide, Fungicide, and Rodenticide Act
g - grams
GI - gastrointestinal
HEC - human equivalent concentration
Hgb - hemoglobin
i.m. - intramuscular
i.p. - intraperitoneal
i.v. - intravenous
IRIS - Integrated Risk Information System
IUR - Inhalation Unit Risk
kg - kilogram
L - liter
LEL - lowest-effect level
LOAEL - lowest-observed-adverse-effect level
LOAEL(ADJ) - LOAEL adjusted to continuous exposure duration
LOAEL(HEC) - LOAEL adjusted for dosimetric differences across species to a human
m - meter
MCL - maximum contaminant level
MCLG - maximum contaminant level goal
MF - modifying factor
mg - milligram
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
MRL - minimal risk level
MTD - maximum tolerated dose
MTL - median threshold limit

NAAQS - National Ambient Air Quality Standards
NOAEL - no-observed-adverse-effect level
NOAEL(ADJ) - NOAEL adjusted to continuous exposure duration
NOAEL(HEC) - NOAEL adjusted for dosimetric differences across species to a human
NOEL - no-observed-effect level
OSF - Oral Slope Factor
p-RfD - provisional Oral Reference Dose
p-RfC - provisional Inhalation Reference Concentration
p-OSF - provisional Oral Slope Factor
p-IUR - provisional Inhalation Unit Risk
PBPK - physiologically based pharmacokinetic
ppb - parts per billion
ppm - parts per million
PPRTV - Provisional Peer Reviewed Toxicity Value
RBC - red blood cell(s)
RCRA - Resource Conservation and Recovery Act
RGDR - Regional deposited dose ratio (for the indicated lung region)
REL - relative exposure level
RGDR - Regional gas dose ratio (for the indicated lung region)
RfD - Oral Reference Dose
RfC - Inhalation Reference Concentration
s.c. - subcutaneous
SCE - sister chromatid exchange
SDWA - Safe Drinking Water Act
sq.cm. - square centimeters
TSCA - Toxic Substances Control Act
UF - uncertainty factor
ug - microgram
umol - micromoles
VOC - volatile organic compound

3-14-2005

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ALDRIN (CASRN 309-00-2)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions or the EPA Headquarters Superfund Program sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

The HEAST (U.S. EPA, 1997a) lists a subchronic RfD of 3E-5 mg/kg-day for aldrin adopted from the chronic RfD of the same value listed on IRIS (U.S. EPA, 2003a). The chronic RfD was based on an estimated LOAEL of 0.025 mg/kg-day for liver toxicity (centrilobular histopathology and increased relative organ weight) in rats exposed to aldrin in the diet at a concentration of 0.5 ppm for two years (Fitzhugh et al., 1964). In this derivation, a total uncertainty factor of 1000 (10 to extrapolate from animals to humans, 10 to protect sensitive individuals, and 10 for the use of a LOAEL) was applied to the LOAEL. The chronic RfD is also included in the Drinking Water Standards and Health Advisories List (U.S. EPA, 2002) and the OPP reference dose tracking report (U.S. EPA, 1997b), which includes an identical OPP RfD for aldrin. A Health Effects Assessment (HEA) for aldrin did not derive subchronic or chronic oral RfDs for aldrin because the compound was classified as a carcinogen (U.S. EPA, 1987a).

No other relevant documents were included in the CARA list (U.S. EPA, 1991, 1994a). ATSDR (2002) calculated a chronic oral minimum risk level (MRL) of 3E-5 mg/kg-day for aldrin also using the study of Fitzhugh et al. (1964) and the same uncertainty factors employed in the IRIS derivation. ATSDR (2002) did not derive an intermediate (subchronic) oral MRL because the available studies were not considered to be suitable.

An RfC for aldrin is not listed on the HEAST (1997a) or on IRIS (U.S. EPA, 2003a). The HEA (U.S. EPA, 1987a) indicated that inhalation data for aldrin, limited to monitoring studies in humans, were insufficient to derive an RfC. ATSDR (2002) did not derive inhalation MRLs for aldrin because no suitable quantitative data were available from the existing inhalation studies. The threshold limit value (TLV-TWA) established by ACGIH (2001, 2002), the recommended exposure limit (REL-TWA) set by NIOSH (2002) and the permissible exposure limit (PEL-TWA) established by OSHA (2002) for aldrin are each set at 0.25 mg/m^3, with notations for skin absorption and carcinogenicity (TLV and REL only, see next paragraph); the levels are intended to protect against effects in the liver (increased organ weight, parenchymatous degeneration and necrosis observed in rats), central nervous system (ranging from headache to convulsions in humans), and kidney (parenchymatous degeneration observed in rats and dogs).

The HEAST (1997a) cites IRIS as the primary source for the carcinogenicity assessment of aldrin. On IRIS (U.S. EPA, 2003a), aldrin is classified as a Group B2, possible human carcinogen, based on inadequate evidence in humans and sufficient evidence in mice. A human oral q_1* of 17 $(mg/kg\text{-}day)^{-1}$ for aldrin is presented based on data for hepatic carcinoma in mice; an inhalation unit risk of 4.9E-3 ($\mu g/m^3$) was derived by extrapolation from the oral data (U.S. EPA, 2003a). The source document for this assessment was a Carcinogenicity Assessment (U.S. EPA, 1987b). IARC (1974, 1987, 2002) determined that aldrin is not classifiable as to its carcinogenicity to humans (Group 3) based on an inadequate data in humans and limited data in animals (definitive positive results in mice but not in rats). ACGIH (2001, 2002) included an A3 notation in its TLV assessment for aldrin to indicate the compound's status as a confirmed animal carcinogen with unknown relevance to humans. The NIOSH (2002) REL also noted the carcinogenicity of aldrin to animals in the same organs: lungs, liver, thyroid and adrenal glands.

An Environmental Health Criteria document on aldrin and dieldrin (WHO, 1989), a Health Effects Support Document for Aldrin/Dieldrin (U.S. EPA, 2003b), a toxicity review on chlorinated hydrocarbon pesticides (Bus and Leber, 2001), a review on the long-term health effects of aldrin and dieldrin (de Jong, 1991), an occupational hazard review on aldrin and dieldrin (NIOSH, 1978) and the NTP (2002a, 2002b) management status report and health and safety report for aldrin were consulted for relevant information. Literature searches were conducted for the period from 1999 to October 2002 to identify data relevant for the derivation of a provisional RfD, RfC and cancer assesment for aldrin. The following databases were searched: TOXLINE, MEDLINE, CANCERLIT, NTIS/BIOSIS, RTECS, HSDB, GENETOX,

CCRIS, TSCATS, EMIC/EMICBACK, and DART/ETICBACK. Additional literature searches were conducted by NCEA-Cincinnati from 2002 through May 2004 using TOXLINE, MEDLINE, Chemical and Biological Abstracts databases.

REVIEW OF PERTINENT DATA

Human Studies

No data were located for chronic or subchronic toxicity in humans following quantified exposures by the oral route. Acute oral exposures to aldrin have been reported to result in neurological effects that include headache, dizziness, nausea, vomiting, malaise, myoclonic jerks of the limbs, clonic and tonic convulsions, and coma (NIOSH, 1978; U.S. EPA, 1987b; de Jong, 1991; ACGIH, 2001; Bus and Leber, 2001; U.S. EPA, 2003b). A 23-year-old male who ingested 25.6 mg/kg exhibited convulsions within 20 minutes, followed by hematuria and azotemia that lasted 18 days, restlessness, hypothermia and tachycardia that lasted 5 days, and abnormalities in electroencephalograms (generalized cerebral dysrhythmia) that lasted for six months. Estimates for the lowest human lethal dose of aldrin range between 1.25 and 10 mg/kg (de Jong, 1991; U.S. EPA, 2003b).

No data were located for chronic or subchronic toxicity in humans following quantified exposures by the inhalation route. Dermal absorption is presumed to account for the major fraction of the absorption following exposures of unprotected industrial or agricultural workers to aldrin dust, and undoubtedly some oral absorption also occurs under these conditions (de Jong, 1991; Bus and Leber, 2001).

Epidemiological studies have been conducted to evaluate the cancer risk following occupational exposure to aldrin. The IRIS document for aldrin (U.S. EPA, 2003a) indicated that two different epidemiological studies did not quantify exposure in workers and were limited in their ability to detect an excess of deaths from cancer (Van Raalte, 1977; Ditraglia et al., 1981); subjects in both studies had also been exposed to other pesticides in addition to aldrin. Increases (not statistically significant) in standard mortality ratios for a few cancer sites (rectum, esophagus, and lymphatic/hemopoietic cancer) identified in the study of Ditraglia et al. (1981) did not persist in subsequent follow-up studies of the cohort (Brown, 1992; Amoateng-Adjepong et al., 1995). The mortality in these studies was not associated with any cancer events in the rectum, esophagus or lymphatic/hematopoietic system. However, an increase in deaths in male workers from cancer of the liver and biliary tract that was observed in the study of Ditraglia et al. (1981) was found to be significant in the study of Brown (1992). Amoateng-Adjepong et al. (1995) reported that excess deaths from hepatobiliary cancer were significantly increased only for hourly paid workers, but were not correlated with increasing duration of employment.

de Jong (1991) conducted an epidemiological study in Dutch petrochemical workers exposed primarily by dermal contact and inhalation to aldrin and sometimes also to dieldrin. In this study, 570 workers (gender not identified) primarily exposed between January 1954 and January 1970 were followed up for mortality until January 1987. The study used extensive data for industrial hygiene and job histories to assess exposures to aldrin/dieldrin retrospectively. In addition, biological monitoring data, based on blood levels of dieldrin, a persistent metabolite of aldrin, were available for 343 of the workers for the period 1963-1970; data from these workers was used to estimate exposures in workers with similar job histories for which blood data were not available. Estimates of daily and total intakes of dieldrin were calculated for each member of the cohort and three levels of exposure (low, moderate and high) were identified; the average daily intake of dieldrin was calculated as 488 µg/day, ranging from 12 to 7000 µg/day. The standard mortality ratio for the exposed cohort was lower than expected based on the mortality of the general population. No increases were observed in the cancer mortality and no specific cancer sites predominated. In a follow-up study, de Jong et al. (1997) extended analysis of the cohort up to January 1993. Total mortality and total mortality from cancer were lower than expected. The number of deaths (6) from rectal cancer was significantly higher than expected (1.5) (SMR = 390.4 [95% CI:143-850]); however there was not a clear dose relationship (SMR 865 [95% CI: 174-2526], 201 [95% CI :3-1117], and 289 [95% CI: 32-1044] in the low-, moderate- and high-exposure groups, based on 3, 1, and 2 deaths, respectively). Two deaths (one each in the low- and moderate-exposure groups) from liver cancer were not significantly higher than expected (0.9) (SMR = 225 [95% CI: 27-813]). The authors concluded that the study does not provide support for the carcinogenicity of aldrin and dieldrin in exposed workers.

Animal Studies

Several subchronic and chronic oral toxicity studies have been conducted in rodents and subchronic studies in dogs exposed to aldrin in the diet (U.S. EPA, 1987a, 2003a,b; WHO, 1989; Bus and Leber, 2001). Hepatotoxicity (hepatomegaly, histopathological degenerative changes) and neurotoxicity (degenerative brain histopathology, hypersensitivity, twitching, tremors and convulsions) were the major effects observed in exposed rats, mice and dogs. Hepatic carcinogenicity was reported in oral studies in mice, but not in rats (U.S. EPA, 1987b, 2003a). The oral database for aldrin also includes developmental toxicity studies in dogs, hamsters, rats and mice, and reproductive toxicity studies in dogs, rats and mice (U.S. EPA, 1987a, 2003b; WHO, 1989; Bus and Leber, 2001). These studies reported reduced fetal survival and/or increases in malformations at doses that were maternally toxic.

Subchronic oral toxicity studies on aldrin examined a limited array of endpoints. Treon and Cleveland (1955) conducted intermediate mortality studies on dogs and rats exposed to aldrin (95% purity) in the diet. Groups of beagle dogs (2-3 male and 2 female) were given diets containing 1, 3, 10, 25 or 50 ppm aldrin for 5 or 6 days per week for up to 15.6 months. Other methods, such as vehicles to dissolve aldrin, were not described systematically, but are inferred

from the reported results. Body weight was recorded weekly. At termination, dogs were necropsied and organ weights were recorded for liver, kidneys, heart, brain, spleen and fat. The liver and kidneys were examined for histopathology. Hemocytology analyses were conducted, but endpoints were not specified. Doses between 0.9 and 9.1 mg/kg-day (10-50 ppm levels) were lethal to all dogs. All dogs that received doses between 0.9 and 1.8 mg/kg-day (10 ppm group) died within 6.7 months. No deaths occurred among dogs exposed to 3 ppm (0.12-0.25 mg/kg-day) or 1 ppm (0.043-0.091 mg/kg-day) for up to 15.6 months. Aldrin had no effect on body weight or hemocytology parameters (not specified). Treatment at ≥3 ppm increased the absolute and relative liver weights in both sexes. Histopathology of the liver (local hyaline droplet degeneration) and kidneys (renal tubular degeneration or vacuolization) was observed in male dogs at ≥3 ppm and female dogs at ≥1 ppm. Male and female dogs that died (that is, those exposed at ≥10 ppm or ≥0.9 mg/kg-day) had diffuse degenerative changes in the liver, kidneys and brain. The 1 ppm dietary level (0.043-0.091 mg/kg-day) was a LOAEL for renal histopathology in female dogs. A NOAEL was not identified.

NCI (1978) conducted subchronic range-finding feeding bioassays on aldrin (technical grade, >85% purity) to establish maximum tolerated doses for carcinogenicity studies in rats and mice. Groups of Osborne-Mendel rats (5/sex/group) were given diets containing 0, 40, 80, 160 or 320 ppm of aldrin for six weeks and observed for an additional two weeks. Using reference values for body weight and food consumption (U.S. EPA, 1988), doses are estimated as 0, 3, 7, 14 and 28 mg/kg-day for male and 0, 4, 8, 16 and 32 mg/kg-day for female rats. Dose-related mortality was observed in both sexes at ≥160 ppm. Body weight gain was depressed consistently in males at 320 ppm. No additional information was provided. No effects were observed at the 80 ppm dietary level (7 or 8 mg/kg-day in male or female rats respectively), based on limited evaluations.

In the subchronic range-finding assay in $B6C3F_1$ mice (5/sex/group), NCI (1978) provided diets containing 0, 2.5, 5, 10, 20, 40 or 80 ppm of aldrin technical grade, >85% purity) for six weeks and then control diets for two weeks. Using reference values for body weight and food consumption (U.S. EPA, 1988), doses are estimated as 0, 0.5, 1, 2, 4, 7 and 14 mg/kg-day in male and 0, 0.5, 1, 2, 4, 8 or 16 mg/kg-day in female mice. Dose-related increases in mortality were observed in both sexes at ≥20 ppm. Aldrin had no effect on body weight gain. No additional information was provided. No effects were observed at the 10 ppm dietary level (4 mg/kg-day) in male or female mice, based on limited evaluations.

A single new oral study was located in the literature search. Paul et al. (1992) evaluated the effect of subchronic oral exposure to aldrin or endosulfan on muscle coordination, learning and memory in rats. Groups of Wistar rats (10/sex/group) were given 0 or 1 mg/kg-day of aldrin by gavage in an aqueous suspension with tragacanth powder daily for 90 days. Motor coordination (balancing on a moving rod) was measured prior to exposure and on every 15^{th} day of treatment. Unconditioned and conditioned avoidance tests were conducted after 90 days of

treatment. Rats were tested for their ability to learn the correct behavior (pole climbing) for avoiding a buzzer/shock in 15 trials; subsequently (the next day) the time for their conditioned response to the buzzer alone was measured in 15 trials. The authors reported that treatment with aldrin had no effect on growth or behavior but did not report any methods or data for these endpoints. Treatment reduced the ability of male and female rats to remain balanced on a moving rod, indicating impairment of motor coordination; male were more severely affected than females. Treated male and female rats demonstrated an inhibition in the ability to learn the correct avoidance behavior compared to controls; 6 trials were needed before all controls were successful, whereas 12 trials were needed before all treated rats were successful. The responding time of all rats to a conditioned stimulus declined with each repetition, reaching a constant value after the 7th trial; however, the response time was slightly slower (about four seconds longer) for treated rats compared to controls. This study identifies a LOAEL of 1 mg/kg-day for neurological impairment (reduced motor coordination, learning ability and delayed response to conditioned stimulus) in rats exposed by gavage for 90 days.

No additional chronic oral animal data were found in the literature search beyond those studies already reviewed by U.S. EPA (1987a, 2003a). Thus, there is no new information to challenge the basis for the chronic RfD on IRIS, namely, the estimated LOAEL of 0.025 mg/kg-day in the 2-year dietary study in rats (Fitzhugh et al., 1964).

Reproduction studies in dogs did not establish no-effect levels for aldrin (WHO, 1989; U.S. EPA, 2003b). Deichmann et al. (1971) administered aldrin (95% purity) by capsule to groups of beagles at doses of 0.15 mg/kg-day (4 females) or 0.3 mg/kg-day (4 males, 3 females) 5 days/week for 14 months. Dogs were mated and the viability of pups recorded. Estrous cycles were delayed 7 to 12 months in treated females and some males exhibited a depressed sexual drive. Mammary development and milk production were severely depressed in treated females. A dose-related decrease in pup survival at weaning was observed: 85, 75 and 44% in the control, low- and high-dose groups, respectively. The low dose of 0.15 mg/kg-day is a LOAEL for reproductive effects (reduced pup survival) in dogs.

In another reproduction study in dogs, Kitselman (1953) fed aldrin (99% purity) in dosed meatballs to groups of mongrel dogs (1-2/sex/group) at doses of 0, 0.2, 0.6 or 2.0 mg/kg-day for one year. Aldrin had no apparent effect on fertility or pregnancy rates. In all treated groups, pups were born with no obvious defects, but died within three days and exhibited degenerative changes in the liver and renal tubules. Treated females also exhibited degenerative changes in the liver. The low dose of 0.2 mg/kg-day in this study is a LOAEL for reproductive toxicity (hepatic and renal toxicity in pups exposed during gestation and hepatic toxicity in bitches).

Reproductive and developmental oral toxicity studies for aldrin were also conducted in rodents (WHO, 1989; U.S. EPA, 2003b). In a three-generation study, Treon and Cleveland (1955) fed groups of male and female Carworth rats (group sizes not reported) diets containing

0, 2.5, 12.5 or 25 ppm of aldrin. U.S. EPA (2003b) estimated doses as 0, 0.125, 0.624 and 1.25 mg/kg-day. Two litters were produced for each generation. Treatment had no effect on numbers of live pups per litter or pup weights at weaning (postnatal day 21), but reduced the viability of pups during lactation in a dose-specific manner. The low dose of 0.125 mg/kg-day is a LOAEL for reduced viability in rat pups.

In a six-generation study, Keplinger et al. (1970) fed Swiss white mice (4 males and 14 females per group) diets containing 0, 3, 5, 10 or 25 ppm of aldrin (purity not reported). U.S. EPA (2003b) estimated doses as 0, 0.45, 0.75, 1.5 or 3.75 mg/kg-day. The 3.75 mg/kg-day dose was discontinued because of high litter mortality. Reduced pup survival during lactation was observed in the 0.75 and 1.5 mg/kg-day groups. No effects on fertility, viability or gestation were observed in the 0.45 mg/kg-day group. The lowest dose of 0.45 mg/kg-day was a NOAEL and 0.75 mg/kg-day was a LOAEL for reduced pup survival during lactation in mice.

Ottolenghi et al. (1974) conducted developmental toxicity studies in which pregnant mice (groups of 10) or hamsters (groups of 41-43) were given a single gavage dose of aldrin (in corn oil) at half the median lethal dose during gestation; the studies included both untreated and vehicle-only controls. In pregnant CD-1 mice, treatment with aldrin at 25 mg/kg-day on gestational day (GD) 9, had no effect on fetal survival or body weight. However, the number of live fetuses with malformations (webbed feet, cleft palate and open eyes) was significantly increased (33%). Maternal toxicity was observed. In pregnant Syrian golden hamsters, treatment with 50 mg/kg-day on GD 7, 8 or 9 significantly reduced the number of live fetuses and fetal weight and increased the incidence of fetal abnormalities (webbed feet, cleft palate and open eyes).

No adequate inhalation toxicity studies in animals were found in the review documents or the literature search. According to ATSDR (2002), Treon et al. (1957) exposed animals to unknown concentrations of aldrin vapor/particles generated by sublimating aldrin at 200°C; however, these studies are confounded by the presence of uncharacterized thermal decomposition products.

Other Studies

Absorption of aldrin in humans or animals occurs following exposure by any route (ATSDR, 2002). Since aldrin is readily metabolized in both humans and animals, it is rarely detected in distribution studies; the metabolite dieldrin is the primary marker for aldrin exposure. Based on studies in volunteers and human cadavers, the relative steady-state distribution of dieldrin in human whole blood, brain gray matter, brain white matter, liver and adipose tissue is estimated as 1, 2.8, 4.2, 22.7 and 136, respectively (U.S. EPA, 2003b). Dieldrin persists in the body with a mean half-life of ~8 months (de Jong, 1991). In humans and rodents, dieldrin has

been detected in breast milk and has been shown to pass through the placenta (ATSDR, 2002; U.S. EPA, 2003b).

The biotransformation of aldrin to dieldrin has been detected in the liver, lung and skin, (ATSDR, 2002; U.S. EPA, 2003b). Mixed function oxidases (cytochrome P-450) are responsible for the epoxidation of aldrin to dieldrin in mammalian hepatocytes; rates of conversion are higher in male rats and mice than in females. *In vitro* studies suggest that the conversion of aldrin in tissues with a low cytochrome P-450 content is carried out by an arachadonic acid-dependent prostaglandin endoperoxide synthase pathway (ATSDR, 2002; U.S. EPA, 2003b). 9-Hydroxydieldrin has been identified as a fecal metabolite in humans and animals. Other metabolites include pentachloroketone, 6,7-trans-dihydroxydihydroaldrin (and its glucuronide conjugate), the glucuronide conjugate of 9-hydroxydieldrin, and aldrin dicarboxylic acid. The relative proportion of the metabolites varies by species, strain and sex (U.S. EPA, 2003b).

In humans and rodents, excretion following oral exposure is primarily in the feces via the bile, with smaller amounts in the urine (ATSDR, 2002). Excretion via lactation has also been described in for humans and rodents (ATSDR, 2002; U.S. EPA, 2003b).

Neurological effects of aldrin have been attributed to alterations in brain neurotransmitters, specifically GABA (γ-aminobutyric acid) (Ecobichon, 2002). Treatment of rats with single gavage doses between 2 and 10 mg/kg or with 2 mg/kg-day for 12 days altered GABA parameters in the brain and increased locomotor activity within two hours of administration (Jamaluddin and Poddar, 2001a,b). The increased locomotor activity was attributed to an activation of glutamate and concomitant inhibition of the GABA system in the cerebellum, hypothalamus and pons-medulla. In a biophysical study, aldrin was demonstrated to change the fluidity of model phospholipid bilayers, increasing the fluidity of bilayers enriched with cholesterol (Demétrio et al., 1998). The results of this study suggest that *in vivo*, intercalation of aldrin into the hydrophobic layer of neuronal cell membranes may contribute to the perturbed function of embedded proteins such as the GABA receptor.

Daily subcutaneous administration of aldrin to pregnant Wistar rats at a dose of 1 mg/kg-day throughout gestation had no teratogenic effect and no effect on body weights in pups, although subtle effects were observed in pups postnatally (Castro et al., 1992). Treated pups showed significant changes in the average timing of certain developmental landmarks; the appearance of incisor eruption was accelerated (on day 4.4 compared to 6.6 for controls), whereas the descent of the testes was delayed (day 31.5 compared to 21.0 for the controls). The timing of pinna detachment, fur development, ear opening and eye opening were not significantly affected. Treated pups also showed significantly higher scores in locomotor frequency tests conducted at 21 and 90 days. Histological examination of brain sections did not reveal overt changes in brain structure that could have contributed to the behavioral effects.

Genotoxicity assays for aldrin were primarily negative in bacteria, but were occasionally positive in mammalian systems, possibly reflecting a requirement for bioactivation. In several studies, aldrin did not induce reverse mutations in *Salmonella typhimurium* (strains TA98, TA100, TA1535, TA1537 or TA1538), *Escherichia coli* or *Bacillus subtilis*, with or without metabolic activation (U.S. EPA, 1987b, 2003a,b; ATSDR, 2002). With or without metabolic activation, aldrin did not cause gene conversion, but did induce reverse mutations in *Saccharomyces cerevisiae* (U.S. EPA, 2003b). In a mouse dominant lethal mutation assay, aldrin reduced the levels of implantations, but the results were not statistically significant (U.S. EPA, 2003b). Aldrin did not induce heritable sex-linked recessive lethal mutations in *Drosophila melanogaster* (U.S. EPA, 2003b). Aldrin induced chromosomal aberrations in human lymphocytes *in vitro* and rat and bone marrow cells of orally-exposed mice, but only at cytotoxic concentrations (U.S. EPA, 2003a,b; ATSDR, 2002). Results of assays for unscheduled DNA synthesis were negative in primary rat hepatocytes and human lymphocytes, but were positive in transformed human fibroblasts *in vitro* (U.S. EPA, 2003b). Aldrin did not induce breakage of plasmid DNA in *E. coli* in the absence of metabolic activation but did induce DNA breakage in rat hepatocytes (U.S. EPA, 2003b).

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC ORAL RfD VALUES FOR ALDRIN

A **chronic RfD of 3E-5 mg/kg-day** is listed for aldrin on IRIS (U.S. EPA, 2003a), based on a LOAEL of 0.025 mg/kg-day for hepatotoxicity (centrilobular lesions and increased liver weight) in rats exposed to 0.5 ppm of aldrin in the diet for two years (Fitzhugh et al., 1964). The presence of a chronic RfD on IRIS precludes derivation of a provisional chronic RfD for this chemical.

The data were reviewed in order to determine the most suitable basis for derivation of a subchronic RfD. Neurotoxicity is the primary effect of aldrin exposure in humans. Aldrin intoxication has been observed following exposures that resulted in a dieldrin concentration in blood higher than 200 ng/mL (de Jong, 1991). The body-burden of dieldrin, which persists in fatty tissue, determines whether a particular exposure would increase the blood concentration of dieldrin above the critical level. Induction of liver enzymes in humans has a lower threshold for dieldrin in blood: 105 ng/mL (de Jong, 1991). Hepatic and neurological changes have been described in rodents orally exposed to aldrin. Hepatic effects (increased organ weight, enlarged centrilobular hepatocytes) were observed in Osborne-Mendel rats exposed to aldrin at a dietary concentration of 0.5 ppm for two years, and nephritis was observed at higher exposure levels (Fitzhugh et al., 1964); the study did not establish a NOAEL. This LOAEL, estimated at 0.025 mg/kg-day, was the lowest effect-level identified among the numerous oral toxicity studies

reviewed by U.S. EPA (1987a, 2003a) and, as mentioned above, was the basis for the chronic RfD of 3E-5 mg/kg-day on IRIS, as well as the subchronic RfD in the HEAST (U.S. EPA, 1997).

Most of the available subchronic toxicity information for aldrin is in studies that were conducted prior to the establishment of current standard protocols. A LOAEL of 0.043 mg/kg-day was identified for renal toxicity (renal tubular degeneration) in beagles exposed to aldrin at a dietary concentration of 1 ppm for nearly 16 months (Treon and Cleveland, 1955). Renal and hepatic effects (degenerative lesions) were observed at the 3 ppm dietary level (0.12-0.25 mg/kg-day) and degenerative lesions in brain, liver and kidneys were observed in dogs fed at or above the 10 ppm level (≥0.9 mg/kg-day). The only newly-located study reported changes in neurobehavioral parameters (impairments in motor coordination, learning and conditioned response times) in rats given 1 mg/kg-day of aldrin by gavage for 90 days (Paul et al., 1992). The NCI (1978) 6-week range-finding studies in rats and mice did not evaluate any endpoints aside from mortality and body weight effects; therefore, the apparent NOAELs in these assays (8 mg/kg-day in rats and 4 mg/kg-day in mice) are not supported by histopathology data. Aldrin had adverse effects on reproduction in dogs exposed in the diet at doses of 0.15 mg/kg-day or higher (Deichmann et al., 1971): delayed estrus and reduced mammary development and milk production in females, reduced sex drive in males, and reduced pup survival at weaning. Another reproductive study reported no effects on fertility or pregnancy rates in dogs at ≥0.2 mg/kg-day, but increases in degenerative hepatic lesions in bitches and increased postnatal mortality of pups, concomitant with degenerative hepatic and renal lesions (Kitselman, 1953). In a 3-generation feed study in rats, reduced pup survival at weaning was observed at ≥0.125 mg/kg-day (Treon and Cleveland, 1955). In a 6-generation study in mice, 0.45 mg/kg-day was a NOAEL and 0.75 mg/kg-day was a LOAEL for reduced pup survival during lactation (Keplinger et al., 1970). A single gavage dose of 25 mg/kg during gestation increased the incidence of fetal abnormalities but did not affect fetal survival or body weight in mice (Ottolenghi et al., 1974). In hamsters, a single gavage dose of 50 mg/kg during gestation reduced fetal survival and body weight and increased the incidence of fetal abnormalities (Ottolenghi et al., 1974). Reproductive and developmental effects of aldrin appear to occur at maternally-toxic doses.

The LOAEL of 0.043 mg/kg-day for renal lesions in the 16-month toxicity study in beagles (Treon and Cleveland, 1955) can serve as the basis for the subchronic RfD for aldrin. Since developmental studies indicate that fetal effects of aldrin occur at maternally-toxic doses, an RfD based on this LOAEL should be protective against fetal effects (U.S. EPA, 2003b). The provisional **subchronic RfD of 4E-5 mg/kg-day for aldrin** is derived by applying an uncertainty factor of 1000 (10 to extrapolate from dogs to humans, 10 to protect sensitive individuals and 10 for the use of a LOAEL) to the dog LOAEL of 0.043 mg/kg-day, as follows:

subchronic p-RfD = subchronic LOAEL / UF
= 0.043 mg/kg-day / 1000
= 0.00004 or 4E-5 mg/kg-day

Confidence in the critical subchronic study is low because, although it evaluated a range of doses, and included examinations for histopathology and hemocytology, it had relatively small group sizes, omitted some toxicological endpoints (clinical chemistry, and urinalysis), did not identify a NOAEL, and was poorly documented. Confidence in the database is medium since reproductive studies were available, but NOAELs were lacking for some supporting studies. Low-to-medium confidence in the provisional subchronic RfD for aldrin results.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC INHALATION RfC VALUES FOR ALDRIN

No human or animal inhalation data were located, precluding derivation of a subchronic or chronic p-RfC for aldrin.

DERIVATION OF A PROVISIONAL CARCINOGENICITY ASSESSMENT FOR ALDRIN

A cancer assessment, including derivation of an oral slope factor of 17 per mg/kg-day and an inhalation unit risk 4.9E-3 per $\mu g/m^3$, is available for aldrin on IRIS (U.S. EPA, 2003a), precluding derivation of a provisional carcinogenicity assessment for this chemical.

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10-23-2006

Provisional Peer Reviewed Toxicity Values for

Aluminum
(CASRN 7429-90-5)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
i.v.	intravenous
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ALUMINUM (CASRN 7429-90-5)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions or the EPA Headquarters Superfund Program sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

This document has passed the STSC quality review and peer review evaluation indicating that the quality is consistent with the SOPs and standards of the STSC and is suitable for use by registered users of the PPRTV system.

INTRODUCTION

Verified toxicity values for aluminum (Al) and its compounds are unavailable on IRIS or HEAST (U.S. EPA, 2006, 1997), except for a chronic oral RfD of 4E-4 mg/kg-day for aluminum phosphide. However, occupational guidelines and standards have been established for a number of chemical and physical forms of Al, including, from ACGIH, 8-hour TWA-TLVs of 10 mg/m^3 for the compound as a metal dust or oxide, 5 mg/m^3 as "pyro" powders or welding fumes, and 2 mg/m^3 for soluble salts or organic forms of the metal (ACGIH, 1998). From NIOSH, 10-hour TWA-RELs of 10 mg/m^3 are specified for "total" Al dust versus 5 mg/m^3 for the respirable portion (NIOSH, 1994). NIOSH covers all other forms of the metal by identical values to those specified by ACGIH (ACGIH, 1998). OSHA PELs for Al include an 8-hour TWA value of 15 mg/m^3 for "total" metal dust, versus 5 mg/m^3 for the respirable portion (NIOSH, 1994). The U.S. EPA's CARA list (U.S. EPA, 1994) cites a HEA for Al (U.S. EPA, 1987), and ATSDR has updated its toxicological profile of the element (ATSDR, 1998).

The U.S. FDA (2000) has specified a maximum aluminum concentration of 25 mcg/L in large-volume parenterals (LVP) used in total parenteral nutrition (TPN). The FDA regulation applies to all LVPs used in TPN, including but not limited to parenteral amino acid solutions, highly concentrated dextrose solutions, parenteral lipid emulsions, sodium chloride and electrolyte solutions, and sterile water for injection.

Research papers pertinent to the potential toxicological and carcinogenic effects of Al were sought through computer searches of the HSDB, RTECS, MEDLINE and TOXLINE (and its subfiles) databases, covering the time period 1995-1999. The literature searches were conducted in June, 1999.

REVIEW OF PERTINENT DATA

The review by Stokinger (1981) gives an account of Al as an all-pervasive component of products that are central to the daily lives of most Americans. For example, the metal is a crucial part of manufactured products for the building, automobile and container industries, while Al as powder or flake is a component in a number of consumer products, such as paints, fireworks, etc. Al complexes and minerals are used in the brewing and paper industries, and as coagulants for water purification. Aluminum oxide finds application in abrasives, as a catalyst or absorbent, and as a component in fillers. Aluminum chloride is included in cosmetic formulations such as deodorants.

Human exposure to Al arises principally from food and water, through its widespread use in food additives, packaging and cooking utensils and Al-containing medications, particularly antacid, buffered aspirin, anti-ulcer and anti-diarrheal formulations (Marquis, 1989; Lione, 1985). Pennington and Schoen (1995) estimated daily Al intakes of 0.1-0.3 mg/kg-day for infants and children 6 months-6 years of age and 0.1-0.18 mg/kg-day for older children and adults, based on the FDA Total Diet Study (1993) and the U.S. Department of Agriculture Nationwide Food Consumption Survey (1987-1988). These data are in broad agreement with those of Wilhelm et al. (1995) who reported the dietary intake of Al in German children (living in the Duisberg area) as ranging from 0.008 to 0.11 mg Al/kg-day. In addition, these values are consistent with a range of 1-20 mg/day (0.014-0.3 mg/kg -day) for normal oral daily Al intake from food and water reported by other investigators (Ganrot, 1986; Iyengar et al., 1987; Wilhelm et al., 1990). However, users of Al-containing medications can ingest much larger amounts of the element, possibly as high as 840-5000 mg/day (12-71 mg/kg-day) from antacids, 126-728 mg/day (1.8-10.4 mg/kg-day) from buffered aspirins and 828 mg/day (11.8 mg/kg-day) from anti-ulcer compounds when taken at recommended dosages (Lione, 1985).

Toxicokinetics of Aluminum

There is a large amount of information available on the absorption, transfer from tissue to tissue and elimination of Al from the body, including data that have been amassed from studies on either human volunteers or laboratory animals. In general, the chemical appears to be poorly absorbed from the gastrointestinal tract, though the portion of the load that is retained will vary depending on the concentration, the chemical species administered, the fasting or fed state of the

host, gastrointestinal pH, animal model, etc. For example, Yokel and McNamara (1988) administered single oral doses of a number of Al compounds (both water soluble and insoluble) to New Zealand white rabbits and obtained absorbed proportions of the load ranging from 0.27% to 27%. Fractional uptake of Al in humans under normal conditions (i.e., with no intake of large quantities of Al from medicine) was estimated to be 0.1-0.3% assuming an intake of 20 mg Al/day (0.3 mg Al/kg-day) and urinary excretion of 20-50 µg Al/day (0.3-0.7 µg Al/kg-day) (Ganrot, 1986). However, little information is available on the actual mechanism by which the element and its compounds are transported across the brush border. (Wilhelm et al., 1990; Lione, 1985).

Although the overall extent of Al absorption is poor following oral exposure, there may be significant intake of the compound by those taking large amounts of Al compounds in patented remedies. As stated, absorption of Al is influenced by gastrointestinal conditions and content because Al can form various complexes with different solubilities and oxidation states depending on pH and interactions with dietary constituents. At low pH (3-5) in aqueous solutions, the soluble (ionic) forms of the Al prevail (Al^{3+}); at high pH (>8), Al in the form of soluble aluminum oxide is present; and at pH 5-8, the element is predominantly in the form of aluminum hydroxide, which is insoluble (van der Voet and de Wolff, 1986; Wilhelm et al., 1990). Ingested constituents that can influence absorption by forming complexes with Al include phosphate, fluoride, calcium, citrate and lactate. For example, Al is used to bind dietary phosphorus and decrease its absorption as a control for hyperphosphatemia, and citrate and lactate are complexing agents that can significantly increase Al absorption (Slanina et al., 1984, 1985, 1986; Partridge et al., 1989; Domingo et al., 1991; Ittel et al., 1991; Lione, 1985; Wihelm et al., 1990).

A number of recent reports of studies on the gastrointestinal absorption of Al have examined the influence of organic anions such as citrate. In general, the presence of such components appears to enhance the absorption of Al, within narrow limits. For example, Deng et al. (1998) administered a single oral dose of either distilled water, 2 mmoles/L aluminum chloride or 2 mmoles/L aluminum chloride plus 2 mmoles/L sodium citrate to six male Wistar rats/group. Animals were bled at 1, 2 and 4 hours after dosing, then terminated after 6 hours. Inductively coupled plasma (ICP) was used to measure Al concentrations in blood, bone (tibia), kidney, liver and the intestinal wall. Irrespective of treatment, the appearance of Al in the blood of dosed groups peaked after 1 hour, with the concentration of the element at higher levels in those animals receiving citrate in addition to aluminum chloride. In those animals receiving aluminum chloride alone, significant tissue concentrations of the element were restricted to the gastrointestinal wall. Those receiving citrate displayed measurable quantities of the element in several of the other monitored tissues, including bone.

Sutherland and Greger (1998a) used a similar dosing regimen to examine the kinetics of absorption and elimination of Al in male Sprague-Dawley rats that had received a single oral dose of 0, 0.25, 0.5 or 1 mmoles/L/kg body weight aluminum lactate in 1 mL of 16% citrate. Concentrations of Al in serum, liver, kidney or bone (tibia) were measured at various post-dosing time intervals up to 6 hours. Depending on the dose, absorption factors for Al of up to 4.2% of the administered dose were observed, with the greater proportion retained in bone. The authors reported a slower rate of absorption in those animals receiving Al at the higher doses, an

observation potentially indicating reduced gut motility and/or saturation of the transcellular absorption processes at the higher concentrations. Aluminum deposited in kidney and bone appeared to turn-over at a slower rate than in the liver.

The influence of citrate on the gastrointestinal absorption of Al in man was examined directly by Taylor et al. (1998) who administered a drink containing Al and citrate to three volunteers. Aluminum and citrate concentrations were monitored in serial blood and urine samples for up to 24 hours. The kinetics of citrate and Al differed markedly, the former peaking in plasma after 32 minutes, versus 87 minutes for Al. This suggests that Al probably does not cross the gastrointestinal barrier as the citrate. Furthermore, the authors reported that the overall extent of Al absorption had probably not exceeded 1% in their experiment, a finding that contrasts with the higher values reported by Sutherland and Greger (1998a) in Sprague-Dawley rats and by Deng et al. (1998) in Wistar rats.

As discussed in a report by Glynn et al. (1999), gastrointestinal absorption of Al from aqueous media will be almost impossible to predict, because of the likelihood that the element will become absorbed to food particles in the intestinal lumen. Accordingly, depending on the dose, mode of delivery and caloric state of the experimental animal (fed/fasted), significant amounts of aqueous forms of Al will be absorbed only when available binding sites on food have become saturated. This presents an inherently complex overall picture of the element's absorption since, additionally, the normal dietary content of Al will be substantial. Thus, it may be assumed that some sequestered Al will be absorbed along with non-sequestered water soluble forms of the element, while the rest will be retained within the gastrointestinal tract.

Sutherland and Greger (1998b) used their aluminum lactate in 16% citrate dosing regimen to examine the comparative importance of biliary versus urinary excretion of Al. Five to seven male Sprague-Dawley rats/group who had previously received an implanted bile cannula were treated by gavage. Another similarly-treated cohort of five animals/group were housed in metabolic cages immediately after dosing to provide 0- to 3-hour and 3- to 6-hour urine specimens. At termination, all animals were sacrificed and exsanguinated, and tissue, bile and urine samples were measured by graphite furnace atomic absorption spectroscopy. Among the key findings to emerge from this study was the incremental appearance of Al in bile as early as 15 minutes after dosing. However, overall amounts of Al were greater in the 3-hour urine samples than those that had accumulated in bile samples collected within a similar time frame. The fact that control rats excreted 3 times more Al in bile than in urine during the first 3 hours after dosing led the authors to conclude that, at low exposure to Al (in controls receiving Al solely from food), the liver is capable of excreting the element to the bile, a mechanism that becomes saturated as the level of Al administration becomes increased. Thereafter, urinary excretion becomes the primary route of elimination in circumstances of Al overload.

Aluminum can also be absorbed by inhalation as indicated by age-related deposition in the lungs of the general population and exposure-related increased blood and urine concentrations in workers exposed to Al (Bast-Pettersen et al., 1994; Sjogren et al., 1996; Hosovski et al., 1990; Wilhelm et al., 1990; U.S. EPA, 1987). Aluminum occurs primarily in particulate form in the ambient atmosphere and as various dusts and fumes during its production and use. Common forms of inhaled Al include aluminum oxide (alumina; Al_2O_3), pyro powders

(powder and flake Al-treated to reduce surface oxidation), Al welding fume and soluble salts (e.g., aluminum chloride and sulfate) (ACGIH, 1998).

Neurotoxicity as a Primary Toxicological Effect of Aluminum

One of the greatest health concerns regarding Al is its neurological effects. The first evidence for Al-induced neurotoxicity in humans was seen in patients who, as a result of receiving long-term hemodialysis for chronic renal failure, developed a degenerative neurological syndrome (dialysis dementia) characterized by the gradual loss of motor, speech and cognitive functions (Alfrey, 1993). This dementia, attributable to Al in the dialysate, is usually fatal within 6-9 months after the first clinical signs appear. In addition, many patients received high oral doses of Al to act as phosphate binders. Autopsies of these patients revealed increased concentrations of Al in the gray matter and cerebral spinal fluid (CSF) but no evidence of neurofibrillary degeneration (NFD) despite the elevated Al levels. Once the connection between Al and dialysis dementia was established, Al was removed from dialysis fluid and the incidence of dementia rapidly declined, thereby strengthening the argument that Al was a causal agent in dialysis dementia (Ganrot, 1986).

Amyotrophic Lateral Sclerosis (ALS) and Parkinson's Disease (PD) are other neurological diseases which have been associated with Al exposure. ALS is a progressive disease of the Central Nervous System (CNS) that is characterized by an accumulation of neurofibrillary tangles. In Guam, southern West New Guinea and parts of Japan, there is an unusually high prevalence of ALS and PD. This may be related to the natural abundance of Al coupled with the virtual lack of magnesium and calcium in the drinking water supplies and soil of these areas. In a study designed to evaluate effects of high Al and low calcium levels in the diet, much like the conditions associated with Guam and other similar areas, cynomolgus monkeys were placed on a low calcium diet either with or without supplemental Al and manganese (Garruto et al., 1989). Chronic calcium deficiency alone produced neurodegenerative effects, although neurofibrillary changes were most frequently seen in the monkeys on a low calcium diet supplemented with Al and manganese.

Though a cause and effect relationship between Al and three forms of chronic encephalopathy in humans: senile dementia of the Alzheimer type (SDAT, Alzheimer's Disease), endemic Amyotrophic Lateral Sclerosis (ALS) and endemic Parkinsonism-dementia (PD, a mixture of Parkinsonism and senile dementia) has been suggested, there is no firm evidence that it plays a causal role in the development of these diseases (Ganrot, 1986; Lione, 1985). The condition is degenerative and characterized by the progressive loss of speech, motor and cognitive functions, with death typically occurring within 1-6 months. Autopsies of patients revealed increased concentrations of Al in the gray matter and cerebral spinal fluid (CSF), though with no conclusive evidence of NFD or other neuropathological changes despite the elevated Al levels.

The neurotoxicity of Al is well documented in certain animal species. Aluminum induces a spectrum of behavioral abnormalities and brain neurofibrillary degenerative changes in rabbits and cats when injected intracranially or parenterally in high doses, though hamsters and monkeys are less sensitive (Ganrot, 1986; Lione, 1985). Such studies have been designed as models for

the possible neurotoxicological effects of Al in humans. However, it should be noted that the neurofibrillary changes in affected animals differ in morphological detail from those associated with SDAT. As discussed further in the Oral Toxicity section, oral doses of Al can also induce neurobehavioral effects in adult mice and rats and in their developing offspring. In general, such neurotoxic effects of Al appear to be more subtle than those induced through routes of administration that by-pass the gastrointestinal tract, perhaps reflecting the lower doses of Al reaching the brain.

Recent reports of studies on the effects of Al on neurotoxicity in animals have sought to define the biochemical mechanisms that are impaired when Al crosses the blood-brain barrier. However, a unifying concept has yet to emerge, though the passage of the element into various regions of the brain has been clearly demonstrated (Deloncle et al., 1995). Among the many biochemical functions and processes that appear to be perturbed by the presence of Al in the brain are the peroxidation status of biological membranes (Katyal et al., 1997; Deloncle et al., 1999), inhibition of the neuronal glutamate-nitric oxide-cyclic GMP pathway (Cucarella et al., 1998), and the marked reduction of protein- and non-protein-bound thiols and the specific activity of Na^{+}/K^{+} and Mg^{++} ATPases (Katyal et al., 1997). The relative importance of each of these mechanisms and how (or whether) they interact to bring about the observed physiological changes remains unclear.

Other Effects of Aluminum

Osteomalacia was frequently observed among long-term dialysis patients with neurological signs and is commonly attributed to Al overload (Ganrot, 1986; Lione, 1985). This bone condition is characterized by widened osteoid (unmineralized bone matrix) with no fibrosis, reduced mineralization rate, skeletal pain and a strong tendency for fractures, lack of response to vitamin D therapy and increased Al concentration in bone. Effects on bone histology and elevated bone Al levels have also been observed in patients with normal renal function who received total parenteral nutrition with Al-contaminated casein as a protein source, and in parenteral Al loading induced osteomalacia in rats and dogs (Lione, 1985).

There are a number of published reports of studies in which the carcinogenicity of aluminum compounds has been evaluated. These include oral exposure studies in which the compounds were made available to experimental animals in the drinking water or diet (Schroeder and Mitchener, 1975a,b: Oneda et al., 1994), and inhalation epidemiological studies, in which the incidence of tumor formation in persons exposed to aluminum-containing dusts and fumes in an occupational setting was compared to unexposed individuals (Spinelli et al., 1991; Thériault et al., 1984, 1990; Armstrong et al., 1986; Tremblay et al., 1995; Selden et al., 1997; Cullen et al., 1996; Dufresne et al., 1996; Ronneberg and Langmark, 1992). However, it has been generally concluded that the inferential association between exposure to Al and marginally increased incidences of tumors of the bladder and/or lung are confounded because of the co-exposure of subjects in such settings to other harmful and potentially carcinogenic substances, such as polycyclic aromatic hydrocarbons (PAHs and coal tar pitch volatiles (CTPV) (Ronneberg and Langmark, 1992). Therefore, the issue of the potential carcinogenicity of Al compounds remains uncertain.

Human Studies

Oral Exposure

Few reports have been identified that address the toxicological effects of Al in humans exposed orally. Furthermore, in a review, Reiber et al. (1995) pointed to the conflicting findings that have been reported when the incidence of neurological symptoms has been assessed in relation to Al exposure in either cross-sectional, ecological or case-control epidemiological studies. Among the more recent studies that have used this approach, Martyn et al. (1997) discussed the findings of a case-control study involving 441 men in England and Wales who were afflicted with either Alzheimer's disease, brain cancer, dementia or other neurological conditions. Assessing the historical exposure of these subjects failed to establish a link between Al in drinking water at the prevailing concentrations (below 0.2 mg/L) and the incidence of one or more of the conditions under investigation. No data were located regarding the oral carcinogenicity of aluminum compounds in humans.

Inhalation Exposure

Neurobehavioral effects were evaluated in a group of 87 Al foundry workers who were occupationally exposed to 4.6-11.5 mg/m^3 Al fumes and dust for a mean of 12.0 years [standard deviation (SD) 4.5 years, shortest exposure 6 years] compared to an unexposed control group (n=60) who were matched for age, job seniority and social status to exposed subjects (Hosovski et al., 1990). It is reported that environmental Al concentrations were measured for each worker separately during the winter and summer, implying that personal sampling may have been used and that the contributing concentrations are time-weighted averages. In certain places, the number of particles ranged as high as 329-1020/cm^2 air, and dust particle sizes were ≤1, 1-5 and ≤5 microns in 65.6, 26.6 and 7.6% of the samples, respectively. Tests of psychomotor ability (simple and complex reaction time, oculomotor coordination), intellectual ability (Wechsler intelligence, performance intelligence and verbal intelligence quotients and Wechsler subtests on information processing, memory, understanding, calculation, coding, picture completion, picture grouping, object assembling, assembling of cubes and common concepts) and cerebral damage (Bender visual motor test) were conducted. Performance of the exposed workers was found to be significantly ($p<0.02$) impaired on the complex reaction time, oculomotor coordination, memory, coding, picture completion and object assembling tests. However, the investigators noted that the performance deficits had no clinical manifestations, and that additional studies were probably needed to confirm the possibility of cerebral damage. The study yielded a lowest available non-duration adjusted LOAEL of 4.6 mg Al/m^3 for psychomotor and cognitive impairment during repeated 8-hour occupational exposures (Hosovski et al., 1990), that could be corrected for discontinuous exposure (10 m^3/20 m^3 and 5 days/7 days) to yield a $LOAEL_{HEC}$ of 1.64 mg/m^3 Al.

Aluminum oxide powders were administered to Canadian miners (mainly underground gold and uranium miners) in known exposures as a means of prophylaxis against silicosis (Stokinger, 1981; Rifat et al., 1990). Data in which more than 42 million Al treatments (≈150,000 man-years) had been given over a period of 27 years ending in 1971 were reviewed

by Stokinger (1981). The effectiveness of this treatment is uncertain but no lung damage or other ill effects (not specified) were observed. The powders (McIntyre powder) were prepared by grinding Al pellets so that 96% of the particles were ≤1.2 μm in diameter. During this process most of the particles became oxidized to aluminum oxide; the powder contained 85% aluminum oxide and 15% elemental Al. According to Stokinger (1981), recommended exposure concentrations were 30,000 particles of respirable size per cubic centimeter (ppcc) for 10 minutes/day or 10,000-20,000 ppcc for 20 minutes/day (total treatment days not indicated). Rifat et al. (1990) stated that the recommended exposure was to an Al dust concentration of 20,000-34,000 parts per ml air in the miners' changing rooms before each shift for 10 minutes. Stokinger (1981) reported that the 30,000 ppcc concentration corresponds to ≈350 mg/m^3, which is equivalent to an 8-hour average concentration of 2 mg/m^3. Based on the Stokinger (1981) data and the fact that one unspecified study used levels 30 times higher than advised, the TLV of 10 mg/m^3 is recommended for Al dust (ACGIH, 1998).

The increasing awareness of the potential neurotoxicity of Al has resulted in a number of investigations of the incidence of neurotoxicological symptoms in Al workers. Although treatment with McIntyre powder had not produced apparent adverse effects, a neurobehavioral evaluation of male miners (261 exposed to McIntyre powder, 346 unexposed) who started working between 1940 and 1979 (additional duration data not reported) was performed in 1988-1989 (Rifat et al., 1990). There were no significant differences between exposed and unexposed miners in reported diagnoses of neurological disorder. Results of cognitive testing (Mini-Mental State Examination for general cognitive function, Ravens colored progressive matrices test for reasoning and Symbol Digit Modalities Test for spatial perceptual accuracy and information processing), however, showed that the exposed group had significantly ($p \leq 0.001$) impaired performance on at least one test, and when all test scores were summed. Also, the likelihood of scores in the impaired range increased with duration of exposure.

A neurologic syndrome was described in Al smelting plant potroom workers (White et al., 1992). Twenty-five men were evaluated for suspected work-related neurologic illness based on findings in three patients studied previously. The average duration of employment was 18.7 years (SD, 3.6; range, 12-23 years), 15 of the patients were working at the time of evaluation, and 10 had taken early retirement or medical leave due to workplace-related symptoms (mean length of time since exposure was 1.3 years ranging from 0.2-5 years). Quantitative exposure level data were not reported, but 21 of the workers had been employed in the potroom prior to installation of fume hoods for a mean duration of 5.3 years (range 3-7 years). Symptoms most often reported by the patients were frequent loss of balance (88%), memory loss (84%) and joint pain (84%); other symptoms included dizziness (80%), numbness (80%), parasthesias (72%) and tremor (68%). Neurologic examinations showed mild to moderate signs of lack of coordination (tremor, dyssynergy of upper extremity limb movement or ataxia) in 84% of the patients. Neuropsychologic effects were evaluated in 21 of the patients using the Wechsler Adult Intelligence Scale-Revised (intellectual functioning), Wide Range Achievement Test-Revised (academic functioning), Halstead-Reitan Neuropsychological Test Battery (neuropsychological assessment) and Minnesota Multiphasic Personality Inventory (personality functioning). Memory function was assessed with the Wechsler Memory Scale (14 patients) and Wechsler Memory Scale-Revised (8 patients). The memory function evaluation showed mild to moderate impairment on subtests of immediate recall for verbal or visual information (70-75% of the

tested patients) and delayed verbal or visual recall (50-70%). Other effects included mild or moderate impairment on Halstead-Reitan tests of abstract reasoning and flexible thinking (42% of the tested patients), memory for tactile information (53%) and sustained attention and discrimination of tonal and speech patterns (44 and 64%, respectively). On the Wechsler memory and Halstead-Reitan tests, mild and moderate impairment was defined as scores 1.5-2 and ≥2 standard deviations below the mean of the normal population, respectively. Most (89%) of the patients tested with the Minnesota Multiphasic Personality Inventory had abnormally elevated scores (≥2 SDs above the population mean) indicative of clinical depression. Significant positive correlations were found between severity of incoordination (signs and symptoms) and degree of exposure (qualitative) before the introduction of the ventilation hoods.

White et al. (1992) noted two other studies that described neurologic problems among Al smelter workers. Thus, an evaluation of 444 electrolysis workers found neuropsychiatric changes in 123 (28%), "neurotic syndromes" in 89 (20%) and "slight pyramidal and cerebellar changes" in 39 (9%) (Langauer-Lewowicka and Braszczynska, 1983). In the second study, symptoms including mental confusion, concentration and memory problems were described in six potroom workers (Cawthon, 1988).

In another study of Al production workers, neuropsychological effects were assessed in 38 elderly men who had been exposed for at least 10 years exclusively in the potroom (n=14), foundry (n=8) or other manual labor departments of the same plant (n=16, control group) (Bast-Pettersen et al., 1994). The mean ages and employment durations of the groups were in the ranges of 62.5-63.5 and 19.2-19.6 years, respectively. The men were examined soon after or just before retirement in 1991. Limited environmental monitoring data indicates that the degree of Al exposure varied between the subgroups and over the years. Average annual total dust concentrations in the potroom were reduced significantly from 9.5 mg/m^3 in 1977 to 3.0 mg/m^3 in 1990. Aluminum levels were not specifically reported, but the average Al content in the total potroom dust was approximately 20% by weight; other constituents of the dust included fluoride and coal tar pitch components. Data from an Al uptake/excretion study of workers from the same plant indicated that the level of Al exposure was approximately 8 times higher in the potroom than in the foundry (0.48 and 0.06 mg/m^3, respectively) (Drablos et al., 1992). Medical examinations (including lung function, standard laboratory tests and serum and urine Al concentrations) and a neuropsychological test battery were performed. The battery assessed six mental functions (neuropsychiatric symptoms, motoric/sensoric, reaction time, psychomotor speed/efficiency, memory/learning and intelligence) using a questionnaire and 15 different objective tests. Some subtle deficits were found in potroom workers that were not considered to be indicative of a significant neurological syndrome. The findings in potroom workers included a subclinical tremor as indicated by results of a static steadiness test [time scores on one of two test indices were significantly worse in comparison with the control group (84% slower, p=0.03)], and possible tendencies (i.e., test results that were about 1 SD below normal mean values but not statistically significant) for increased risk of impaired visuospatial organization (Block Design subtest of the Wechsler Adult Intelligence Scale) and psychomotor tempo (one Halstead ReitanTrail Making test). Although these findings were not considered to be indicative of a neurologic syndrome, it was suggested that they may be early signs of CNS impairment. Additionally, the finding of a subclinical tremor seems to be consistent with the tremor and other

signs of incoordination observed in 84% of the patients in the White et al. (1992) study summarized above.

Studies of Al welders are consistent with those of Al smelter workers in indicating that occupational exposure to Al can be neurotoxic. CNS function was evaluated in 17 welders who had an average of 15 years (range 5-27 years) experience, with the last 4 years exclusively with Al (Hanninen et al., 1994). Most of the welders had equipment that ventilated the welding masks but the respiratory protection was not always used. The assessment included measurements of serum and urinary Al, neuropsychological tests (simple reaction time, three tests for psychomotor speed, two tests for visual and spatial ability, four memory tests and two verbal ability tests), a symptom questionnaire and neurological interview, quantitative electroencephalography (QEEG) and P-300 event-related auditory-evoked responses. Serum and urine Al levels were 3.5 and 8.5 times higher, respectively, than an unexposed reference population. The welders performed normally on the neuropsychological tests, although correlation analysis of test scores and exposure parameters showed weak negative associations between the four memory tests and urinary Al level and a positive association between the variability (standard deviation) of visual reaction times and serum Al levels. Analysis of the QEEG data showed that serum Al levels were positively correlated with the amount of delta and theta activity in the brain frontal region and negatively correlated with the amount of alpha activity in the frontal region. Results of this study (disturbances of memory and attention, QEEG changes similar to those in patients with Al encephalopathy) were interpreted as consistent with known CNS effects of Al, but insufficient for establishing a definite relationship between Al exposure and effects.

In another study of Al welders, CNS evaluations were performed on 38 men who had at least 5 years exposure (mean 17.1 years) and a control group of 44 railway track welders exposed to metal fumes other than Al (mean 13.8 years) (Sjogren et al., 1996). Limited monitoring data indicated that the median exposure to welding fumes was 10 mg/m^3 and that the Al content was 40% of the total fumes. Symptom questionnaires, psychological tests (simple reaction time, finger tapping speed and endurance, digit span, vocabulary, tracking, symbol digit coding, cylinders, olfactory threshold and Luria-Nebraska motor scale), neurophysiological indices [electroencephalography, P-300 auditory-evoked responses, brain-stem auditory evoked responses and diadochokinesis (ability to perform rapidly alternating movements with one limb)] and blood and urine Al levels were assessed. The blood and urine Al concentrations were approximately 3 and 7 times higher in the Al welders than in the controls, but there were no clear correlations between duration of exposure to Al and concentration of Al in blood or urine. The Al welders reported more acute CNS symptoms (e.g., concentration difficulties) and had decreased motor function in five tests (finger tapping in non-dominant hand, two tasks from the Luria-Nebraska motor scale, pegboard peg movement with dominant hand, amplitude of diadochokinesis in dominant hand) when compared to the control group. Urinary Al concentration was significantly correlated with acute CNS symptoms, but not with any of the performance measures. To further study possible dose-effect relationships of Al exposure, the Al welders were combined with the control group and divided into three exposure categories according to urinary Al levels, using the 50^{th} and 75^{th} percentiles as category dividers. The group with the highest mean urinary Al level had significantly more acute CNS symptoms and significantly reduced performance on one of the motor function tests (a Luria-Nebraska motor

scale task) when compared to the group with the lowest Al level. In an earlier study of 65 welders with ≥10 years of exposure to Al fumes, the highest exposure category (based on exposure duration) was 2.8 times more likely than unexposed workers to have three or more neuropsychiatric symptoms (Sjogren et al., 1990).

A body of epidemiological evidence has pointed to an increased incidence of cancers of various kinds in workers employed in the aluminum production industry. However, as discussed in a review by Ronneberg and Langmark (1992), the concern about potential cancer hazards in the aluminum industry has primarily arisen because of exposures to polycyclic aromatic hydrocarbons (PAHs) and coal tar pitch volatiles (CTPVs) rather than to Al *per se*. Thus, while a number of studies have provided inferential data linking occupationally exposed aluminum workers with an increased risk of developing tumors of the bladder or lung (Gibbs, 1985; Thériault et al., 1984, 1990; Armstrong et al., 1986; Spinelli et al., 1991; Pearson et al., 1993; Tremblay et al., 1995), it would be unwise to ascribe any excess tumor formation to the effects of Al in view of the concurrent exposure to well-documented carcinogenic PAHs such as benzo(a)pyrene. The issue is further complicated by the likely exposure of production workers to other substances such as fluorides, sulfur dioxide, aromatic amines and asbestos (Ronneberg and Langmark, 1992; Tremblay et al., 1995; Dufresne et al., 1996), and to the possible effects of cigarette smoking in affected individuals. Consequently, these studies have failed to provide direct evidence for the carcinogenicity of Al fumes and dusts.

Animal Studies

Oral Exposure

Numerous subchronic animal studies were located in the biomedical/toxicological literature but only those that define the threshold region of the oral dose-response relationship are summarized in this paper. A major limitation of many of the studies of Al toxicity is the lack of complete information on total dietary (e.g., food and drinking water) intake of Al and of other elements that are known to effect Al biokinetics and toxicity (e.g., calcium and magnesium). Estimated or reported dosages used in studies in which Al content of the basal diets are not reported must be assumed to underestimate the actual experimental dosages. The magnitude of the underestimate may be considerable. For example, a range of Al contents of 200-1200 mg Al/kg for commercial grain-based diets (Golub et al., 1992b) would provide 30-200 mg Al/kg bw-day in a subchronic or chronic mouse bioassay [based on U.S. EPA (1988) default values for body weight and food intake]. On this basis, studies in which complete dietary Al intakes were not reported or could not be estimated may provide some information about the hazards of oral exposure to Al but are inappropriate for establishing NOAELs or LOAELs for the critical effect of Al. NOAELs and LOAELs from studies that provide estimates of total Al dosages, or otherwise provide information relevant to determining the NOAEL/LOAEL boundary for the critical effect of Al are presented in Table 1 and are summarized below.

Systemic toxicity

Groups of 10 female Sprague-Dawley rats were administered aluminum nitrate nonahydrate in sugar-containing drinking water at doses of 360, 720 and 3600 mg/kg-day (26, 52

and 259 mg Al/kg bw-day, respectively) for 100 days (Domingo et al., 1987). A control group received sugar-containing distilled water only. Sugar had been added to the drinking water of all groups to reduce the taste-aversive effects of Al. The level of Al in the diet was not reported. Animals were housed in metabolic cages to facilitate the collection of fecal and urine samples. Food and water consumption were measured daily, body weights were noted weekly and blood samples were taken at monthly intervals and at termination to monitor clinical chemistry and hematological parameters. At termination, all animals were necropsied, and the weights of major organs (brain, heart, lungs, kidneys, liver and spleen) were monitored. Aluminum concentrations were measured in various tissues, pieces of which were processed for histopathological examination. A significant decrease ($p<0.05$) in body weight gain was observed in the 259 mg Al/kg-day group, attributed by the authors to decreased food intake. Overall, no consistent variations in hematological (hemoglobin, hematocrit) or clinical chemistry (SGOT, SGPT, alkaline phosphatase, urea, creatinine, total protein, cholesterol, glucose) parameters were observed. No histopathological alterations in the heart, liver, kidney, spleen, brain and cerebellum were observed. Interpretation of these data was complicated by the concurrent exposure of the rats to high doses of nitrate of up to 475 times the RfD for nitrate (1.6 mg nitrate-nitrogen/kg-day) which is based on methemoglobinemia in humans (U.S. EPA, 1999). Therefore, because of nitrate co-exposure, the absence from the study design of a food-restricted control group and uncertainty surrounding the contribution of Al in food, the apparent effect of Al on body weight gain cannot be conclusively attributed to Al alone.

Some recent studies have identified a number of potential toxicological responses in laboratory animals exposed orally to Al compounds in a subchronic or chronic dosing regimen. In most cases, however, only one dose level was employed in the study compared to controls, and since the amount of Al in the diet was not given, the resulting dose level represents an incremental dose of Al compared to that of controls as baseline. However, while these studies may offer inadequate quantitative dosimetric information for NOAEL/LOAEL identification and consequent RfD development, they provide an qualitative indication of a range of potential toxicological responses that might be induced in humans exposed to the element. For example, Garbossa et al. (1998) studied the potential for water-soluble Al to affect the erythropoietic integrity of late erythroid progenitor cells in the bone marrow. Three groups of five male Wistar rats/group were either (1) gavaged with citrate at a dose of 1.0 μm Al/g-day (27 mg/kg-day), 5 days/week, for 15 weeks, (2) had drinking water containing 100 mmol Al/L made available to them as the citrate for the same length of time or (3) maintained as controls. As calculated by the authors, the dose associated with the applied concentration of Al in drinking water approximated to 14-17 μmol/g-day (420 mg/kg-day). Rats had access to a standard chow diet, though with no indication of the baseline concentration of Al provided therein. At the end of the in-life phase of the study, all rats were sacrificed, and samples of blood were obtained for hematological investigation. Femoral bone marrow cells were flushed with physiological medium, stimulated with recombinant human erythropoietin, then monitored for the comparative incidence of colony-forming units-erythroid (CFU-E). Further tests were carried out to monitor the osmotic fragility and average life-span of erythrocytes from each test group. The animals in the group receiving Al at the higher dose showed decreased hematocrit, hemoglobin concentration, median osmotic fragility and erythrocyte life-span values compared to controls. The content of Al increased in the serum and bone of both exposed groups, the distribution of concentrations in bone correlating inversely with the extent of an animal's CFU-E development.

That Al in drinking water may have the ability to cause histopathological changes and altered hepatic enzyme activities was suggested by Basu et al. (1997) who made available aluminum chloride in drinking water to groups of eight male Sprague-Dawley rats at a dose of 50 mg/kg-day (10.1 mg Al/kg-day) for 40 days. Additionally, other groups of similarly-treated rats received drinking water containing either 0, 50, 100, 200 or 400 ppm (mg/L) added calcium (Ca), as the chloride. The authors reported increased specific activities of acid and alkaline phosphatases in liver 10,000 x g supernatants from Al-receiving animals versus controls, and in alkaline phosphatase activity in equivalent kidney preparations. The presence of Ca in the drinking water appeared to reverse these changes, plus the accompanying histopathological features associated with them.

Konishi et al. (1996) examined the ability of Al and Ca to cause opposite and potentially harmful effects in laboratory animals, in relation to the well-documented association between Al and the onset of osteomalacia. Male STD Wistar rats were divided into four groups (n=4), receiving either (1) a normal diet (Group I), (2) a normal diet supplemented with Al (Group II), (3) a Ca-deficient diet (Group III) or (4) a Ca-deficient diet with supplemental Al (Group IV), for 10 weeks. Blood samples were taken at termination, and then animals were perfused with paraformaldehyde/glutaraldehyde fixative. Levels of Ca, iron (Fe) and Al in serum and bone were measured by atomic absorption spectrophotometry, and sections of the resected right tibia were prepared for histopathological examination after decalcification in 5% formic acid in 10% formalin.

There were statistically-significant changes in body weight gain when those of groups 3 and 4 were compared to animals from groups 1 and 2, the values for the latter groups remaining constant from about 4 weeks of dosing. In discussing their histopathological findings, the authors described no decrease in the thickness of cortical bone in Group II compared to control, while bone specimen from Groups III and IV showed “an increase in osteoid as well as osteoblasts and osteoclasts”, in addition to other disturbances of ossification. Such effects were considered to suggest bone fragility, with changes being more marked in Group IV compared to III. The amount of Al in the tibia of exposed rats was significantly greater in Group II than in Group I, whereas the average levels in Groups III and IV showed a further increase in Al deposition, most notably in group IV. There were also differences among the groups in the concentration of Fe in bone (tibia), and in the concentrations of Al, Ca, Fe and the levels of parathyroid hormone in blood. The authors concluded that Ca deficiency appeared to potentiate the deposition of orally administered Al in bone, and the attendant inhibition of ossification. Iron deposition was also thought to play a role in the osteogenic disturbance, where Ca is deficient.

A histopathological investigation indicated profound changes in the cerebrovascular and neuronal integrity when male Long-Evans rats (n=9) were exposed for 52 weeks to 0.5 ppm aluminum fluoride in drinking water (Varner et al., 1998). This corresponded to an Al dose of 0.019 mg/kg-day, based on a default drinking water consumption of 0.057 L/day, and a default body weight of 0.472 kg for male Long-Evans rats (U.S. EPA, 1988). Duel control groups received either NaF (fluoride controls) or double distilled deionized water. Tissue levels of Al were measured in brain, liver and kidney by the use of a direct current plasma technique.

Animals receiving aluminum fluoride showed poor survival compared to the other groups, with 6/9 having died by week 48. The tissue concentrations of Al were increased in the brain and kidney compared to both the control groups, with Al-fluorescence being used to demonstrate that Al deposition was mostly in the vasculature. Morphological and histopathological changes due to treatment were apparent in the liver, kidney and spleen. Some changes in neuronal integrity were also evident in the hippocampus and neocortex. Other cytological changes in the brain were associated with chromatid clumping, pyknosis and vacuolation.

A report by Somova et al. (1997) describes a study in which 10 male Wistar rats/group received either 0, 5 or 20 mg/kg-day aluminum chloride by gavage in water for 6 months. At termination, all animals were exsanguinated, then subjected to a necropsy in which excised pieces of liver, kidney and cardiac and skeletal muscle were taken for histopathological examination. Pieces of brain were examined by electron as well as light microscopy, and all tissues were monitored for Al concentration by atomic absorption spectrophotometry. As tabulated by the authors, Al in plasma and all of the listed tissues was dose-dependently increased to levels that were statistically significantly greater than controls. However, though described in qualitative terms and illustrated photographically, the Al-induced lesions did not receive a quantitative treatment in the report. Thus, while at least some of the low dose rats displayed NFD (neuro fibrillar degeneration) of the hippocampal region of the brain, insufficient data are provided in the report to apply this observation to the identification of a NOAEL or LOAEL.

Dietary experiments

Six Beagle dogs/sex/group were fed a diet providing either, in males, 0, 118, 317 or 1034 mg/kg-day sodium aluminum phosphate (0, 3.4, 9.0 or 29.4 mg Al/kg-day, respectively) or, in females, 0, 112, 361 or 1087 mg/kg-day sodium aluminum phosphate (0, 3.2, 10.3 or 30.9 mg Al/kg bw-day, respectively), for 6 months (Katz et al., 1984). No information was available on the level of Al in the diet, and no compound-related effects on body weight gain, hematological and clinical chemistry parameters (parameters not specified) or histopathological endpoints (major organs and tissues examined) were observed. A highest NOEL of 30.9 mg Al/kg-day could be tentatively identified in this study, but this would not include the contribution of Al from the basal diet, nor reflect the identification of any toxicological effects, since the NOEL occurred at the upper limit of the dose-response curve.

Neurotoxicity

A number of studies have been reported in which neurotoxicological/neurobehavioral effects have been explicitly evaluated. In others, the effects of Al on neurological developmental have been addressed. For example, Golub et al. (1989) fed diets containing Al as the lactate at 25 (controls), 500 or 1000 mg Al/kg diet (3.3, 65 or 130 mg Al/kg-day) to groups of 15 female Swiss-Webster mice for 6 weeks (Golub et al., 1989). No mice were exposed to lactate alone. While no statistically significant differences in food intake or body weight gain were observed, mice fed the highest Al concentration gained less weight than the controls or low-dose group. As reported by the authors, a significant decrease (20%) in spontaneous motor activity (i.e., total, vertical and horizontal movement) was observed in the 130 mg Al/kg-day group. Activity in the

65 mg Al/kg-day group was not significantly different than the controls. Thus, the highest NOAEL is 65 mg Al/kg-day and the LOAEL is 130 mg Al/kg-day.

Neurobehavioral effects of aluminum lactate were evaluated in groups of 12 female N:NIH Swiss-Webster mice (4.5-5.5 weeks old) that were fed 25 (controls) or 1000 mg Al/g diet for 90 days (Golub et al., 1992a). Based on a food factor of 0.19 kg diet/kg body weight/day calculated using an algorithm relating food consumption to body weight (U.S. EPA, 1988) and reported body weight data (the time-weighted average weight is 25.4 g), the dosage in the treated mice is estimated to be 190 mg Al/kg bw-day. No mice were exposed to lactate alone. A neurobehavioral test battery used by Donald et al. (1989) was administered at the beginning of the experiment (day 0) and after 45 and 90 (±3) days, with motor activity evaluated at the latter two time points. Aluminum levels were measured in brain, femur and liver at the end of the exposure period.

Body weight was significantly increased in the treated mice but no exposure-related changes in food intake or overt signs of neurotoxicity were observed. Results of the neurobehavioral tests showed significantly decreased hindlimb grip strength at 90 days, decreased air puff startle response at 90 days and decreased auditory startle response at 45 days in the treated mice. Spontaneous motor activity was reduced at 90 days as indicated by decreased total activity counts, horizontal activity counts and percentage of intervals with high activity counts. Aluminum concentrations in the brain and liver were increased approximately 3-fold in the treated mice, but brain and liver lipid peroxidation indices were not altered.

Male Wistar rats (6-8 per group) were exposed continuously for 6 months to food containing 1.52 mg Al/kg (normal diet) or 1000 mg Al/kg as aluminum chloride with citrate (Florence et al., 1994). The average daily Al intake was estimated to be 0.13 or 84 mg Al/kg bw-day, assuming a body weight of 0.305 kg (arithmetic mean of default mature weight of male Wistar rats and the starting weight in this study of 0.11 kg) and a food intake of 0.026 kg food/kg bw-day, calculated using an algorithm relating food intake to body weight (U.S. EPA, 1988). The citrate content of the diet was in a 1:1 stoichiometric proportion to Al, therefore, the estimated daily intake was 598 mg/kg-day. Rats exposed to Al developed histopathological abnormalities in brain tissue, not specific to any brain region, characterized by extensive cytoplasmic vacuolization in astrocytes, swelling of astrocytic processes, particularly of astrocyte end-feet abutting blood vessels. Neurons also exhibited vacuolization and nuclear inclusions. Although no specific behavioral assays were reported, the investigators noted that "no significant behavioral changes were observed". Accordingly, the functional significance of the histopathological lesions is uncertain. The lesions appear to differ from the NFD observed with parenteral Al exposures (Kowall et al., 1989; Wakayama et al., 1993); or from exposures to Al in combination with calcium deprivation (Garruto et al., 1989; Kihira et al., 1995; Mitani, 1992). The LOAEL for histopathological changes in the brain was 84 mg Al/kg-day.

Male Sprague-Dawley rats (40 per group) were exposed in drinking water to 0, 50 or 100 mg Al/kg bw-day as aluminum nitrate with citric acid for 6.5 months beginning at 21 days of age, 8 months of age or 16 months of age (Domingo et al., 1996). The citric acid dosage was 355 or 710 mg/kg-day in the 50 or 100 mg Al/kg bw-day groups, respectively. Controls did not receive citric acid. Dietary Al intake was not reported; the rats were maintained on Panlab rat

chow. Animals from control and exposed groups were subjected to a number of neurobehavioral tests, and at termination, Al levels were measured in various excised regions of the brain. The authors observed the highest Al levels in the olfactory bulb and rhachidical bulb, while the cortex and thalamus were the regions showing the lowest Al content. However, compared to controls, there were no significant effects ($p>0.05$) of Al (with citric acid) on spontaneous motor activity (open-field) or passive avoidance operant training or performance (grid floor shock, light/dark shuttle box). Thus, the NOAEL was 100 mg Al/kg-day with citric acid; although this does not include the Al contribution from food. This study is listed on Table 1 because the NOAEL, although probably underestimated because of unreported Al intake from food, is still lower than the LOAELs from other studies.

Groups of six male albino rats were administered 0 or 25 mg Al/kg bw-day as aluminum nitrate in normal saline by gavage, 10% ethanol in drinking water, or 25 mg Al/kg bw-day by gavage combined with 10% ethanol in drinking water, 6 days/week for 6 weeks (Flora et al., 1991). The level of Al in the diet was not reported. Urinary Δ-aminolevulinic acid (ALA), blood ALA-dehydratase (ALAD), blood zinc protoporphyrin (ZPP), glutamic oxaloacetic transaminase (GOT) and glutamic pyruvic transaminase (GPT) in serum and liver and brain biogenic amines and their metabolites [dopamine (DA), norepinephrine (NE), 5-hydroxytryptamine (5-HT), homovanillic acid (HVA) and 5-hydroxyindolacetic acid (5-HIAA)] were evaluated at the end of the treatment period. Treatment with Al alone caused significantly increased blood ALAD ($p<0.01$), decreased liver GPT ($p<0.05$), decreased brain DA ($p<0.01$), increased brain NE ($p<0.05$) and decreased brain 5-HT ($p<0.05$). Compared to treatment with Al alone, concurrent exposure to ethanol and Al produced significantly decreased ALAD, increased ALA, increased ZPP, increased liver GPT, increased serum GOT and increased brain HVA. Significant changes found only in the combined Al and ethanol group included increased serum GPT, increased brain NE and decreased brain 5-HT. Treatment with ethanol alone only inhibited blood ALAD. The rats were co-exposed to relatively high levels of nitrate [comparable to those in the Domingo et al. (1987) subchronic study], but it seems likely that some of the changes (i.e., effects on brain chemicals) are related to aluminum which is known to be neurotoxic. Because the toxicological significance of the changes is unclear due to lack of evaluation of neurobehavioral performance and other endpoints, there is uncertainty whether the 25 mg Al/kg-day dose is a NOAEL or a LOAEL, an uncertainty compounded by the absence of information about the level of Al in the basal diet.

Reproductive/developmental toxicity

A number of studies have been carried out to examine the effects of Al compounds on developmental toxicity, particularly their effects on postnatal neurobehavioral development. For example, Bernuzzi et al. (1989) exposed groups of 6-12 pregnant Wistar rats to aluminum chloride or aluminum lactate in the diet on gestational days 1 through 21. The rats received nominal daily doses of 0, 100, 300, 400 mg Al/kg as aluminum chloride or 0, 100, 200 or 400 mg Al/kg as aluminum lactate. No rats were exposed to lactate alone, and information regarding level of Al in the basal diet was not reported. On the average, there was a less than 10% decrease in maternal body weight gain and no effect on food or water intake. No significant difference in litter size was observed. However, postnatal mortality increased 55% and 26% in offspring of the rats exposed to 300 or 400 mg Al/kg-day, respectively. The offspring of dams

fed ≥300 mg Al/kg-day weighed significantly less than controls on postnatal day 1. Decreased body weight was also observed on postnatal days (PD) 4 and 14 in the offspring of rats fed 400 mg Al/kg-day as aluminum lactate. The following tests were used to assess neuromotor development (maturation): righting reflex, grasping reflex, negative geotaxis, suspension test and locomotor coordination. The tests were performed on PDs 4, 6, 9, 12 and 20, respectively. Impairment of neuromotor development (righting and grasping reflexes) was observed in the pups exposed to ≥200 mg Al/kg-day. Impaired grasping reflex was also observed in the 100 mg/kg-day aluminum lactate group. Offspring of rats fed 400 mg/kg-day also exhibited altered performance on the locomotor coordination test.

A follow-up study by the same research group found that ingestion of 400 mg Al/kg bw-day as aluminum lactate had no effect on postnatal mortality, body weight and righting and grasping reflex tests (Muller et al., 1990), although significant differences between control and exposure groups were noted in locomotor coordination and operant conditioning tests. Significant differences between controls and exposed groups in the negative geotaxis test were limited to those pups of dams treated during the second and third weeks of gestation, a finding interpreted by the authors to indicate the possibility of long-term effects on the central nervous system of trans-placenta exposure to Al during a later organogenic phase. According to Muller et al. (1990), the contradictions between this and their earlier study (Bernuzzi et al., 1989) could be related to environmental modifications. In particular, the mothers and pups were much more protected in the Muller et al. (1990) study than in the previous one because they were housed in plastic cages instead of wire mesh cages and received cotton to build nests. Body temperature of the pups, therefore, may have been more adequately maintained in the Muller et al. (1990) study. As discussed in this study, toxicity in pups can be confounded by insufficient body temperature, and delayed pup weight gain could explain the differences in neuromotor performance.

Muller et al. (1990) administered diets supplemented with 0 or 400 mg Al/kg bw-day as aluminum lactate to groups of 6-9 pregnant Wistar rats on days 1-7, 1-14 or 1-21 of gestation. No rats were exposed to lactate alone, and information regarding level of Al in the basal diet was not reported. Neuromotor development was assessed on postnatal days 4, 6, 9, 12 and 20 using tests of righting reflex, grasping reflex, negative geotaxis, suspension and locomotor coordination, respectively. Learning ability was also tested on PD 65 using operant conditioning. No effects on maternal body weight or food intake were observed in dams exposed on gestational days 1-7 or 1-14. In the dams exposed on gestational days (GD) 1-21, a significant decrease in maternal body weight (26 and 35%, respectively) was observed on days 16 and 19 of gestation. Decreased food intake was also observed on day 19 of gestation. No effects on litter size, postnatal mortality or postnatal body weight were observed. Impairment of neuromotor development ($p<0.05$) was observed in two of the five tests (negative geotaxis and locomotor coordination); no differences between the three treated groups were observed. For the operant conditioning test, there were significant differences ($p<0.05$) between the treated and control young rats. No differences between the three treated groups were observed. The LOAEL for developmental toxicity is 400 mg Al/kg-day, but this does not include the contribution of Al from the basal diet.

Groups of 10 pregnant Sprague Dawley rats were administered 180, 360 or 720 mg/kg-day aluminum nitrate nonahydrate by gavage (13, 26, 52 mg Al/kg bw-day) on GDs 6-14

(Paternain et al., 1988). A vehicle (water) only control group was used. The level of Al in the diet was not reported. Aluminum exposed dams gained significantly less weight than the controls. No significant effects on the numbers of litters, corpora lutea, total implants, live fetuses, resorptions or runt fetuses were observed. Significant decreases in fetal body weight and tail length were observed at all three Al doses; decreased fetal body length was also observed at the 52 mg Al/kg-day dose level. No dose-related external or visceral malformations were observed in the offspring. However, a significant increase in the incidence of skeletal malformations (delayed ossification, hypoplastic deformed ribs) was observed at all three treatment levels. In addition, the incidence of hematomas was significantly increased at the high dose. Because the rats were co-exposed to relatively high levels of nitrate [comparable to those in the Domingo et al. (1987) subchronic study], the effects of treatment cannot be conclusively attributed to Al alone, in the absence of a nitrate-exposed control group.

By contrast to the striking findings of potentially teratogenic effects of aluminum nitrate in Sprague-Dawley rats, as described above (Paternain et al., 1988), equivalent experiments by Domingo et al. (1989) in Swiss mice did not reveal any reproductive, developmental or teratogenic effects of Al, when administered to dams as the hydroxide. Domingo et al. (1989) administered by gavage 0, 66.5, 133 or 266 mg/kg-day aluminum hydroxide (0, 23.9, 47.8 or 95.5 mg Al/kg bw-day) to groups of 20 pregnant Swiss mice on GD 6-15. The level of Al in the diet was not reported. The dams were killed on GD 18. No compound-related effects were observed on maternal mortality, clinical signs, body weight, food intake or absolute or relative heart, lung, spleen, liver, kidney and brain weights. In addition, no compound-related effects were observed on numbers of implantations, resorptions, live and dead fetuses, sex ratio and the incidences of external malformations, internal soft-tissue defects or skeletal abnormalities. Therefore, this study identifies a NOEL of 95.5 mg Al/kg-day by default for reproductive, developmental and teratogenic toxicity in mice. However, neuromotor development was not assessed and the contribution of Al from the basal diet was not stated in the report.

A number of studies have been designed to evaluate the influence of citrate or lactate on the potential developmental toxicity of Al. For example, Gomez et al. (1991) exposed groups of 15-19 pregnant Sprague-Dawley rats to either distilled water (controls) or 133 mg Al/kg bw-day in the form of either aluminum hydroxide (384 mg/kg-day), aluminum citrate (1064 mg/kg-day) or aluminum hydroxide (384 mg/kg-day) concurrent with citric acid (62 mg/kg-day) by gavage on GD 6-15. The level of Al in the diet was not reported and no rats were exposed to citric acid alone. Terminations were performed on GD 20. Maternal and fetal evaluations showed exposure-related effects only in the group exposed to aluminum hydroxide and citric acid concurrently. Significant changes included reduced maternal body weight gain on GDs 6-20 (but not at sacrifice on day 20), reduced fetal body weight and some skeletal variations (increased delayed occipital and sternebrae ossification and increased absence of xiphoides). No effects were seen on maternal food consumption or clinical signs, maternal absolute or relative liver, kidney or brain weights, gravid uterine weight, corpora lutea/dam, implantations/litter, pre- or postimplantation loss/litter, viable or nonviable implants/litter, fetal sex ratio or fetal malformations (external, visceral or skeletal). This study identified a stand alone minimum LOAEL of 133 mg Al/kg-day for non-neurobehavioral developmental toxicity of aluminum hydroxide and aluminum citrate in rats. Although confidence in this LOAEL is low (because aluminum hydroxide administered concurrently with citric acid induced did developmental

effects and because the dose does not include a contribution of Al from the basal diet) the value is consistent with the developmental NOAEL of 95.5 mg Al/kg-day for aluminum hydroxide in mice (Domingo et al., 1989).

In a similar experimental protocol, groups of 11-13 pregnant female Swiss albino (CD-1) mice were administered 57.5 mg Al/kg bw-day as either aluminum hydroxide (166 mg/kg-day), aluminum lactate (627 mg/kg-day) or aluminum hydroxide (166 mg/kg-day) concurrent with lactic acid (570 mg/kg-day) by gavage on gestation days 6-15 (Colomina et al., 1992). Other groups were treated with lactic acid alone (570 mg/kg-day, equivalent to the amount in 627 mg/kg of aluminum lactate) or distilled water (controls). The level of Al in the diet was not reported. Fetal evaluations were performed on GD 18, including examinations for skeletal and visceral abnormalities in approximately two-thirds and one-third of the pups, respectively. The investigators noted that the dose of Al (57.5 mg/kg-day) is equivalent to ingestion of 3.5 g Al/day by a 60 kg person, which is higher than the usual quantities of Al ingested therapeutically for peptic disorders. Maternal body weight gain was significantly lower than control values in the aluminum lactate-treated mice when evaluated over GDs 6-9 (92%), 6-12 (55.6%) and 0-18 (38.5%) and in the mice treated with combined aluminum hydroxide and lactic acid evaluated over GDs 6-12 (37.8%), 6-15 (42.7%) and 0-18 (15.7%). The decreased maternal weight gain in the aluminum lactate group was accompanied by significantly reduced food consumption during gestation days 6-18. Significant developmental and/or teratological effects in the aluminum lactate group included 16% reduced fetal body weight ($p<0.01$) and increased incidences of cleft palate (13.2%, $p<0.05$), dorsal hyperkyphosis (i.e., excessive flexion of spine) (13.5%, $p<0.05$) and delayed parietal ossification (15.4%, $p<0.01$). These developmental effects were not observed in any of the control or aluminum hydroxide exposed pups, and the only other significant changes in the other groups were decreased maternal relative liver weight and delayed fetal parietal ossification in the lactic acid only exposure group. Other types of internal or skeletal malformations or variations were not found in any of the fetuses. Additionally, no effects were seen on maternal absolute or relative kidney weight, gravid uterine weight, numbers of implantation sites/litter, live or dead fetuses, resorptions, postimplantation loss/litter, litters with dead fetuses or fetal sex ratio in any of the groups. By analogy to the findings of the Domingo et al. (1989) and Gomez et al. (1991) studies, the lack of developmental effects of aluminum hydroxide at the tested dose could be related to low solubility and absorption.

In a more recent study, pregnant Swiss mice were administered gavage doses of 0 or 104 mg Al/kg bw-day as aluminum hydroxide on days 6-15 of gestation (Colomina et al., 1994). Dietary Al intake was not reported; the mice were maintained on Panlab rodent chow. Compared to controls, there were no effects ($p>0.05$) of Al on maternal body or organ weight, number of implantations per litter, number of resorptions per litter, number of dead fetuses per litter, percentage of positive post-implantation loss, sex ratio or fetal body weight per litter. Gross external, visceral or skeletal examination of fetuses revealed no abnormalities or developmental variations. Thus, the NOAEL for development effects from this study is 104 mg Al/kg-day, however, this does not include the Al contribution from food. Thus, based on this study and the previous study (Colomina et al., 1992), aluminum lactate appears to be more potent as a developmental toxicant in mice than the less water soluble aluminum hydroxide.

Groups of 16 pregnant Swiss-Webster mice were fed 25 (control group), 500 or 1000 mg Al/kg diet as aluminum lactate throughout gestation and lactation (Donald et al., 1989). The control diet was fed to pups that were selected for post-weaning neurobehavioral assessment. Reported maternal doses were 5, 100 and 200 mg Al/kg bw-day at the beginning of pregnancy and 10.5, 210 and 420 mg Al/kg bw-day near the end of lactation. No mice were exposed to lactate alone. There were no treatment-related changes in maternal survival, body weight (measured on GD 0 and 16 and PDs 0, 5, 10, 15 and 20), food intake, toxic signs or neurobehavior (evaluated after pups were weaned at PD 21 using the same test battery used for the pups and described below), or on litter size or postnatal growth and development in pups as assessed by body weight, toxic signs on PDs 0-55, and by crown-rump length on PDs 0 and 20. Neurobehavioral maturation was tested in two pups per litter on PDs 8-18 with a 12-item test battery (fore- and hindlimb grasp, fore- and hindpaw placement on sticks of 2 widths, vibrissa placing, visual placing, auditory and air puff startle, eye opening and screen grasp, cling and climb). A neurobehavioral test battery was administered to six pups per litter at age 25 days (4 days postweaning) or 39 days (fore- and hindlimb grip strengths, temperature sensitivity of tail, negative geotaxis, startle reflex to air puff and auditory stimuli) or age 21 and 35 days (foot splay). The pre-weaning neurobehavioral testing showed that a significant ($p=0.007$) number of pups in the high dose group had impaired vertical screen climb performance. The postweaning neurobehavioral assessment showed significantly ($p<0.05$) altered performance on several tests. These included decreased forelimb grip strength at age 39 days in the low dose group, increased hindlimb grip strength at age 25 days in both low and high dose groups, increased foot splay distance at age 21 days in both low and high dose groups and at age 35 days in the low dose group, and increased forelimb grip strength at age 25 days and decreased thermal sensitivity at age 25 and 39 days in the high dose group. There were no treatment-related changes in concentrations of Al in pup liver or bone (brain tissue was not analyzed).

In a more recent study of similar design by the same group of investigators, groups of 14 and 9 female Swiss Webster mice (6-8 weeks old) were fed 25 (control) or 1000 mg Al/g diet as aluminum lactate, respectively, during gestation and lactation (Golub et al., 1992b). The 1000 mg/g concentration was selected based on the demonstration of neurobehavioral effects in weanlings at this level (Donald et al., 1989). No mice were exposed to lactate alone. Using food intake and body weight values estimated from reported data, maternal doses are estimated to be approximately 4.3 and 174 mg Al/kg bw-day at the beginning of gestation and 4.8 and 607 at the end of the lactation period. At birth, litters were fostered either within or between groups to provide four groups of offspring that were exposed to excess Al via maternal diet during gestation, lactation, both or neither (i.e., 25 ppm during gestation and lactation, 1000 ppm during gestation and 25 ppm during lactation, 25 ppm during gestation and 1000 ppm during lactation, and 1000 ppm during gestation and lactation). Maternal effects included significantly ($p\leq0.015$) reduced (10-12%) body weight gain and food intake in the treated group during late pregnancy and lactation, and signs of neurotoxicity (hindlimb splaying and dragging) in one treated dam at postnatal day 21 (weaning); this dam had seizures and died 4 days later. No treatment-related effects on litter size, birth weight, crown-rump length, righting ability at birth, sex ratio or postnatal survival were observed. Both gestation-only and lactation-only exposure caused significantly ($p<0.05$) decreased body weight gain in the treated pups beginning on postnatal day 10; combined gestation and lactation exposure produced the greatest decrease (approximately 24% at weaning). Neurobehavioral testing using the same battery as Donald et al. (1989) was

performed at weaning on the dams and on a total of 12, 16, 12 and 6 pups (1 male and 1 female pup per litter) from the control, gestation-only, lactation-only and combined gestation and lactation groups, respectively. Results of this testing showed effects only in pups, including significantly decreased forelimb grip strength after gestation-only exposure, increased hindlimb grip strength after both gestation and lactation exposure, decreased temperature sensitivity after lactation-only exposure, and longer negative geotaxis latency after lactation-only exposure. In general, the findings of this study are consistent with those of Donald et al. (1989) in showing neurodevelopmental effects at the 1000 mg/kg dietary concentration, although intake dosages are dissimilar at the end of lactation. Using the dosage at the beginning of gestation, this study defines a LOAEL of 174 mg/kg-day for developmental effects.

The Donald et al. (1989) study differs from that of Golub et al. (1992b) in that offspring were not fostered, were tested at a later age (25 vs. 21 days), were allowed 4 days of recovery from the treated diet prior to testing, participated in other behavioral tests currently, and experienced no growth retardation. The effects found only in the cross-fostered groups in the Golub et al. (1992b) study (lower forelimb strength after gestation exposure and altered negative geotaxis latencies after lactation only exposure) were not observed by Donald et al. (1989). Increased footsplay was observed by Donald et al. (1989) but not by Golub et al. (1992b), perhaps due to an opposing effect of smaller pup body size in this study. Neither gestation or lactation exposure affected pup brain or liver Al concentrations, but lactation exposure caused significantly lower manganese and iron concentrations in liver and manganese concentrations in brain.

In a further extension of the two previous studies (Donald et al., 1989; Golub et al., 1992b), pregnant female Swiss-Webster mice were exposed continuously to a semi-purified diet containing 7 (control), 500 or 1000 mg Al/kg from the time of conception, through pregnancy and lactation (Golub et al., 1995). At weaning, pups were exposed to the same Al diet as their mothers (500 or 1000 mg Al/kg) until they were 150-170 days of age or were switched to the control diet (7 mg Al/kg) for the same time period. Based on reported dosages in previous studies by the same investigators, estimated daily dosages for mice exposed to 1000 mg Al/kg diet were as follows: 200 mg/kg bw-day in pregnant mice, 420 mg/kg-day in lactating mice and 130 mg/kg-day in offspring (Golub et al., 1994); doses for the mice exposed to 500 mg Al/kg diet were assumed to be approximately half of that of mice fed 1000 mg Al/kg, or 100 mg/kg-day in pregnant mice, 210 mg/kg-day in lactating mice and 65 mg/kg-day in offspring. Compared to the control diet, the Al diet had no effect on dam weight, gestation length, litter size, pup weight, offspring growth or organ weights. Operant conditioning (nose poke) of offspring for delayed spatial alternation or discrimination reversal tasks was initiated at 50 days of age and continued 5 days/week for a total of 35 sessions. A neurobehavioral test battery was conducted when the offspring were 150-170 days of age (forelimb and hindlimb grip strength, temperature sensitivity, negative geotaxis, air puff and auditory startle response). Maternal and pre-weaning exposure to 500 mg Al/kg significantly affected ($p<0.05$) operant training in the offspring, but not performance after training in delayed spatial alternation or discrimination reversal tasks (i.e., decreased number of training sessions to achieve the training criteria). This exposure also significantly decreased forelimb and hindlimb grip strength and puff startle response ($p<0.05$). Pre-weaning and combined pre- and post-weaning exposure to 1000 mg Al/kg significantly increased ($p<0.05$) incidence of cagemate aggression at the time behavioral

testing. No effects were observed on auditory startle response, temperature sensitivity or negative geotaxis in offspring. Histopathological examination of the brain and spinal cord revealed no treatment-related changes. Thus, the LOAEL for combined maternal and pre-weaning exposure on neurobehavioral effects in mice would approximate to 100 mg Al/kg-day (estimated daily maternal dosage).

Pregnant Charles River CD rats were administered gavage doses of 0, 250, 500 or 1000 mg Al/kg bw-day ("experiment A") or 0, 5, 25, 50, 250 or 500 mg Al/kg bw-day ("experiment B") as aluminum lactate in distilled water on GDs 5-15 (Agarwal et al., 1996). Dietary Al intake was not reported. Offspring were examined for body weight, anogenital distance, oestrus cycle regularity (after puberty), duration of pseudopregnancy induced by mechanical stimulation of the cervix, oocyte production induced by an injection of human chorionic gonadotropin, and male and female gonad weights. Aluminum had no effect on litter size and no consistent effects on birth weight were observed. For example, birth weights were decreased in male offspring from dams that received 250 mg Al/kg-day, but not at higher dosages, and the effect was observed only in experiment A. Female offspring birth weights decreased at certain dosage levels in experiment A and increased at these same dosage levels in experiment B. Similar inconsistencies between experiment A and B were observed for gonadal weights, anogenital distance, time to puberty (vaginal opening), duration of pseudopregnancy or numbers of superovulated oocytes. A significantly increased ($p<0.05$) number of abnormal oestrus cycle lengths (defined as less than 4 days or greater than 5 days) occurred in offspring from dams that received 250 mg Al/kg-day (in experiment A, the endpoint was not measured in experiment B). However, the effect was most pronounced in the first three oestrus cycles (of five observed) and not detected by the 5th cycle. Thus, the NOAEL for temporary disturbance of the oestrus cycle in offspring of dams administered Al is 250 mg Al/kg-day. NOAELs for all other reproductive endpoints in this study were 1000 mg Al/kg-day. These NOAELs do not include the contribution of Al in food.

In a three-generation study, Ondreicka et al. (1966) exposed initial groups of seven female and three male Dobra Voda mice to either 0 or 19.3 mg Al/kg bw-day as aluminum chloride in drinking water. The diet also contained 160 to 180 ppm Al, giving an estimated intake of 27-31 mg/kg-day based on default values for food consumption and body weight for chronic exposure of mice (U.S. EPA, 1988). Using this estimate, the total Al intakes (drinking water and food) were 27 mg/kg-day (controls) and 46.3 mg/kg-day (exposed group). The P_0 group produced three litters (designated F_{1a}, F_{1b} and F_{1c}) and the F_{1a} group produced two litters (designated F_{2a} and F_{2b}) from which the weanlings were exposed to Al in the drinking water starting at 4 weeks of age. There was no difference in body weight gain among the groups in the P_0 generation, a result that contrasted with the striking decrease in this parameter in the treated F_{1b}, F_{1c}, F_{2a} and F_{2b} groups. Though no effects on erythrocyte count, hemoglobin levels or histopathology of the liver, spleen and kidneys were observed in the P_0, F_1 or F_2 generations at the end of the study and no significant differences were seen in the number of litters or offspring between the exposed and control groups, the study identified a LOAEL of 46.3 mg Al/kg-day, based on the observed changes in body weight gain.

Other toxicological effects of aluminum

In a study designed to determine the effects of oral Al exposure on susceptibility to bacterial infection, female Swiss-Webster mice (13-14 per group) were exposed to a diet containing 25 (control), 500 or 1000 mg Al/kg as aluminum lactate during pregnancy, through lactation and for 10 days following weaning of the pups (Yoshida et al., 1989). Based on reported dosages in previous studies by the same investigators, estimated daily dosages for mice exposed to 1000 mg Al/kg diet are as follows: 200 mg/kg-day during pregnancy and 420 mg/kg-day during lactation; doses for the mice exposed to 500 mg Al/kg diet are assumed to be approximately half of that of mice fed 1000 mg Al/kg, or 100 mg/kg-day in pregnant mice and 210 mg/kg-day in lactating mice (Golub et al., 1994). At weaning, dams and pups were inoculated with a tail vein injection of *Listeria monocytogenes* and monitored for mortality for 10 days. In a separate experiment, female mice, 6 weeks of age, were exposed to the same dietary Al levels for 6 weeks and then inoculated with *L. monocytogenes*. Estimated Al dosages were 5, 98 or 195 mg Al/kg bw-day for the 25, 500 or 1000 mg Al/kg dietary levels, respectively, based on a default food factor of 0.195 kg diet/kg bw-day assuming a reference "subchronic" food intake and body weight for female B6C3F1 mice over the period from weaning to 90 days (U.S. EPA, 1988). Inoculation resulted in significantly greater ($p<0.025$) mortality in dams exposed to 500 or 1000 mg Al/kg diet compared to controls. There were no differences in mortality between the groups of inoculated pups or between groups of inoculated adult mice exposed to Al for 6 weeks. The LOAEL for pregnant mice was 100 mg Al/kg bw-day and the NOAEL for adult, non-pregnant mice was 195 mg Al/kg bw-day. Although the exposure duration in this study was only 7 weeks, it is included in Table 1 because it provides the only dose-response data on the effects of Al on resistance to pathogens.

Carcinogenicity studies

Schroeder and Mitchener (1975a) exposed 52 Long-Evans rats/sex/group to 0 or 5 ppm Al as potassium aluminum sulfate in drinking water for life. Based on default values for drinking water consumption and body weight for this strain of rat in a chronic study (U.S. EPA, 1988), these values are equivalent to Al doses of 0.472 and 0.67 mg/kg-day, for males and females, respectively. Study endpoints included body and heart weight; serum glucose, cholesterol and uric acid; and urinary protein, glucose and pH. All animals were necropsied at the time of natural death, and histological examinations were carried out on heart, lung, kidney, liver, spleen and gross tumors, for approximately 50% of the animals in the group. The only remarkable finding was a significant increase ($p<0.005$) in gross tumor incidence in exposed male rats [13/25 (52%) compared to 4/26 (15%) in controls], although the tumor sites were not reported. Six of the tumors in the exposed males (46% of total) were considered malignant compared to two malignant tumors (50% of total) in the male controls. There were no significant differences in tumor incidences between exposed and control females.

In another study by the same investigators, 54 Swiss mice/sex/group were exposed to drinking water containing 0 or 5 ppm Al as aluminum potassium sulfate for life (Schroeder and Mitchener, 1975b). Based on default values for drinking water consumption and body weight for B6C3F1 mice in a chronic study (U.S. EPA, 1988), these values approximate to Al doses of 1.2 mg/kg-day in both males and females. Study endpoints included body weight, gross pathology,

and some limited histology of the heart, lung, liver, kidney and spleen. The incidences of gross tumors were 15/41 (36.6%) and 11/38 (28.9%) in exposed and control males, respectively, and 19/41 (46.3%) and 14/47 (29.8%) in exposed and control females, respectively, differences that did not achieve statistical significance by Fisher's exact test, although incidences of multiple tumors and lymphoma leukemia were considered by the authors to be significantly increased in females ($p<0.025$ and $p<0.05$, respectively). However, a definitive assessment of aluminum carcinogenicity in both this and the rat study (Schroeder and Mitchener, 1975a) is precluded by the limitations of the pathology examinations and reporting.

In a more recent study, the tumorigenic potential of aluminum potassium sulfate was assessed in B6C3F1 mice chronically exposed in the diet (Oneda et al., 1994). Sixty animals/sex/group were fed a diet containing 0, 1.0, 2.5, 5.0 or 10.0% (w/w) for 20 months. These concentrations of aluminum potassium sulfate (as the dodecahydrate) are equivalent to 0, 569, 1422, 2844 and 5687 ppm Al. Using food factors calculated with an algorithm relating food consumption to body weight (U.S. EPA, 1988) and body weight data estimated from growth curves reported by the investigators, the dosages of aluminum are estimated to be 0, 95, 237, 483 or 1024 mg Al/kg-day in males and 0, 97, 242, 512 or 1110 mg Al/kg-day in females. Clinical signs, food consumption, and body weight were evaluated weekly. Hematology, clinical chemistry or urine endpoints were not assessed. Necropsies that included organ weight measurements and comprehensive histological examinations (including brain) were performed on all animals, including those that died during the course of the study. Survival rates were higher than control values in all treated male and female groups, ranging from 86.7-95.0% compared to 73.3% in males and 86.7-91.7% compared to 78.3% in females. No changes in food consumption were observed, but body weight gain was increased in both sexes at 95-97 and 237-242 mg Al/kg-day (weights were 10-23% higher than controls at end of study), was similar to controls in both sexes at 483-512 mg Al/kg-day, and decreased in both sexes at 1024-1110 mg Al/kg-day (11-16% lower than controls at end of study). There were no exposure-related increased incidences of tumors, other proliferative lesions or non-neoplastic lesions. In fact, the incidence of spontaneous hepatocellular carcinomas was significantly decreased in males at 1024 mg Al/kg-day (5.5% compared to 20.5% in controls, $p<0.01$).

Inhalation Exposure

Groups of 20 weanling Fischer 344 rats/sex and 20 weanling Hartley guinea pigs/sex were exposed to 0, 0.25, 2.5 or 25 mg/m^3 aluminum chlorhydrate [$Al_2(OH)_5Cl{\geq}x(H_2O)$] for 6 hours/day, 5 days/week for 6 months (Steinhagen et al., 1978). Analysis of the aluminum chlorhydrate by the investigators showed it to contain 24.5% Al, indicating that the animals were exposed to 0, 0.061, 0.61 and 6.1 mg Al/m^3. Body weights were measured weekly for the first 8 weeks and biweekly thereafter. At the end of the exposure period, 10 animals (5/sex) of each species were sacrificed for organ weight measurements (heart, lung, liver, kidney, spleen and brain) and histological examination of the lungs, liver and kidney. In addition, comprehensive histological examinations were performed on animals in the control and 6.1 mg AL/m^3 groups. The remainder of the animals was used for hematology evaluation (RBC, WBC, hematocrit and hemoglobin) and Al measurements in blood and tissues. Apparent effects of Al included multifocal granulomatous pneumonia in both species at ≥0.61 mg Al/m^3, significantly increased absolute and relative lung weights in both species, and decreased body weight gain in rats and

minimal lung edema in guinea pigs at 6.1 mg Al/m^3. The granulomatous reaction was characterized by foci of giant vacuoled particle-containing macrophages in the lungs and macrophages that did not appear to contain vacuoles or other evidence of phagocytized material in the peribronchial lymph nodes. There was a significant dose-related accumulation of Al in the lungs of both species at ≥0.061 mg Al/m^3. However, a NOAEL of 0.061 mg/m^3 could be identified for the onset of compound-induced histopathological effects.

In other studies, groups of 14-30 guinea pigs, rats and hamsters were exposed to fine metallic Al powders (pyro, atomized and flaked) at concentrations of 15, 30, 50 or 100 mg powder/m^3 air for 6 hours/day, 5 days/week for 6 months (Gross et al., 1973). Alveolar proteinosis occurred in exposed animals of all three species after 2 months of exposure, but fibrosis or other pulmonary changes did not develop. Similarly, groups of 23 or 46 rats and 48 hamsters were exposed to undetermined concentrations of Al fumes or Al powder (20% Al, 80% $Al(OH)_3$) for morning hours only or morning and afternoon for up to 20 months (Christie et al., 1963). Effects were similar for both forms of Al in both species, including initial increased alveolar macrophage proliferation followed by nodular hyalinized areas, with development of pneumonia but no fibrosis.

Exposure to 2.18 mg Al fibers/m^3 for 6 hours/day, 5 days/week for up to 86 weeks produced slightly increased alveolar macrophages and some irritation of the nasal passages in a group of 50 Alderly Park rats (Pigott et al., 1981). Finally, a study by Drew et al. (1974) observed the development of granulomatous nodules also developed in male hamsters that were exposed to 8 mg Al/m^3 of *Alchlor* (a propylene glycol complex of aluminum-chloride-hydroxide) for 6 hours/day, 5 days/week for 20 or 30 exposures. The alterations persisted at the longest post treatment observation (6 weeks) and consistently developed at the bifurcation of the bronchioloalveolar ducts, which is a likely site of particulate deposition.

DERIVATION OF A PROVISIONAL CHRONIC RfD FOR ALUMINUM

This survey of the toxicological effects of Al in rodents suggests that neurotoxicological and developmental (including neurodevelopmental) endpoints are among the most sensitive indicators of Al toxicity. However, as vehicles for the development of toxicity values such as a provisional chronic RfD, the latter group of studies are considered to be more appropriate, since the level of exposure to Al appears to be better characterized. In fact, neurobehavioral deficits have been observed in mice and rats exposed during various stages of development and in subchronic studies (Bernuzzi et al., 1989; Donald et al., 1989; Golub et al., 1989, 1992a, b, 1995; Muller et al., 1990), as described above. These deficits include impaired operant learning, changes in grip strength, altered startle response and impaired motor coordination. In addition, several studies have shown that oral Al can produce histopathological changes in the CNS, although the histopathological lesions have yet to be causally related to the neurobehavioral deficits. Thus, Florence et al. (1994) reported histopathological changes in the brain of rats exposed to dietary Al for 6 months, the changes including the appearance of vacuolation of the cell body and cell processes of astrocytes in the brain and swelling of astrocytic processes. In addition, more localized vacuolization of neurons in the brain also was observed. These changes

were observed in rats exposed to elevated Al in the diet and are distinct from the NFD that has been observed in rats, rabbits and monkeys maintained on elevated dietary Al in combination with reduced dietary calcium (Garruto et al., 1989; Kihira et al., 1994; Mitani, 1992; Yano et al., 1989; Yoshida et al., 1990) or in rabbits administered intracisternal or intraventricular injections of Al (Kowall et al., 1989; Wakayama et al., 1993). Interpretation of the low-calcium studies is complicated by the observation that NFD was observed in animals maintained on low-calcium diets without excess Al and was enhanced by the addition of excess Al to these diets (Garruto et al., 1989; Kihira et al., 1994). Furthermore, Al has been shown to inhibit the gastrointestinal absorption of calcium (Orihuela et al., 1996), an effect that may exacerbate the calcium deprivation induced by low calcium diets. Thus, it is not clear whether calcium deprivation enhances the neurotoxicity of Al or Al exacerbates the adverse effects of calcium deprivation.

Donald et al. (1989) and Golub et al. (1995) are co-principal studies that identify a LOAEL of 100 mg Al/kg-day for minimal neurotoxicity in the offspring of mice exposed to dietary aluminum lactate (soluble aluminum) during gestation and lactation. The neurotoxicity associated with this LOAEL is consistent with LOAELs from other developmental and subchronic neurobehavioral studies in mice and rats which used higher dietary dosages of aluminum lactate or aluminum chloride (Golub et al., 1989, 1992a,b; Bernuzzi et al., 1989; Muller et al., 1990). Of the above, Golub et al., (1995) is the only study in which a histopathological examination of the brain and spinal cord was conducted and no abnormalities were reported. The Florence et al. (1994) study indicates that histopathological abnormalities of the CNS can occur in rats exposed subchronically to 84 mg/kg-day; although this is lower than the LOAEL for neurobehavioral effects, it was not chosen as the principal study because the functional significance of the histopathological lesions are uncertain.

A number of studies were identified that, at face value, appeared to indicate LOAELs at lower doses than the 100 mg Al/kg-day value selected herein, for example, Paternain et al. (1988) and Colomina et al. (1992). However, in these as in many of the studies under consideration, insufficient information on dietary Al (Al content and/or feed type) was reported to permit a reliable estimation of the overall dose level to which the animals were subjected.

Other developmental studies with aluminum hydroxide and/or citrate in mice and rats identified a NOAEL which are equivalent (95.5 mg Al/kg-day), or a minimum LOAEL that was greater (133 mg Al/kg-day) than the 100 mg Al/kg-day critical LOAEL (Domingo et al., 1989; Gomez et al., 1991), an overlap potentially related to differences in effective doses due to variations in unreported Al dietary content and factors affecting absorption such as chemical form (e.g., the use of less absorbable aluminum hydroxide). In addition, the LOAEL of 43.3 mg Al/kg-day for decreased body weight gain in mice exposed to aluminum chloride for 180-390 days (Ondreicka et al., 1966) was thought be inappropriate for risk assessment due to the small sample size and to the poor reporting of study details. Aluminum nitrate caused alterations in levels of brain biogenic amines and hepatic and hematological indices in rats exposed to 21.4 mg Al/kg-day for 6 weeks (Flora et al., 1991). This dose is not a LOAEL because insufficient information is available to determine if the effects are adverse.

Therefore, the LOAEL of 100 mg Al/kg-day for minimal neurotoxicity in the offspring of mice (Donald et al., 1989, Golub et al., 1995) is selected as the basis for the provisional chronic

RfD. The LOAEL is considered minimal because the results of the postweaning neurobehavioral test battery indicate that performance deficits may be marginal. In particular, of the three observed effects (decreased forelimb and increased hindlimb grip strengths, increased hindlimb foot splay distance), one effect (increased grip strength) has unclear toxicological significance and two effects (increased grip strength and foot splay distance) did not persist after 2 weeks of no further exposure.

Application of an uncertainty factor (UF) of 100 (3 for use of a minimal LOAEL, 10 for interspecies extrapolation and 3 for intrahuman variability where the critical effects have been observed in a sensitive sub-group) results in a provisional RfD of

p-RfD = 1E-0 mg Al/kg-day.

The provisional RfD of **1E-0** mg Al/kg-day is approximately 3-fold higher than estimated normal daily Al intake of approximately 0.2-0.3 mg/kg-day (Iyengar et al., 1987; Ganrot, 1986; Wilhelm et al., 1990). Chronic users of medications such as antacids, buffered aspirins and antiulceratives would be expected to ingest much larger amounts of Al, possibly as high as 10-70 mg/kg-day. However, these subjects would not represent the most sensitive population (developing infants), as indicated by the animal data.

Low confidence is placed in the co-critical studies, because they only identify a LOAEL for a sensitive effect and evaluated comparatively small numbers of animals. Confidence in the data base is low because the most reliable supporting data for neurotoxicity of Al in humans are of limited general relevance (e.g., dialysis encephalopathy is manifested in patients with impaired renal function and excessive Al uptake from intravenous exposure). In fact, neurotoxicity remains to be assessed in animals chronically exposed to Al, and developmental morphology has not been adequately investigated in two animal species. These limitations in the Al data base do not increase uncertainty in the RfD; therefore, a data base uncertainty factor was not used. However, reflecting the low confidence in the co-critical studies, there is low overall confidence in the RfD.

DERIVATION OF A PROVISIONAL CHRONIC RfC FOR ALUMINUM

Al seems to be the most likely cause for the generally and consistently reported psychomotor and cognitive effects (particularly signs of impaired coordination) in Al production workers and welders (Bast-Pettersen et al., 1994; Rifat et al., 1990; Hosovski et al., 1990; White et al., 1992; Hanninen et al., 1994; Sjogren et al., 1990, 1996). In addition, there is strong evidence that Al is neurotoxic by other routes of exposure. Thus, a degenerative neurological syndrome (dialysis dementia) has been documented in humans with chronic renal failure, apparently due to an increased exposure to Al from dialysis treatment and/or ingestion of phosphate binding agents which contain Al (Alfrey, 1993). This syndrome is characterized by gradual loss of motor, speech and cognitive functions. Neurotoxicity, particularly neuromuscular effects such as decreased motor activity, startle responsiveness and grip strength, has also been observed in mice following subchronic oral exposure and in the offspring of mice and rats exposed orally during gestation and/or lactation. Based on this information, as well as evidence

that Al is absorbed by Al production workers and welders, the hypothesis that the occupational studies are indicative of a neurotoxic effect of Al appears to be justified. However, the only occupational study that has yielded suitable monitoring data is that of Hosovski et al. (1990), in which workers were exposed to presumed time-weighted average (TWA) concentrations of 4.6-11.5 mg Al/m^3 magnitude for an average of 12 years. Using 4.6 mg Al/m^3 as the LOAEL for psychomotor and cognitive impairment for an 8-hour occupational exposure (Hosovski et al., 1990) and corrections for discontinuous exposure (10 m^3/20 m^3 and 5 days/7 days), the $LOAEL_{HEC}$ is 1.64 mg/m^3. Applying an uncertainty factor of 300 for intrahuman variability (10), use of a LOAEL (10) and an incomplete database (3) yields a provisional RfC of

p-RfC = 1.64 mg/m^3/300 = 5E-3 mg/m^3.

The lack of inhalation developmental studies may increase uncertainty in the database because oral data in animals indicate that neurotoxic and morphological developmental effects may occur at lower doses than neurotoxicity in adults. Additionally, there is uncertainty related to the lack of corroborating data on air concentrations associated with neurotoxicity. Confidence in the critical study is low to medium because only a LOAEL was identified. Confidence in the database is medium because (1) there are no corroborating data on effect levels (NOAELs and additional LOAELs), (2) no data are available for developmental neurotoxicity by the inhalation route and (3) a well-designed two-generation reproduction study is lacking. Reflecting the low to medium confidence in the critical study and database, there is low to medium confidence in the provisional RfC.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR ALUMINUM

Weight-Of-Evidence Classification

A considerable number of epidemiological studies have examined the incidence of excess tumor formation in persons occupationally exposed to Al in the form of dusts or fumes. In general, a body of inferential evidence exists for an increase in cancer of the bladder and lung through such occupational exposure to Al, although conclusions linking these responses to the effects of Al are confounded by attendant co-exposure to other harmful emissions such as PAHs and by cigarette smoking. A 20-month exposure of B6C3F1 mice to Al potassium sulfate dodecahydrate in the diet at concentrations up to 10% w/w displayed no indication of compound-related carcinogenicity and, in general, no indication of adverse toxicological effects of any kind (Oneda et al., 1994). Similarly, the life-time exposure of Swiss mice and Long-Evans rats to 5 ppm Al as aluminum potassium sulfate in drinking water provided no convincing evidence for the carcinogenicity of Al compounds (Schroeder and Mitchener, 1975a,b). Gene reversion experiments on Al compounds resulted in negative results in *S. typhimurium* (Ahn and Jeffrey, 1994). Taking all of the evidence of Al carcinogenicity together, and in accordance with the U.S. EPA (2005) cancer guidelines, aluminum is classified as *inadequate information to assess carcinogenic potential*. The basis for this classification is insufficient evidence in epidemiological/occupational studies, lack of demonstrated carcinogenicity or mutagenicity in

available animal studies, lack of positive evidence of non-carcinogenicity and lack of mode of action data for aluminum.

Quantitative Estimates of Carcinogenic Risk

Due to insufficient data, a provisional oral slope factor and inhalation unit risk could not be developed.

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Table 1. Summary of oral toxicity data for aluminum[a]

Study	Type	Species	Al	Exposure Concentration (ppm)	Exposure Dosage (mg Al/kg-day)	Exposure Frequency and Duration	Critical Effect	NOAEL (mg Al/kg-day)	LOAEL (mg Al/kg-day)	FEL (mg Al/kg-day)
Ondreicka et al., 1966	Subchronic 3-gen dietary	Dobra Voda mice	chloride	--	27 (control), 46	Continuous, 180-390 days	Decreased body weight gain in F1 and F2.	--	46	--
Golub et al., 1989	Subchronic dietary	S-W mice	lactate	25 (control), 500,1000	3.3 (control), 65,130	Continuous, 6 weeks	Decreased spontaneous motor activity; decreased weight gain.	65	130	--
Golub et al., 1992a	Subchronic dietary	S-W mice	lactate	25 (control), 1000	190	Continuous, 90 days	Decreased hindlimb grip, decreased spontaneous motor activity, decreased startle response.	--	190	--
Florence et al., 1994	Subchronic dietary	Wistar rat	chloride (with citric acid)	1.52 (control), 1000	0.13 (control), 84	Continuous, 6 months	Histopathological changes in brain astrocytes and neurons.	--	84	--
Domingo et al., 1996	Subchronic drinking water	Sprague Dawley rats	nitrate (with citric acid)	--	0, 50, 100 (plus unreported dietary Al)	Continuous, 6.5 months	Operant conditioning and performance	100	--	--
Yoshida et al., 1989	Subchronic dietary	S-W mice	lactate	25 (control), 500, 1000	5 (control), 98, 195	Continuous, 7 weeks	Increased mortality from *L. monocytogenes* inoculation	195	--	--
Donald et al., 1989	Developmental dietary	S-W mice	lactate	25 (control), 500, 1000	5 (control), 100, 200	Continuous, gestation and lactation	Neurobehavioral effects.	--	100	--
Golub et al., 1992b	Developmental dietary	S-W mice	lactate	25 (control), 1000	4 (control), 174	Continuous, gestation and lactation	Neurobehavioral effects.	--	174	--
Golub et al., 1995	Developmental dietary	S-W mice	lactate	7, 500, 1000	1 (control), 100, 200	Continuous, gestation, lactation to maturity	Neurobehavioral effects.	--	100	--

Table 1. Summary of oral toxicity data for aluminum[a]

Study	Type	Species	Al	Exposure Concentration (ppm)	Exposure Dosage (mg Al/kg-day)	Exposure Frequency and Duration	Critical Effect	NOAEL (mg Al/kg-day)	LOAEL (mg Al/kg-day)	FEL (mg Al/kg-day)
Yoshida et al., 1989	Developmental dietary	S-W mice	lactate	25 (control), 500, 1000	4 (control), 100, 200	Continuous, gestation and lactation	Increased mortality of dams from *L. monocytogenes* inoculation	--	100	--

[a]Studies for which total dosages were reported or could be estimated (unless otherwise noted).

2-2-2005

Provisional Peer Reviewed Toxicity Values for

Ammonia

(CASRN 7664-41-7)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

2-2-2005

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR AMMONIA (CASRN 7664-41-7)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions (or the EPA HQ Superfund Program) sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

The HEAST (U.S. EPA, 1997) lists subchronic and chronic oral reference doses (RfDs) of 34 mg/L for ammonia. A comment in the HEAST indicates that 34 mg/L is a concentration in drinking water that is specifically related to the organoleptic (taste) threshold and that a safe concentration for ammonia may be higher than 34 mg/L, but the data are inadequate to assess the safe level. The source document for derivation of the HEAST subchronic and chronic oral RfD values is the Health Effects Assessment (HEA) for Ammonia (U.S. EPA, 1987). The HEAST subchronic and chronic RfD values are based on a determination of the organoleptic (taste) threshold of ammonia in redistilled water by Campbell et al. (1958). The value selected for the HEAST subchronic and chronic RfDs was supported by the closely similar value of 35 mg/L identified as the taste threshold for ammonia in a World Health Organization Environmental Health Criteria (EHC) document (WHO, 1986) and as the ambient water quality criterion to

protect human health derived by U.S. EPA (1981). No oral assessment is included on IRIS (U.S. EPA, 2003) or the Drinking Water Standards and Health Advisories list (U.S. EPA, 2002). No relevant documents other than the HEA and the AWQC document were included in the CARA list (U.S. EPA, 1991, 1994a).

The HEAST includes a value of 1E-1 mg/m^3 for the subchronic inhalation RfC. The HEAST subchronic RfC used the same data and is the same as the RfC (1E-1 mg/m^3) reported in IRIS (U.S. EPA, 2003). The IRIS chronic RfC value was derived from a free-standing NOAEL of 6.4 mg/m^3 (9.2 ppm) identified for lack of evidence of decreased pulmonary function or changes in subjective symptomatology in an occupational study of workers exposed to ammonia in a soda ash (sodium carbonate) facility (Holness et al., 1989). A LOAEL was not identified in the study. The NOAEL was adjusted for intermittent exposure to a value of 2.3 mg/m^3 and divided by a composite uncertainty factor (UF) of 30. The composite UF included a factor of 10 for protection of sensitive individuals and a factor of 3 for database deficiencies, including lack of chronic data, proximity of the occupational $NOAEL_{HEC}$ to a $LOAEL_{HEC}$ observed in a subchronic inhalation study in rats (Broderson et al., 1976), and lack of data on reproductive or developmental toxicity. The RfD/RfC Workgroup verified the RfC on February 21, 1991. The HEA had previously derived subchronic and chronic inhalation RfDs of 0.36 mg/m^3 by dividing the ammonia air odor threshold of 3.6 mg/m^3 (Carson et al., 1981) by an uncertainty factor of 10 to obtain an estimate of the lower bound limit for odor detection.

The public review draft of the ATSDR Toxicological Profile on ammonia (ATSDR, 2002) derived an intermediate oral minimal risk level (MRL) value of 0.3 mg/kg-day based on a duration-adjusted NOAEL of 39.5 mg/kg-day for weight loss in rats exposed to ammonium sulfamate in drinking water for 90 days (Gupta et al., 1979) and an uncertainty factor of 100 (10 for extrapolation from rats to humans and 10 to protect sensitive individuals). ATSDR (2002) also derived a chronic inhalation MRL of 0.3 ppm (200 $\mu g/m^3$) based on a duration-adjusted NOAEL of 3.1 ppm in the Holness et al. (1989) study and an uncertainty factor of 10 for human variability. The State of California (OEHHA, 2002) has derived a chronic inhalation reference exposure level of 200 $\mu g/m^3$ (0.3 ppm) for ammonia. This value (200 $\mu g/m^3$) is based on the occupational study of Holness et al. (1989) with a duration adjusted NOAEL of 2 mg/m^3 and an uncertainty factor of 10 for intraspecies variability. The OEHHA (2002) used the same methodology as ATSDR. ACGIH (2001) lists a TLV-TWA of 25 ppm (17 mg/m^3) and a STEL of 35 ppm (24 mg/m^3) for ammonia. These values are intended to minimize the potential for acute ocular and respiratory tract irritation. NIOSH (2002) lists values of 25 ppm (18 mg/m^3) and 35 ppm (27 mg/m^3) for the REL-TWA and REL-ST, respectively. OSHA (2002) lists a value of 50 ppm (35 mg/m^3) for the PEL-TWA.

Ammonia is not included in the HEAST (U.S. EPA, 1997) cancer table. IRIS (U.S. EPA, 2003) and the Drinking Water Standards and Health Advisories list (U.S. EPA, 2002) do not provide a carcinogenicity assessment for ammonia. IARC (2002) has not evaluated the

carcinogenicity of ammonia. NTP (2002) does not list ammonia among the chemicals it considers to be known human carcinogens or reasonably anticipated to be human carcinogens.

Literature searches to identify studies relevant to the derivation of provisional toxicity values for ammonia were conducted for the period 1988 through September 18, 2002. Databases searched included: TOXLINE, MEDLINE, TSCATS, RTECS, CCRIS, DART, EMIC/EMICBACK, HSDB, GENETOX and CANCERLIT. Additional literature searches were conducted through May 2004 by NCEA-Cincinnati using TOXLINE, MEDLINE, Chemical and Biological Abstract databases and no relevant information was found.

REVIEW OF PERTINENT DATA

Human Studies

Holness et al. (1989) studied workers exposed to ammonia in a sodium carbonate production plant. Fifty-two of the 64 available workers agreed to participate in the study. The control group consisted of 31 office and stores workers employed at the plant who were without previous exposure to ammonia. Information was collected on age, height, work history, smoking history, respiratory symptoms, and skin and eye complaints. Respiratory questions were based on an American Thoracic Society questionnaire. Sense of smell was evaluated at the beginning and end of the work week. Pulmonary function tests were performed at the beginning and end of each work shift on two test days. The parameters measured were forced vital capacity (FVC), forced expiratory volume in one second (FEV_1); and forced expiratory flow rate at 50% and 75% of the vital capacity (FEF_{50} and FEF_{75}). Mean time-weighted average (TWA) exposures to ammonia were determined by personal air sampling over one shift following NIOSH recommendations. The average sampling time was 8.4 hours. The mean age of the exposed workers was 38.9 ± 11.7 years and the average duration of exposure was 12.2 ± 8.9 years. Only weight differed significantly when demographics for the exposed and control workers were compared. Time-weighted average airborne concentrations of ammonia were 9.2 ± 1.4 ppm (6.4 mg/m^3) and 0.3 ± 0.1 ppm (0.2 mg/m^3) for the exposed and control groups, respectively. Although no significant difference was evident between exposed and control groups in reporting of respiratory symptoms, workers reported that exposure at the plant aggravated specific symptoms including coughing, wheezing, nasal complaints, eye irritation, throat discomfort, and skin problems. No significant differences were evident between the exposed and control groups in reporting of respiratory symptoms, sense of smell, baseline lung function, or change in lung function at the beginning and end of a work week. No significant relationships between level or length of ammonia exposure and lung function results were demonstrated. The NOAEL in this study was 9.2 ppm (6.4 mg/m^3), based on lack of evidence for decreased pulmonary function or changes in subjective assessments of respiratory symptoms. A LOAEL was not identified in this study.

Ferguson et al. (1977) exposed healthy human volunteers (2/concentration) employed in an alkali plant to ammonia concentration of 25 ppm, 50 ppm, or 100 ppm, 5 days/week for six weeks. Conclusions of the study were actually based on 5 weeks of exposure as a result of technical difficulties during the first week of the study. Toxicity was assessed by subjective and objective indications of eye and respiratory tract irritation, pulse rate, respiration rate, pulmonary function (FVC, FEV), physical examination, and the ability to perform routine tasks. Exposure to ammonia did not result in abnormalities of the chest, heart, vital organs, neurological response, task performance or significant weight changes as assessed during weekly medical examinations. Transient irritation of the throat was observed at exposures of 50 ppm (4 hours/day).

More recently published occupational studies were examined to identify data potentially suitable for calculation of a subchronic RfC. Ballal et al. (1998) reported the results of a cross-sectional study of male workers employed in two fertilizer plants in Saudi Arabia. Exposure to ammonia concentrations of 25 ppm and above were significantly associated with respiratory symptoms including wheezing, cough, phlegm, dyspnea, and asthma. Ali et al. (2001) examined the pulmonary function of workers (gender not specified) in an ammonia-producing factory in Saudi Arabia. Cumulative exposure of greater than 50 mg/m^3-years was associated with significantly reduced FEV_1 and FVC. Symptomatic workers (i.e., those reporting cough, phlegm, wheeze, and/or dyspnea) showed significantly reduced $FEV_1$and FEV_1/FVC ratio when compared to asymptomatic workers. Neither study adequately reported details of worker exposure, such as the number of hours worked per week, and were not further considered for derivation of reference doses.

A number of studies have examined the relationship between inhalation exposure to pollutants (including ammonia) in livestock confinement buildings and occurrence of respiratory symptoms and/or changes in pulmonary function in workers (Heerderik et al., 1990; Choudat et al., 1994; Donham et al., 1995, 2000; Reynolds et al., 1996; Vogelzang et al. 1997, 2000; Cormier et al., 2000). Exposure to ammonia concentrations of 2.3 to 20.7 ppm was associated with symptoms of bronchial reactivity, inflammation, cough, wheezing, or shortness of breath and decrements in pulmonary function as measured by FEV_1, maximum expiratory flow rate, and maximal mid-expiratory flow rate. These data are of limited use for derivation of a subchronic toxicity reference value for ammonia because workers were concurrently exposed to other potential respiratory toxicants such as dusts, endotoxins, and nitrogen dioxide.

The carcinogenic potential of ammonia via the inhalation route has not been assessed in humans.

The experimental database for human oral exposure to ammonia consists of acute and short-term studies of exposure to ammonium chloride. No subchronic or chronic duration oral exposure studies were located in the literature examined. The availability of studies on ammonium chloride is a result of its use for experimental induction of hyperchloremic metabolic

acidosis. Few of the available studies have been designed or conducted to specifically assess the toxicity of ammonia or ammonium ion in response to oral dosing.

U.S. EPA (1981) reviewed fifteen existing short-term studies of ammonium chloride in humans. Administration of ammonium chloride to all age groups produced metabolic acidosis, with increased susceptibility observed in infants. The results of these studies indicate that metabolic acidosis, impaired glucose tolerance, and reduced tissue sensitivity to insulin may result from doses of ammonium chloride greater than or equal to 100 mg/kg-day (31.8 mg ammonia/kg-day, as estimated by U.S. EPA, 1981). Although frank toxicity was not reported, U.S. EPA (1981) expressed concern for potential bone demineralization as a result of impaired acid-base balance.

In the longest duration human study found, Lemann et al. (1966) investigated the electrolyte balance of five men who were given doses of ammonium chloride to induce metabolic acidosis. Each individual served as his own control. Following baseline observations, each subject was given a small initial dose which was progressively increased over a period of six to nine days, after which the dose remained constant until administration of ammonium chloride was discontinued after day 18. U.S. EPA (1987) reported total doses of 733 mEq (approximately 93 mg/kg-day) for the initial loading period and 2771 mEq (approximately 177 mg/kg-day) for the remainder of the experiment. During ammonium chloride loading, net fixed acid production was increased by an average of 3425 mEq. Progressive acid retention was initially accompanied by a progressive decrease in serum bicarbonate concentration. Serum bicarbonate levels dropped as acid was retained during the first nine days of ammonium chloride dosing, stabilized at a reduced level by about day 12, and rose slightly between days 13 to 18, but did not return to baseline levels until after treatment with ammonium chloride was discontinued. Calcium and phosphorus balances became negative as a result of urinary losses, suggesting to the study authors that slow dissolution of bone mineral was occurring to provide additional buffering capacity. The LOAEL in this study was the initial dose of 93 mg/kg-day.

The carcinogenic potential of ammonia via the oral route has not been assessed in adequately designed epidemiological studies.

Animal Studies

Broderson et al. (1976) continuously exposed F344 rats (6 rats/sex/dose) to ammonia concentrations of 25, 50, 150, or 250 ppm for seven days prior to inoculation with *Mycoplasma pulmonaris* and for 28 to 42 days following inoculation. These exposures were conducted using purified ammonia from a commercial source. In addition, one treatment group was exposed to ammonia produced from a natural source (soiled bedding) for 30 days following inoculation. Each treatment group had a corresponding control group that was inoculated with *M. pulmonaris* and exposed only to background levels of ammonia. Additional groups were exposed to

background or high levels of ammonia (trace and 250 ppm, respectively) without *M. pulmonaris* inoculation. Toxicity was assessed by observation of clinical signs and histopathological examination of nasal passages, middle ear, trachea, lungs, liver, kidney, adrenal, pancreas, testicle, spleen, mediastinal nodes, and thymus. Clinical signs were similar in control and exposed groups during the pre-inoculation exposure period. Signs of murine respiratory mycoplasmosis (MRM) were observed in all groups approximately 10 days after inoculation. All levels of ammonia from bedding or the commercial source increased the severity of the rhinitis, otitis media, tracheitis, and pneumonia characteristic of MRM. The prevalence and extent of gross atelectasis and consolidation were greater in rats exposed to high ammonia concentrations (i.e., ammonia concentrations greater than background) and the prevalence of microscopic respiratory lesions was also greater. The prevalence of gross and microscopic lung lesions differed significantly from controls when data from all high exposure groups were summed and compared with pooled control data. Regression analysis indicated a positive relationship between ammonia concentration and prevalence of gross or microscopic lesions. Exposure of uninoculated rats to ammonia resulted in lesions that were unlike those of MRM and which were restricted to the nasal passages. A LOAEL of 25 ppm (17.4 mg/m^3) was identified in this study.

Schoeb et al. (1982) inoculated pathogen-free F344 rats with M. pulmonis and exposed groups to trace or 100 ppm (70 mg/m^3) concentrations of ammonia for up to 28 days. Growth of *M. pulmonis* was greater in ammonia-exposed rats than in controls and serum immunoglobulin response to the inoculum was also greater in the exposed population. Results of an experiment conducted in rats with cannulated tracheas demonstrated that the nasal passages absorbed virtually all ammonia at administered concentrations of 500 ppm (348 mg/m^3) or below.

Coon et al. (1970) continuously exposed male and female Sprague-Dawley and Long Evans rats for a minimum of 90 days to ammonia concentrations of 0, 40, 127, 262, 455, or 470 mg/m^3. A LOAEL of 262 mg/m^3 was identified on the basis of nasal discharge in 25% of the rats and nonspecific degenerative and circulatory changes in the lungs and kidneys. The upper respiratory tract was not examined for microscopic lesions. In another series of experiments, Coon et al. (1970) exposed rats, guinea pigs, rabbits, dogs and monkeys to ammonia concentrations of 0, 155, or 770 mg/m^3 for 8 hours/day, 5 days/week for a total of 30 exposures. This study identified a LOAEL of 770 mg/m^3 for lung inflammation in rats and guinea pigs and ocular and nasal irritation in dogs and rabbits. The upper respiratory tract was not examined for presence of lesions.

Anderson et al. (1964) conducted a series of experiments that included continuous exposure of guinea pigs and Swiss albino mice to 20 ppm (13.9 mg/m^3) ammonia for up to six weeks and exposure of Leghorn chickens for up to 12 weeks. A separate group of guinea pigs was exposed to 50 ppm (35 mg/m^3) ammonia for six weeks. Although no effects were observed after exposure to 20 ppm for four weeks, gross lesions including edema, congestion, and hemorrhage were observed in the lungs of all three species after six weeks. Grossly enlarged and

congested spleens, congested livers and lungs, and pulmonary edema were observed in guinea pigs exposed to 50 ppm ammonia for six weeks.

Weatherby (1952) exposed guinea pigs to 0 or 170 ppm (118 mg/m^3) 6 hours/day, 5 days/week for up to 18 weeks. No adverse effects were observed in animals exposed for 6 to 12 weeks. Mild changes were observed in the spleen, kidney suprarenal glands, and liver at 18 weeks. No effects on the lungs were observed. The upper respiratory tract was not examined for lesions.

No effects on ovarian or uterine weights were observed in pigs exposed by inhalation to approximately 5 or 35 ppm ammonia for 6 weeks (Diekman et al., 1993). Continuous exposure of female pigs to approximately 35 ppm ammonia from 6 weeks prior to breeding through gestation day 30 did not significantly affect age to puberty, number of live fetuses, fetus-to-corpus luteum ratio, or fetal length when compared to females exposed to 7 ppm ammonia for the same duration (Diekman et al., 1993).

Limited subchronic and chronic toxicity data are available for ammonia. In an early study, Seegal (1927) administered ammonium chloride doses of 0 or 372 mg/kg-day to rabbits by gavage for 36 days and observed episodes of severe metabolic acidosis and epithelial degeneration in the renal tubules. Similar effects plus softening of the teeth, skull, and ribs were observed at a dose of 234 mg/kg-day given by gavage for 11 months.

Freedman and Beeson (1961) exposed 12 adult male Sprague-Dawley rats to 1.6% ammonium chloride in the drinking water for periods of up to three weeks to evaluate effects on the kidney. Six control animals were provided with tap water. An additional group of 10 rats was given drinking water containing 1% ammonium chloride for an additional 2.5 months to assess subchronic effects. No abnormalities were detected by urinalysis, gross pathology or histologic examination. Physiological adaptation to metabolic acidosis was indicated by increased glutaminase activity per gram of kidney with duration of treatment. No data on water consumption or body weight of the test animals were provided. Assuming that the rats weighed 250 grams and consumed 25 mL of drinking water per day, U.S. EPA (1987) estimated a time-weighted average dose of approximately 360 mg/kg-day.

Gupta et al. (1979) conducted a subchronic exposure study in adult female and weanling male and female ITRC rats (20/sex/age/dose). The test animals were treated with ammonium sulfamate ($NH_4SO_3NH_2$) at doses of 0, 100, 250, or 500 mg/kg-day, 6 days per week for 30, 60, or 90 days. The ammonium sulfamate was given as a 10% solution, but the study report did not clearly indicate whether the dose was administered by gavage. Food and water consumption, appearance, behavior, and body weight were monitored during the study. Hematological parameters and organ weights were measured at interim and terminal sacrifices and tissue samples were collected for histopathological examination. Food and water consumption were

decreased in male and female weanlings at the 500 mg/kg-day dose relative to the controls. No compound-related clinical signs of toxicity were observed in dosed rats. Body weight of adult females receiving 500 mg/kg-day was significantly reduced at 60 day (9%) and 90 days (16%) when compared to the control group. No significant differences were noted in hematological parameters, organ weights, or histopathology. Although the study authors indicated that ammonium sulfamate would be expected (on the basis of its structure) to cause metabolic acidosis, this prediction does not appear to have been confirmed experimentally. These data identify NOAEL and LOAEL values of 250 and 500 mg/kg-day as ammonium sulfamate, respectively. The effective dose of ammonia at each of these dose levels is uncertain, because under certain conditions the sulfamate ion is hydrolyzed to bisulfate ion and ammonia (U.S. EPA, 1981, 1987). Assuming no hydrolysis of the sulfamate ion, these doses correspond to 37.3 and 74.8 mg/kg-day of ammonia, respectively.

Bodega et al. (1993) fed diets containing 0 or 20% ammonium acetate to pathogen-free female Wistar rats (5 rats/group) for 3, 7, 15, 45, or 90 days to assess effects on glial fibrillary acidic protein (GFAP) in the spinal cord. The ammonium acetate in the diet was supplemented by addition of 5 mM ammonium acetate to the drinking water. The total exposure from the combined food and water was not provided by the author. Exposure to ammonium acetate had no effect on behavior, water consumption, or spinal GFAP levels of the test animals. Body weight gain was significantly reduced in dosed animals at all time points. Body weight gain in animals exposed to ammonia for 90 days was 69% of the control value.

Fazekas (1939, 1954a,b) conducted studies in rabbits that ranged from 3 to 17 months in duration. The administration of various ammonium salts (carbonate, chloride, sulfate, hydrophosphate, acetate, or lactate) or ammonium hydroxide resulted in enlargement of the parathyroids. Similar results were obtained with a variety of other chemicals (sodium dihydrophosphate, sodium ammonium phosphate, calcium chloride, hydrochloric acid, acetic acid, lactic acid) (Fazekas, 1954a). The chemicals were given for three week periods separated by one week intervals. The administered dose of ammonium salts in this study is unclear, but based on descriptions in secondary sources is likely to be less than or equal to 0.4 mg/kg-day. In a related study, similar treatment of rabbits with ammonium chloride or ammonium sulfate resulted in fluctuations in serum calcium and phosphorus levels (Fazekas, 1954b). Rabbits given gavage doses of 100 mg/kg by gavage on alternate days and then daily for 17 months developed enlarged adrenal glands. An initial fall in blood pressure of 20 to 30 mg Hg was followed by a gradual rise to levels 10 to 30 mg Hg after several months of treatment.

In a chronic study, Barzel and Jowsey (1969) exposed male Sprague-Dawley rats to 1.5% ammonium chloride in the drinking water for 330 days. The effects of ammonium on animals receiving a nutritionally complete diet included decreased bone content of fat-free solid and calcium; decreased body weight and body fat; and decreased blood pH and plasma carbon dioxide. Barzel (1975) reported effects on bone (decreased density, ash weight, and calcium

content), but no effects on growth, in intact and ovariectomized female rats exposed to 1.5% ammonium chloride in the drinking water for 300 days. U.S. EPA (1981) estimated an average daily dose of 1500 mg/kg-day for both studies.

The carcinogenic potential of ammonia has been investigated in an oral bioassay conducted in mice. Toth et al. (1972) exposed male and female Swiss mice (49-50/sex/dose) to 0.1, 0.2, or 0.3% ammonium hydroxide in the drinking water for their lifetime. U.S. EPA (1987) estimated an average daily dose of 565 mg/kg-day at the highest concentration. Male and female C3H mice (40/sex) were exposed to 0.1% ammonium hydroxide in the drinking water for their lifetime. This concentration corresponded to average daily doses of approximately 270 mg/kg-day, respectively, as calculated by U.S. EPA (1987). While data for a control group are reported in the publication, it is not clear whether this group was run concurrently with the ammonia treatment groups. The mice were examined and weighed at weekly intervals. Moribund animals were humanely sacrificed. Complete necropsies were performed on all animals and the liver, kidney, spleen, lung, and organs with gross lesions were processed for histopathological examination. No evidence for carcinogenicity was observed in males or females of either strain.

Two studies have examined the interaction of ammonia with other compounds in the induction of tumors. Uzvölgyi and Bojan (1980) investigated the interaction of ammonia with diethyl pyrocarbonate (DEPC) in induction of lung tumors in CFPL mice (a urethane-sensitive strain). Mice given gavage doses of either ammonia or DEPC alone did not develop lung tumors, whereas development of lung tumors was observed in mice dosed with both ammonia and DEPC. Induction of tumors in the sensitive CFPL strain may have resulted from formation of urethane *in vivo* from ammonia and DEPC (Uzvölgyi and Bojan,1985). Tsujii et al. (1995) studied the effect of ammonia on tumor development in male Sprague-Dawley rats pretreated with N-methyl-N'-nitro-N-nitrosoguanidine (MNNG) in the drinking water for 24 weeks and subsequently exposed to drinking water containing 0 or 0.01% ammonia for an additional 24 weeks. Exposure to ammonia significantly increased the incidence, multiplicity, size, and depth of tumors in the glandular stomach and stimulated cell proliferation in the gastric mucosa.

Reproductive and developmental toxicity data on ammonia from animal studies are limited. Treatment of virgin female rabbits with oral doses of various ammonium salts (carbonate, chloride, hydrophosphate, or sulfate) or ammonium hydroxide was associated with enlargement of the ovaries, follicle maturation, and formation of corpora lutea (Fazekas, 1949). Enlargement of the uterus, hypertrophy of the teats, and secretion of milk were also reported in treated rabbits. However, several aspects of this study are poorly documented, including the use of controls and exact method of dose administration.

Minaña et al. (1995) examined the effect of prenatal exposure to 20% ammonium acetate in the diet on NMDA receptor function in Wistar rats. As judged from graphically presented data, offspring of dams treated from day 1 of pregnancy through lactation had body weights at

birth that were comparable to the control group. The body weight of weanlings maintained on a diet containing 20% ammonium acetate was reduced by approximately 27% and 26% in males and females, respectively, at 120 days of age when compared to animals maintained on the control diet. Rats exposed to ammonia during pregnancy and lactation and fed an unsupplemented diet at weaning had a lower growth rate than the controls until day 60, indicating persistent effects of prenatal and lactational exposure to ammonia. Prenatal exposure to ammonia reduced binding of [^{3}H]MK-801 to NMDA receptors in primary cultures of cerebellar neurons by approximately 60%. No data were provided for feed intake in this study; therefore, an average daily dose can not be reliably estimated.

Other Studies

Information on the toxicokinetic properties of ammonia have been reviewed and summarized in ATSDR (2002). Inhalation exposure studies in humans show that ammonia dissolves in the mucous of the upper respiratory tract. At low levels of exposure, most inhaled ammonia is retained in the upper respiratory system. As the ammonia concentration increases, the capacity of the upper respiratory system is saturated and a larger percentage is absorbed. Development of nasal and pharyngeal irritation, but not tracheal irritation, following exposure is consistent with retention of inhaled ammonia in the upper respiratory tract. Animal data provide supporting evidence for high nasal retention. Quantitative differences in the amount of ammonia in inhaled and exhaled air suggest that small amounts are absorbed across the nasopharyngeal membranes into the systemic circulation. Limited systemic absorption is also inferred from lack of change in blood nitrogen and urinary-ammonia compounds following exposure. The available evidence suggests that ammonium absorbed via inhalation would be distributed to all body compartments by the blood. Ammonium reaching the tissues would be used in protein synthesis or as a buffer, with excess levels reduced by urinary excretion or conversion in the liver to glutamine and urea. Absorbed ammonia is excreted by the kidneys as urea and urinary ammonium compounds. Bioaccumulation to toxic levels is not expected to occur from chronic inhalation exposure based on the low levels of absorption and existence of multiple effective mechanisms for detoxification and excretion.

Human data indicate that ingested ammonium compounds are readily absorbed. The absorbed ammonium ion is transported via the hepatic portal vein to the liver, where most is metabolized to urea in healthy individuals. Data from animals and humans suggest that little of the ingested compound reaches the systemic circulation as ammonia or ammonium ion. Ingested ammonium compounds are excreted primarily in the urine as urea. Small amounts may be excreted in the sweat or in exhaled air.

Genotoxicity data are available from studies in humans, mice, *Escherichia coli*, *Drosophila melanogaster*, and cultured chick fibroblast cells. Yadav and Kaushik (1997) conducted cytogenetic assays on blood samples collected from 22 workers exposed to ammonia

gas (ambient level = 0.09 mg/m^3) during production of nitrogen fertilizers and 42 unexposed staff employed at the same facility. The exposed workers did not show clinical symptoms of ammonia toxicity. The mitotic index, total number of chromosome aberrations (CA), and frequency of sister chromatid exchange (SCE) were significantly increased in the exposed workers as compared to their matched controls. The frequency of CA and SCE increased with the duration of exposure. Concurrent exposure to other compounds such as nitrogen dioxide was not addressed in the study report. The frequency of micronuclei was significantly increased in Swiss albino mice treated with intraperitoneal doses of ammonia ranging from 12.5 to 50 mg/kg as compared to controls (Yadav and Kaushik, 1997). Positive results were obtained for reverse mutation in *E. coli*, but only at levels of ammonia that were cytotoxic (Demerec et al., 1951). Negative results were reported for ammonium sulfate in *Salmonella typhimurium* and *Saccharomyces* (Litton Bionetics, 1975). Positive results were observed for chromosomal aberrations in chick fibroblasts treated with buffered ammonium chloride (Rosenfeld, 1932). Reduced cell division and inhibition of DNA repair were observed in mouse fibroblasts treated with ammonia and/or ammonium chloride (Visek et al., 1972; Capuco, 1977). Lobasov and Smirnov (1934) reported slightly mutagenic activity in *D. melanogaster*. Auerbach and Robson (1947) obtained doubtful, probably negative, results for sex-linked recessive mutations in *D. melanogaster* and reported negative results for dominant lethality.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC ORAL RfD VALUES FOR AMMONIA

Adequate toxicity data for derivation of provisional subchronic or chronic RfD values are not available. The human experimental database consists primarily of older acute and short-term studies in which ammonium chloride was used to induce metabolic acidosis. The longest duration of exposure among these studies was 18 days. The animal database includes one study (Gupta et al., 1979) that was reasonably well-documented, evaluated appropriate endpoints, and included a histopathological evaluation of potential target tissues. This study was not used to derive p-RfD values for two reasons. First, the test article was ammonium sulfamate, which is hydrolyzed under certain conditions to bisulfate ion and ammonia. It is not known whether hydrolysis occurred when the compound was administered to rats; thus, the actual dose of ammonia/ammonium ion administered to the test animals is uncertain. Second, comparison of the data from this study to results from human studies suggests that health effects may occur in humans at lower concentrations of ammonium salts. Gupta et al. (1979) identified a NOAEL equivalent to 37.3 mg ammonia/kg-day and a LOAEL equivalent to 74.8 mg ammonia/kg-day (assuming no hydrolysis of the sulfamate ion; the actual dose may differ). This LOAEL is higher than the 31.8 mg/kg-day level of concern identified for humans by U.S. EPA (1981) for potential bone demineralization. Route-to-route extrapolation is not feasible for derivation of oral reference values because the toxicokinetic properties of ammonia differ significantly for the oral and inhalation pathways. This evaluation of data adequacy is consistent with previous

assessments conducted by U.S. EPA (1981, 1987), which did not use the existing toxicity data for derivation of reference doses.

Because adequate data are lacking for oral exposure to ammonia, previous determinations of toxicity reference values (U.S. EPA, 1981, 1987, 1997) have used organoleptic (taste) data to estimate acceptable ammonium levels in drinking water at 34-35 mg/L. However, organoleptic (taste) data are not reliable predictors of either toxicity or intake. Furthermore, WHO (1986) has identified several limitations of the "triangle test" methodology used to derive the organoleptic (taste) threshold for ammonia: 1) the definition of the threshold is somewhat arbitrary; 2) McBride & Laing (1979) have reported significant positional bias in using the triangle test to determine taste threshold; and 3) the triangle test is not intended to mimic environmental exposures in which the taste thresholds could be substantially higher. Due to the high uncertainty associated with use of the organoleptic (taste) data for ammonia, no oral subchronic or chronic p-RfD is derived.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC INHALATION RfC VALUES FOR AMMONIA

A **chronic RfC of 1E-1 mg/m^3** is listed for ammonia on IRIS (U.S. EPA, 2003) based on lack of evidence of decreased pulmonary function in human workers exposed to an estimated concentration of 6.4 mg/m^3 for an average of 12.2 years (Holness et al., 1989). The presence of a chronic RfC on IRIS precludes derivation of a provisional chronic RfC for this chemical.

The occupational study of Holness et al. (1989) and the subchronic study conducted in rats by Broderson et al. (1976) were also considered to be an appropriate basis for derivation of a provisional subchronic RfC. Holness et al. (1989) identified a NOAEL of 9.2 ppm (6.4 mg/m^3) for apparent lack of effect on pulmonary function or changes in subjective assessments of symptoms in workers exposed to ammonia for a mean duration of 12.2 years while employed at a sodium carbonate production plant. A LOAEL was not identified in this study. The $NOAEL_{HEC}$ was calculated using the default dosimetric adjustment for human data (U.S. EPA, 1994b), as follows:

$$NOAEL_{ADJ} = 6.4 \text{ mg/m}^3 \times 5\text{days}/7\text{days} = 4.6 \text{ mg/m}^3$$

$$NOAEL_{HEC} = NOAEL_{ADJ} \times (VE_{ho}/VE_h)$$
$$= 4.6 \text{ mg/m}^3 \times (10 \text{ m}^3/20 \text{ m}^3)$$
$$= 2.3 \text{ mg/m}^3$$

where,

VE_{ho} = human occupational default minute volume (10 m^3/8 hours; U.S. EPA, 1994b)

VE_h = human ambient default minute volume (20 m^3/24 hours; U.S. EPA, 1994b)

A $LOAEL_{HEC}$ was calculated from the rat data of Broderson et al. (1976) for comparison with the human $NOAEL_{HEC}$. These researchers identified a LOAEL of 17.4 mg/m^3, the lowest concentration tested, for increased severity of rhinitis and pneumonia (with respiratory lesions) in F344 rats inoculated with *M. pulmonis* and continuously exposed to ammonia. The $LOAEL_{HEC}$ is calculated using the procedure for a respiratory effect of a category 1 gas in the extrathoracic region (U.S. EPA, 1994b) as follows:

$LOAEL_{ADJ}$ = $LOAEL_{OBSERVED}$ = 17.4 mg/m^3 (continuous exposure)

$LOAEL_{HEC}$ = $LOAEL_{ADJ}$ x $RGDR_{ET}$

$RDGR_{ET}$ = $(V_E / SA_{ET})_A$ / $(V_E / SA_{ET})_H$
= (0.14 m^3/day / 15 cm^2) / (20 m^3/day/ 200 cm^2) = 0.093

$LOAEL_{HEC}$ = 17.4 mg/m^3 x 0.093
= 1.62 mg/m^3 ≈ 1.6 mg/m^3

where:

$RDGR_{ET}$ = regional gas deposition ratio in the extrathoracic region
V_E = ventilation rate (m^3/day)
SA_{ET} = surface area of extrathoracic region (cm^2)
A, H = subscripts denoting laboratory animal and human, respectively
$(V_E)_A$ = 0.14 m^3/day (subchronic, female F344 rats; U.S. EPA, 1988)
$(V_E)_H$ = 20 m^3/day (U.S. EPA, 1988)
$(SA_{ET})_A$ = 15 cm^2 (U.S. EPA, 1994b)
$(SA_{ET})_H$ = 200 cm^2 (U.S. EPA, 1994b)

A **subchronic p-RfC of 0.1 mg/m^3 (1E-1 mg/m^3)** is derived by applying a composite uncertainty factor of 30 to the human NOAEL of 2.3 mg/m^3 (Holness et al., 1989). The composite UF includes a factor of 10 to protect sensitive individuals and a factor of 3 for proximity of the animal LOAEL to the human NOAEL and database limitations, including lack of adequate reproductive and developmental toxicity studies. The UF is applied to the human $NOAEL_{HEC}$ of 2.3 mg/m^3, as follows:

subchronic p-RfC = $NOAEL_{HEC}$ / UF
= 2.3 mg/m^3 / 30
= 0.1 mg/m^3 or 1E-1 mg/m^3

The animal LOAEL of 1.62 mg/m^3 is in close proximity to the human NOAEL of 2.3 mg/m^3; however, the extrathoracic effects observed in the animal study were mild and reversible. Furthermore, the animal $LOAEL_{HEC}$ of 1.6 mg/m^3 gives a sixteen-fold comparative ceiling to the p-sRfC of 0.1 mg/m^3. This adds confidence to the human NOAEL. Thus, the human NOAEL is considered for the derviation of this subchronic p-RfC. Thus the subchronic p-RfC, based on pharmacokinetics, remained the same as the RfC.

Confidence in the principal study is medium because the study was conducted in humans (but the sample size was relatively small), data were collected on males only, and a LOAEL was not identified. Although complaints of exacerbated upper respiratory symptoms were recorded in the principal study and support the extrathoracic region as the critical region for effects, an objective assessment of the workers' nasal epithelium was not performed. However, the observation of mild extrathoracic effects in animals at a HEC similar to the NOAEL support the human findings.

Confidence in the database is medium. The developmental, reproductive, and chronic toxicity of ammonia have not been tested, but toxicokinetic data suggest that ammonia is absorbed by the nasal passages at concentrations comparable to the $NOAEL_{HEC}$ and systemic distribution is unlikely (U.S. EPA, 2003). Medium confidence in the subchronic p-RfC follows.

DERIVATION OF A PROVISIONAL CARCINOGENICITY ASSESSMENT FOR AMMONIA

Human data on the carcinogenic effects of ammonia or ammonia compounds are not available. Among animals, no evidence for carcinogenicity was observed in two strains of mice administered ammonium hydroxide in drinking water for two years or in a urethane-sensitive strain of mice administered ammonia in water by gavage for 4 weeks. There is some indication that ammonia contributes to the development of cancer when coadministered with DEPC (via formation of urethane) or MNNG (via stimulation of cell proliferation in the gastric mucosa). Limited genotoxicity testing of ammonia has produced mixed results. Under the proposed guidelines (U.S. EPA, 1999), the data for carcinogenicity of ammonia *are inadequate for an assessment of human carcinogenic potential.*

Derivation of quantitative estimates of cancer risk for ammonia is precluded by the absence of data indicating a carcinogenic effect for this chemical.

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Provisional Peer Reviewed Toxicity Values

Benz[a]anthracene
(CASRN 56-55-3)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards

NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR BENZ[a]ANTHRACENE (CASRN 56-55-3)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

- Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
- California Environmental Protection Agency (CalEPA) values, and
- EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

This document has passed the STSC quality review and peer review evaluation indicating that the quality is consistent with the SOPs and standards of the STSC and is suitable for use by registered users of the PPRTV system.

INTRODUCTION

IRIS (U.S. EPA 1990b) reports that an RfD for benz[a]anthracene is not available at this time. Neither the HEAST (U.S. EPA, 1997) nor the Drinking Water Regulations and Health Advisory list (U.S. EPA, 2000) report an RfD for benz[a]anthracene. ATSDR (2000) has not published a Toxicological Profile for benz[a]anthracene, though a discussion of benz[a]anthracene is included in the profile for polycyclic aromatic hydrocarbons (PAH) (ATSDR, 1995). No oral MRLs were derived for benz[a]anthracene. IARC (1973, 1983) monographs on benz[a]anthracene and the NTP status report (NTP, 2000) were consulted for relevant information. The World Health Organization (WHO, 2000) has not published an Environmental Health Criteria document for benz[a]anthracene.

The CARA lists (U.S. EPA, 1991, 1994b) report no relevant documents specific for benz[a]anthracene. A Drinking Water Criteria Document (U.S. EPA, 1990a) for PAH exists, but an RfD for benz[a]anthracene was not derived.

Literature searches were conducted from 1989 to June, 2000 for studies relevant to the derivation of an RfD. The databases searched were: TOXLINE, MEDLINE, CANCERLIT, RTECS, GENETOX, HSDB, CCRIS, TSCATS, EMIC/EMICBACK, and DART/ETICBACK.

A carcinogenicity assessment for benz[a]anthracene is available on IRIS (U.S. EPA, 1990b). This assessment, verified 02/07/1990, was based on a Carcinogen Assessment of Coke Oven Emissions (U.S. EPA, 1984a) and a Drinking Water Criteria Document for Polycyclic Aromatic Hydrocarbons (PAHs) (U.S. EPA, 1990). Benz[a]anthracene was assigned to weight-of-evidence Group B2, probable human carcinogen, based on increased incidences of pulmonary and hepatic tumors in mice exposed by gavage (Klein, 1963) or intraperitoneal injection (Wislocki et al., 1986), positive results in tests for complete carcinogenicity and initiating activity in skin painting assays in mice (multiple studies reviewed by IARC, 1973), and injection site sarcomas in mice injected subcutaneously (Steiner and Edgecomb, 1952; Steiner and Falk, 1951). Supporting data from genotoxicity tests included positive results for mutations in bacteria and mammalian cells, and transformed mammalian cells in culture. It was noted that benz[a]anthracene is a component of mixtures that are known to produce cancer in humans, although there are no human data that specifically link benz[a]anthracene with human cancers. However, due to the lack of adequate oral data for benz[a]anthracene, an oral slope factor was not included on IRIS (U.S. EPA, 1990b).

The HEAST (U.S. EPA, 1997) reports the availability of the weight-of-evidence assessment on IRIS, but contains no additional information. The Drinking Water Standards and Health Advisories list (U.S. EPA, 2000) includes the cancer group B2 designation for benz[a]anthracene, but does not include additional cancer risk information. A Health Effects Assessment for Polycyclic Aromatic Hydrocarbons (PAHs) (U.S. EPA, 1984b) was located, but no relevant documents specific to benz[a]anthracene were found in the CARA database (U.S. EPA, 1991, 1994b).

The International Agency for Research on Cancer (IARC, 1973, 1983, 1987) evaluated benz[a]anthracene for carcinogenicity and placed the chemical in Group 2A (probable human carcinogen), finding that there is sufficient evidence that benz[a]anthracene is carcinogenic to experimental animals and that the chemical is active in short-term genotoxicity tests. CalEPA derived an oral slope factor for benz[a]anthracene which is based on a relative potency factor approach (CalEPA, 1999). The ATSDR (1995) Toxicological Profile for Polycyclic Aromatic Hydrocarbons (PAHs) and the NTP (2000) management status report were searched for relevant information. Updated literature searches for cancer data were conducted from 1989 to 2000. The databases searched were TOXLINE, MEDLINE, CANCERLIT, CCRIS, TSCATS, HSDB, RTECS, GENETOX, DART/ETICBACK, and EMIC/EMICBACK.

REVIEW OF THE PERTINENT LITERATURE

Human Studies

No studies were located regarding oral exposure of humans to benz[a]anthracene.

No studies were located regarding the carcinogenicity of benz[a]anthracene in humans following oral exposure.

Animal Studies

No oral studies in animals suitable for derivation of an RfD were located. The majority of available studies examined mixtures of PAHs containing benz[a]anthracene, rather than the pure compound. A study by Klein (1963) examined the carcinogenic effects of benz[a]anthracene in mice following gavage exposure (3 exposures/week, ~1.5 mg/exposure in 0.05 mL volume, for durations between 344 and 600 days). However, the study examined only one exposure level and only reported tumor incidence; noncancer endpoints were not evaluated.

Klein (1963) observed increased incidence of pulmonary adenoma and hepatoma in male mice treated with 3% benz[a]anthracene solution by gavage for 5 weeks. This study is not suitable for quantitative cancer risk assessment due to the short exposure duration and use of a single dose level (U.S. EPA, 1990a). No other studies were located that could be used as the basis for derivation of an oral slope factor for benz[a]anthracene.

Other Studies

A number of genotoxicity studies (reviewed by ATSDR, 1995; IARC, 1973; U.S. EPA, 1984b, 1990a) indicate that benz[a]anthracene is genotoxic to bacteria and mammalian cells.

DERIVATION OF A PROVISIONAL RfD FOR BENZ[a]ANTHRACENE

A provisional RfD for benz[a]anthracene cannot be derived due to the lack of suitable human and animal data.

DERIVATION OF A PROVISIONAL RfC FOR BENZ[a]ANTHRACENE

A provisional RfC for benz[a]anthracene cannot be derived due to the lack of suitable human and animal data.

DERIVATION OF A PROVISIONAL ORAL SLOPE FACTOR FOR BENZ[a]ANTHRACENE

A provisional oral slope factor for benz[a]anthracene cannot be derived because human data are lacking and the oral cancer data in animals are inadequate. However, the Appendix to this document contains a screening value that may be useful in certain instances. Please see the attached Appendix for details. A provisional unit risk is not developed because of lack of available data.

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APPENDIX

DERIVATION OF A SCREENINGVALUE FOR BENZ[a]ANTHRACENE

For reasons noted in the main PPRTV document, it is inappropriate to derive provisional toxicity values for benz[a]anthracene, oral slope factor. However, information is available for this chemical which, although insufficient to support derivation of a provisional toxicity value, under current guidelines, may be of limited use to risk assessors. In such cases, the Superfund Health Risk Technical Support Center summarizes available information in an Appendix and develops a "Screening Value." Appendices receive the same level of internal and external scientific peer review as the PPRTV documents to ensure their appropriateness within the limitations detailed in the document. In the OSRTI hierarchy, Screening Values are considered to be below Tier 3, "Other (Peer-Reviewed) Toxicity Values."

Screening Values are intended for use in limited circumstances when no Tier 1, 2, or 3 values are available. Screening Values may be used, for example, to rank relative risks of individual chemicals present at a site to determine if the risk developed from the associated exposure at the specific site is likely to be a significant concern in the overall cleanup decision. Screening Values are not defensible as the primary drivers in making cleanup decisions because they are based on limited information. Questions or concerns about the appropriate use of Screening Values should be directed to the Superfund Health Risk Technical Support Center.

In this appendix, we briefly examine the Agency's development of a quantitative cancer dose-response analysis for benz(a)anthracene (B[a]A), a polycyclic aromatic hydrocarbon (PAH). In 1993, the U.S. EPA developed an estimated order of potency value of 0.1 for B[a]A, relative to the carcinogenicity of a second PAH, benzo(a)pyrene (B[a]P). We then examine the development of this estimated order of potency value considering the relative potency factor method developed in the U.S. EPA's Supplementary Chemical Mixtures Guidance (U.S. EPA, 2000). We conclude that there is uncertainty in applying an RPF value, which was developed in a rodent bioassay, to an oral slope factor. We identify uncertainties regarding the application of this value in risk assessments. The discussion focuses on animal bioassay data rather than *in vitro* methods, because we do not know whether such studies provide relevant measures of relative potency for humans. We also do not discuss studies that have compared potencies for non-cancer effects because the IRIS database does not quantify an oral RfD for B[a]P; other sources of variability associated with the development of RfD estimates complicate the application of relative potency approaches.

In 1992, the U.S. EPA published the 'Drinking Water Criteria Document for Polycyclic Aromatic Hydrocarbons (U.S. EPA, 1992), which details the development of an oral cancer slope factor (OSF) for a PAH, B[a]P. This document also classified seven other PAHs including B[a]A as probable human carcinogens, but, citing limited dose-response information, did not develop cancer slope factor estimates for these seven PAHs. In 1993, the Agency published the 'Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons' (U.S. EPA, 1993), which describes the development of an approach for quantifying the cancer risk associated with these seven PAHs by comparing the relative carcinogenic potency of each

compound to that of B[a]P. The Agency's approach was mathematically equivalent to the toxicity equivalence factor (TEF) approach (U.S. EPA, 1989). The TEF approach as applied to dioxins assumed that a single TEF value could be developed for each dioxin congener and that this same value could be used for different health endpoints, different routes of exposure and different durations of exposure. However, the underlying scientific data for B[a]A and B[a]P did not satisfy all of the criteria recommended for implementing the TEF method (Barnes, et al., 1991). The Agency acknowledged that this approach did not meet all of the criteria for TEF development and coined an alternative term, "estimated order of potency" to distinguish this approach from TEFs citing the following additional reasons:

- approach applied to a small subset of the PAHs, instead of all PAHs
- approach limited to the cancer endpoint, instead of all health endpoints
- slope factor derivation based on B[a]P exposure only from an oral pathway, instead of deriving this value based on multiple exposure routes
- uncertainty about such an application given the current understanding of the toxicodynamics associated with PAH carcinogenicity

The Agency approach assumed that the human carcinogenicity of the seven PAHs could be predicted using an oral cancer slope factor that was developed for B[a]P. To analyze the carcinogenicity of B[a]A relative to B[a]P, the Agency utilized the results of a chronic mouse dermal bioassay reported by Bingham and Falk (1969), which relied on the bioassay methods published by Horton et al. (1965). In the bioassay, groups of mice were treated with either B[a]P or B[a]A. B[a]P or B[a]A was applied to an area of shaved skin on the back of each mouse twice weekly until the animal developed a tumor or died. We note that Bingham and Falk (1969) did not report solvent control tumor incidences.

The ability of B[a]A to elicit rodent skin tumors then was quantitatively compared to that of B[a]P (Equation 1). U.S. EPA (1992) describes a potency analysis by T. Thorslund of ICF-Clement Associates under contract with U.S. EPA. In the application of these models it was assumed that carcinomas can develop from papillomas. The relative potency of each PAH was calculated as the ratio of the estimated times-to-tumor with the potency of BAP indexed as 1. Point estimates (maximum likelihood estimates) were compared rather than upper bound estimates. Based on this approach the U.S. EPA (1993) recommended an "estimated order of potency" value for B[a]A of 0.1, relative to B[a]P. This was described as an interim recommendation. Time-to-tumor analyses rely on measures of response time and dose. Consequently, this integrated measure of response time is an imperfect measure upon which to base an estimate of the relative potency of one chemical to another.

$$RPF = \frac{TT_{B[A]P}}{TT_{B[A]A}}$$ Equation 1

Where:
RPF Relative Potency Factor (unitless)
TT Time-to-tumor (days)
B[A]A Benz[a]Anthracene
B[A]p Benz[a]Pyrene

U.S. EPA (1993) also analyzes the relative potency of B[a]A based on several other bioassays. Based on an intraperitoneal injection study (Wislocki et al. 1986), US EPA (1993) reported a range of "estimated order of potency" values of 0.06-0.52 for B[a]A. Wislocki et al. (1986) administered B[a]P and B[a]A intraperitoneally to newborn CD-1 mice on postnatal days 1, 8, and 15 and the mice were sacrificed after 1 year. The range of potency values was calculated using liver and lung tumor incidence data. The relevance of this exposure route to environmental exposures is questionable and the applicability of relative potency comparisons to such exposures is not known. The US EPA (1993) also discusses a manuscript by Nisbet and Lagoy, which recommends a relative potency value of 0.1 for B[a]A based on comparisons of tumorigenic potencies with B[a]P (essentially the same as those reviewed by Clement Associates, 1988). The RPFs were derived from previously reported review papers (Nisbet and LaGoy, 1992; Rugen et al., 1989; Clement Associates, 1988; Chu and Chen, 1984), as well as the primary literature describing pulmonary implant, skin painting, subcutaneous injection, and mouse skin DNA binding studies. The relative potency values of B[a]A were comparable across multiple testing modalities.

In 2000, the Agency published the 'Supplementary Guidance for Chemical Mixtures,' which describes the relative potency factor method. Similar to the TEFs and estimated order of potency methods, this method is based on the concept of dose addition. The fundamental assumption of dose additive mixture methods is that the components' toxicity is mediated through the same toxic mode of action; then, the toxicity of mixtures consisting of components that act through a common mode of toxic action can be predicted by the component compounds' toxicity. The toxicity of the marginally studied components of the mixture can be estimated by scaling to the toxicity of a well-studied component of the chemical mixture (referred to as the index chemical). To implement this approach, the index chemical must have adequate toxicologic dose-response data for relevant routes of exposure. The toxicity of each of the other components of the mixture is predicted by scaling its exposure level by its toxicity relative to the index chemical. This scaling factor, called the Relative Potency Factor (RPF), is based on a comparison of the results of toxicologic assays with those results for the index chemical. The product of the measured exposure concentration of each mixture component and its RPF is considered to be an equivalent dose in units of the index chemical (i.e., dose of Chemical I X RPF_I = Index Chemical Equivalent Dose of Chemical I). The index chemical exposure equivalents of all the mixture components are summed to express the total mixture exposure in terms of an equivalent exposure to the index chemical. The risk posed by the mixture is quantified by comparing the mixture's index chemical equivalent dose to the dose-response function of the index chemical. A key advantage of this mixture component method is that, based on the available data, the application of an RPF can be limited to specific toxicologic effects, exposure routes, exposure durations, or dose ranges. The EPA stated that RPF applications that have no such limitations are called toxicity equivalence factors (TEFs).

Based on this application of the RPF method and the OSF listed on IRIS for B[a]P, 7.3 per mg/kg-day, we provide a **screening oral slope factor of 0.7 per mg/kg-day (0.1 x 7.3).** Screening level values should be used only for screening and after consultation with the Superfund Health Risk Assessment Center.

The following should be considered in the application of the B[a]A RPF value to the OSF for B[a]P.

- The B[a]A RPF value of 0.1 was developed using chronic exposure data, applications to other exposure durations should include analyses of toxicokinetics and toxicodynamics.
- The B[a]A RPF value of 0.1 was developed using cancer data, applications to other toxicity endpoints should include analyses of toxicokinetics and toxicodynamics.
- The B[a]A RPF value of 0.1 was developed based on a small number of exposure routes, applications to other routes of exposure should compare toxicokinetics and toxicodynamics of B[a]A across relevant routes of exposure.
- Use of the maximum likelihood estimates to develop the RPF value (U.S. EPA, 1992) of 0.1 for B[a]A is appropriate

A number of additional uncertainties are identified:

- The Bingham and Falk study does not report a vehicle control. The lack of such a control increases the uncertainty in the quantitative interpretation of the results.
- The limited review of the toxicological literature on B[a]A failed to identify data that characterize whether the carcinogenicity of B[a]A and B[a]P results from a common toxic mode of action. Evidence presented here is based on gross observations of benign and malignant tumor development in rodents. Additional toxicodynamic analyses are needed to characterize whether these compounds share a common toxic mode of action in rodents. Information is also needed to determine if this mode of action is relevant to humans. We emphasize that this assumption of common toxic mode of action is *critical* to application of a dose additive method such as the RPF method and that the molecular evidence supporting this assumption for carcinogenicity of B[a]A and B[a]P is not evaluated here.
- The RPF value for B[a]A is based primarily on a point of contact exposure with shaved dermis. Although other similar RPF values have been derived based on other exposure pathways (U.S. EPA, 1993), the applicability of the exposure routes used in these studies to environmentally relevant RPFs estimates is not known. The OSF for B[a]P is based on the increased incidences of squamous cell papillomas and carcinomas in the forestomachs of mice, rats and hamsters administered BAP via the diet or by gavage (Neal and Rigdon, 1967; Knauf and Rice, 1992). These were likely point of contact tumors. Additional data are needed to characterize the absorption, distribution, metabolism and elimination of B[a]A; such data need to be compared with similar studies in B[a]P as well as toxicodynamic studies to assess the uncertainty in cross-route applications of this RPF. Again, in addition to such studies in rodents, an evaluation of the kinetics of both compounds in humans would be useful in the evaluation of the RPF value to other routes of exposure.
- Applications of this RPF value for B[a]A to other types of risks (e.g., non-cancer) should be considered carefully. In this analysis, we did not survey the literature to evaluate whether

data are available to evaluate the relative potency of B[a]A to B[a]P for other health endpoints.

- Additional empirical data are needed on the additivity of carcinogenic effects of PAHs. Results of testing simple mixtures of PAHs and mixture components must be compared to assessments made from bioassays of complex PAH environmental mixtures. The conduct of such studies, while not critical to the development of this RPF value, could improve the overall confidence in the results of cancer risk estimates derived from dose-additive models of PAH carcinogenicity.

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May 9, 2008

Michael Sivak
U.S. EPA, Region 2

ASSISTANCE REQUESTED: PPRTVs for Bis(2-chloroethoxy)methane, Chloroethane, Cobalt and Chlorobenzene (*Onondaga Lake*)

ENCLOSED INFORMATION:

Attachment 1: **PROVISIONAL TOXICITY VALUES FOR BIS(2-CHLOROETHOXY)METHANE (CASRN 111-91-1)**

Attachment 2: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR CHLOROETHANE (CASRN 75-00-3)**

Attachment 3: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR CHLOROBENZENE (CASRN 108-90-7)**

Attachment 4: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR COBALT AND COMPOUNDS (CASRN 7440-48-4) Derivation of Subchronic and Chronic Oral RfDs**

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Attachment 5: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR COBALT AND COMPOUNDS (CASRN 7440-48-4) Derivation of Subchronic and Chronic Inhalation RfCs**

Attachment 6: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR COBALT AND COMPOUNDS (CAS NO. 7440-48-4) Derivation of a Carcinogenicity Assessment**

BE ADVISED: *Unless specifically indicated to have been peer reviewed, it is to be noted that the attached Provisional Toxicity Value Paper(s) have not been through the U.S. EPA's formal review process; therefore, they do not represent a U.S. EPA verified assessment.*

If you have any questions regarding this transmission, please contact the STSC at (513) 569-7300.

Attachments (6)

cc: STSC Files

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9-22-2006

Provisional Peer Reviewed Toxicity Values for

Bis(2-chloroethoxy)methane
(CASRN 111-91-1)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL TOXICITY VALUES FOR BIS(2-CHLOROETHOXY)METHANE (CASRN 111-91-1)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions or the EPA Headquarters Superfund Program sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

Neither subchronic nor chronic RfDs or RfCs for bis(2-chloroethoxy)methane (BCM) are available on IRIS (U.S. EPA, 2006a), the HEAST (U.S. EPA, 1997) or the Drinking Water Standards and Health Advisories list (U.S. EPA, 2004). A carcinogenicity assessment for bis(2-chloroethoxy)methane is available on IRIS (U.S. EPA, 2006a) that includes a classification of Group D, not classifiable as to human carcinogenicity, based on no human or animal data. The CARA list (U.S. EPA, 1991a, 1994) includes no documents for this chemical. The toxicity of bis(2-chloroethoxy)methane has not been reviewed by ATSDR (2006), IARC (2006), or WHO (2006). ACGIH (2006), NIOSH (2006) and OSHA (2006) have not established occupational exposure limits for this compound. The NTP (2006) Management Status Report provided no relevant information. A technical report on haloethers prepared for EPA in 1975 (Durkin et al., 1975) and the Ambient Water Quality Criteria Document for Chloroalkyl Ethers (U.S. EPA, 1980) were reviewed for pertinent information. Literature searches were conducted from 1965 to September 2002 in TOXLINE, CANCERLIT, MEDLINE, GENETOX, HSDB, EMIC/EMICBACK, DART/ETICBACK, RTECS and TSCATS for relevant studies. During April 2004, these databases were again searched for relevant studies; none were identified that would change the conclusions of the risk estimate.

REVIEW OF PERTINENT DATA

Bis (2-chloroethoxy)methane is a synthetic organic chemical used as a solvent and as a reactant in the manufacture of polysulfide elastomers. More than 95% of polysulfide elastomers are made from bis (2-chloroethoxy) methane starting material and sodium polysulfide. The resulting products are used as heat- and solvent resistant sealants. The U.S. Food and Drug Administration has approved bis(2-chloroethoxy)methane for use in the manufacture of resins approved for direct contact with food packaging materials. Bis (2-chloroethoxy)methane is on the U.S. EPA's 1990 High Production Volume chemical list (U.S. EPA, 2006b); in 1977, 10 to 50 million pounds of bis(2-chloroethoxy)methane were produced in the U.S. (HSDB, 2005).

Human Studies

Oral Exposure. No reports were located regarding the subchronic or chronic toxicity or carcinogenicity of bis(2-chloroethoxy)methane in humans by oral exposure.

Inhalation Exposure. No reports were located regarding the subchronic or chronic toxicity or carcinogenicity of bis(2-chloroethoxy)methane in humans by inhalation exposure.

Animal Studies

Oral Exposure. Non-fasted Sprague-Dawley rats (10/sex/dose group) were treated with oral doses of 0, 10, 20, 40, 80, or 120 mg/kg-day of bis(2-chloroethoxy)methane by daily gavage in corn oil for 90 days (Bio/Dynamics, 1990a). Physical observations, body weight and food consumption measurements were recorded weekly. Hematology and clinical chemistry evaluations were performed after one month of treatment and at termination. Ophthalmoscopic examinations took place at termination. Complete gross post-mortem examination was conducted on all animals. The control and high-dose groups received comprehensive histopathological examinations, while only the kidneys, liver, lungs and gross lesions were examined in the intermediate dose groups.

Of the 20 rats that received the highest dose (120 mg/kg-day), all ten males and seven of ten females died or were killed in moribund condition prior to completion of the study (Bio/Dynamics, 1990a). One death occurred after a single dose and seven more occurred during the first week. Subsequent deaths occurred as late as day 76 of the study. These deaths were considered by the researchers to be chemical-related; myocardial degeneration seen by microscopic examination in all 120 mg/kg-day rats that died after day 14 of the study was considered by the researchers to be a possible cause of death. One female in the 80 mg/kg-day dose group died on day 78; a death that was also considered to be chemical-related by the investigators in part because microscopic examination revealed myocardial degeneration similar to that seen in the 120 mg/kg-day animals that died. One female in the 40 mg/kg-day group died due to gavage error, but no chemical-related deaths were observed in the 10, 20 or 40 mg/kg-day dose groups. Rats killed in moribund condition and some of those that died exhibited emaciation, poor food consumption, hypothermia, lethargy/prostration, dyspnea, gasping, moist

rales, ataxia, abnormal posture, slight tremors, salivation, and brown-yellow stains on the snout, paws, ventral surface and anogenital area. Clinical signs were unremarkable in rats that survived the experiment. In male rats treated with the highest dose of bis(2-chloroethoxy)methane, body weight was significantly reduced by 17-18 % after weeks 1 (n=6 survivors) and 2 (n=4 survivors), and 7 to 21% thereafter (n=1 or 2 survivors). Mean body weights of males receiving 80 mg/kg-day were slightly lower than control during the second two months of the study: 6% deficit at week 5 and 10% deficit at week 12 (differences from control not statistically significant). Mean body weights for males in the lower dose groups were similar to controls, and no effect on body weight was evident in females at any dose level. Food consumption was reduced in the high-dose male group during the first 2 weeks of the study, but was similar to controls subsequently in the 2 survivors of this group. Food consumption was similar to or higher than controls in all other test groups. Ophthalmological examinations were unremarkable.

No statistically significant changes in hematological parameters were observed (Bio/Dynamics, 1990a). Exposure to 120 mg/kg-day induced statistically significant alterations in several clinical chemistry parameters in both males and females. The alterations that were considered to be indications of an effect of exposure to 120 mg/kg-day of bis(2-chloroethoxy)methane were: 1) slight elevations in serum aspartate aminotransferase (AST) at one month in both males and females, with a marked, statistically significant elevation in AST among high-dose females at study termination (no high-dose males survived to study termination), 2) a statistically significant elevation in serum alkaline phosphatase in males at one month and nonsignificant elevations in females at both one and three months, and 3) increased blood urea nitrogen (BUN) in females at 1 month (nonsignificant) and 3 months (statistically significant). In the 80 mg/kg-day group, there was a slight, statistically significant increase in serum alanine aminotransferase (ALT) among male rats at 3 months. No changes in clinical chemistry parameters were observed among male or female rats receiving 10, 20, or 40 mg/kg-day of bis(2-chloroethoxy)methane compared to controls.

Absolute and relative liver weights were statistically significantly increased in a dose-related fashion in female rats treated with 80 or 120 mg/kg-day (Bio/Dynamics, 1990a). Liver weight measurements were not available for males in the 120 mg/kg-day dose group due to early mortality; the only statistically significant change in males was a small increase in relative liver weight at 40 mg/kg-day. Histopathologic examination of the liver revealed a dose-related increased incidence of minimal-to-slight hypertrophy of the centrilobular hepatocytes in males treated with 20, 40, or 80 mg/kg-day (0/10, 0/10, 3/10, 4/10, 6/10, and 0/10 in the 0, 10, 20, 40, 80, and 120 mg/kg-day groups, respectively). The difference from controls was statistically significant in the 40 and 80 mg/kg-day groups (Fisher exact test conducted for this assessment). The lesion was not observed in males of the 120 mg/kg-day group, but rats in this group all died early. Liver lesions were not found in female rats. Mean adrenal weights (absolute and relative) were reduced relative to control among male rats receiving 20, 40, or 80 mg/kg-day. This effect on adrenal weight, however, was not observed among females and adrenal morphology was normal; thus, the toxicological significance of this effect on the adrenal gland is uncertain. Significant increases in relative kidney and testes weights in male rats at 80 mg/kg-day were considered by the researchers to be secondary to reduced body weight in this group. Kidney lesions, seen only in male rats, were increased incidences of minimal to moderate tubular nephrosis, accompanied in some cases by birefringent intracytoplasmic inclusions in the

convoluted tubular epithelium, and hyaline droplets in the epithelial cytoplasm of the proximal convoluted tubules. The incidence and severity of the renal lesions increased with dose, with the 10 mg/kg-day group being similar to controls and the 80 mg/kg-day group showing the most pronounced effects.

Other organs affected by the 120 mg/kg-day dose were the heart (myocardial degeneration), brain and spinal cord (vacuolization, gliosis), spleen, bone marrow, and thymus (atrophy, hypocellularity), and epididymides (oligospermia, degenerated seminal product); however, these organs were not systematically examined in rats receiving lower doses (Bio/Dynamics, 1990a). Of particular interest is the heart. Postmortem examination revealed slight-to-moderate degeneration of the myocardium in all high-dose animals that died after 2 weeks of exposure to bis(2-chloroethoxy)methane. The overall incidence of myocardial degeneration was 6/10 males and 6/10 females at 120 mg/kg-day (versus 0/10 for controls of each sex). The authors speculated that myocardial degeneration was a possible cause of death. Despite the prevalence of this effect among high-dose rats of both sexes, and absence among controls, the authors did not conduct histopathological examinations of the hearts of rats receiving lower doses, aside from one female from the 80 mg/kg-day group (the female that was found dead on day 78) and one female from the 40 mg/kg-day group that died accidentally in week 5. Histological examination revealed myocardial degeneration in the 80 mg/kg-day female, but not the 40 mg/kg-day female.

The renal effects seen in male rats are consistent with the pattern of early stages of alpha-$_{2u}$ globulin-associated rat nephrotoxicity, as established by the Risk Assessment Forum (U.S. EPA, 1991b), wherein the Agency concluded these renal effects are not appropriate as a critical effect for human health risk assessment. This study identified a LOAEL of 20 mg/kg-day based on liver lesions (hypertrophy of the centrilobular hepatocytes) in males rats and a NOAEL of 10 mg/kg-day following subchronic oral administration of bis(2-chloroethoxy)methane.

More recently, the general toxicity of BCM was evaluated in mice (Battelle, 2002a) and rats (Battelle, 2002b) exposed to BCM (in 95% ethanol) dermally for 5 days per week for 90 days. Applied doses for rats and mice were 0, 50, 100, 200, 400 and 600 mg/kg. Duration adjusted doses were 0, 36, 71, 143, 286 and 429 mg/kg. Available reports do not indicate whether the dose site was occluded. For all rats, the 600 mg/kg dose was lethal, and observations consistent with heart failure were noted in some rats in the 400 and 600 mg/kg dose groups. BCM was lethal in two of 10 female rats receiving 400 mg/kg. Selected organs were histologically examined at sacrifice. Hematology and clinical chemistries were not altered. Histopathic cardiomyopathy was considered the most toxicologically significant finding, and a dose-dependent increase in severity was noted in the 400 and 600 mg/kg dose groups. In male rats, histologic alterations were noted in the glandular stomach, mesenteric lymph nodes, spleen, thymus, Harderian gland and olfactory epithelium, but only in high dose animals. Findings in female rats differed only in that spleen, Harderian gland and olfactory epithelium were affected at 400 mg/kg and renal tubular (cortex) damage was noted in high dose females.

In mice, Battelle (2002b) reported no findings of lethality in males, but BCM was lethal to 3/10 female mice receiving 600 mg/kg. Erythrocyte-related parameters (RBC, hemoglobin, hematocrit) were significantly reduced in male mice at and above 200 mg/kg and both absolute

and relative kidney weights were increased at 400 and 600 mg/kg. In female mice, absolute liver weight was increased and myocardial vacuolization were observed at 400 mg/kg. At 600 mg/kg, additional findings included histopathic alterations in heart and liver, erosion and inflammation of the stomach and duodenum, and reductions in erythrocyte parameters. Dunnick et al (2004a) also reported the results from this study and noted an increased (2/10) incidence of myocyte cytoplasmic vacuolization in female rats exposed to 200 mg/kg, with incidences of 5/10 and 8/10 in the two higher doses, respectively.

From these studies, a dermally applied, duration adjusted LOAEL of 71 mg/kg-day is indicated for decreased hemoglobin content in male mice and increased incidence of myocyte cytoplasmic vacuolization in female rats. Correspondingly, the NOAEL values would be 36 mg/kg-day. Special considerations and information must be available to translate this dermally applied dose to a corresponding internal dose. Some pertinent information describe the distribution and elimination of 14C from a 14C-labelled BCM dermal administration study (Mathews and Jeffcoat, 2002). In those studies, BCM was dermally applied. *Ex vivo* studies with excised skin demonstrated a loss of 85% of the applied dose within one hour of application. Absent a capacity of absorption and removal from the site, these results indicate that up to 85% of the administered dose may be lost to volatilization within the first hour of application. Results from dermal studies in rats exposed to 10 and 0.1 mg/kg with and without dose site appliances (covers) demonstrated that dermal absorption resulted in a total absorbed dose of approximately 15% of the administered dose with appliances and approximately 40 to 44% of applied dose without appliance, seemingly indicative of additional ingestion via grooming (Mathews and Jeffcoat, 2002). In mice with the dermal appliance, these samples accounted for approximately 9 and 18% of a dermally applied dose of 0.1 or 10 mg/kg, with dose site accounting for approximately 1% of the administered dose. Mice administered BCM without the site-protective appliance absorbed 13 and 21% of applied doses of 0.1 and 10 mg/kg, respectively. The pattern of tissue distribution, extent of urinary elimination and other pharmacokinetic information, demonstrated for total radiolabel derived from 14C-labelled BCM, demonstrate appreciable similarity between dermal and oral exposures. While these data indicate dermal absorption, potential and undescribed differences in the metabolism of orally and dermally exposed animals exist and complicate the development of a dermal correction factor, especially so in light of studies that seem to indicate thiodiglycolic acid as the potentially bioactive (toxic) metabolite (Mathews and Jeffcoat, 2002). This metabolite is common to other cardiotoxic compounds, as well. Without further adjustment, the dermally applied, duration adjusted NOAEL values indicated by Battelle (2002a,b) and quantified by Dunnick et al (2004a) are higher than NOAEL value (10 mg/kg-day) for liver lesions developed from orally administration studies (Bio/Dynamics, 1990a).

In a range-finding study for the oral subchronic study (Bio/Dynamics, 1990a), non-fasted Sprague-Dawley rats (5/sex/dose group) were treated with 0, 20, 40, 50, 60, 80, or 100 mg/kg-day of bis(2-chloroethoxy)methane by daily gavage in corn oil for two weeks (Bio/Dynamics, 1990b). When no signs of toxicity were noted after one week of dosing, the 20 and 40 mg/kg-day doses were increased to 150 and 200 mg/kg-day, respectively, for the second week of treatment and satellite groups of 5 rats/sex/group were started on doses of 120 or 160 mg/kg-day. Animals were observed twice daily for mortality and gross toxicity. Physical examinations and body weight and food consumption measurements were performed weekly. Blood was collected

from all rats surviving to study termination for hematology and clinical chemistry evaluations. Complete gross postmortem examinations were performed on all animals. The brain, heart, liver, kidneys, adrenals, and gonads were weighed for animals killed at terminal sacrifice. Histopathology was not performed.

Doses of 120 mg/kg-day and above clearly produced treatment-related mortality (7/10-10/10 dead after 1-9 doses) (Bio/Dynamics, 1990b). The only deaths in the lower dose groups were single deaths in the 60 and 80 mg/kg-day groups (1/5 females and 0/5 males died in each group after 16 doses) that may also have been due to treatment. Findings in rats that died or were sacrificed moribund included clinical signs (lethargy, tremor, dyspnea, irregular gait, yellow or brown staining of the anogenital area, salivation, moist rales, hypothermia, and general poor condition in some rats just prior to death), antemortem weight loss, hematological changes (increased hemoglobin, hematocrit, and red blood cell count in males, but not females), and serum chemistry changes (increases in serum markers for hepatotoxicity and nephrotoxicity, including ALT, AST, alkaline phosphatase, BUN, and glucose). Due to the high mortality in the $\geq$120 mg/kg-day dose groups, meaningful comparisons based on group means were not possible for these groups. Among the 20-100 mg/kg-day groups, there were no significant differences from controls for food intake or body weight, and no clinical signs were observed. The only significant hematology finding was an increase in red blood cell count in females, but not males, at 100 mg/kg-day. Blood urea nitrogen was significantly increased in the 50, 80, and 100 mg/kg-day female groups, and non-significantly increased in the 60 mg/kg-day female group. The magnitude of the change from controls was small for this parameter ($\approx$20%) and did not increase with dose. No other serum chemistry changes were seen in females or males. Absolute and relative liver weights were significantly increased in females in the 80 and 100 mg/kg-day groups (by 21-27%, a moderate change for this parameter). No other significant organ weight changes were found. Gross postmortem examination revealed no abnormalities attributable to bis(2-chloroethoxy)methane. The results of this study support the finding of the subchronic study that the liver is an important target for bis(2-chloroethoxy)methane.

In a short term study to characterize and examine the short-term time course of BCM-induced cardiotoxicity, rats were exposed dermally for up to 12 days to 400 and 600 mg/kg BCM in 95% ethanol (Dunnick et al, 2004b). Within two days of exposure to 600 mg/kg, most but not all cardiac myocytes examined showed toxic effects. Mitochondrial alterations were the most prominent, but other alterations included distention of the sarcoplasmic reticulum, myofibrillary degeneration and occasional Z-banding misalignments. Severe disintegration of mitochondria and the presence of megamitochondria were observed. Swelling of the sarcoplasmic reticulum was presented as a sign of cellular injury due to loss of membrane function in maintaining water balance. The authors noted in animals surviving to day 16 a "resolvement of the manifestations of the lesions".

Inhalation Exposure. No reports were located regarding the subchronic or chronic toxicity of bis(2-chloroethoxy)methane in animals by inhalation exposure.

Other Studies

Toxicokinetics. The disposition of BCM was investigated in rats and mice by Research Triangle Institute (RTI) under contract to NIEHS (Mathews and Jeffcoat, 2002). In that study, male and female F-344 rats and male and female B6C3F1 mice received 14-C-labeled BCM via the oral, intravenous (i.v.) and dermal routes. BCM appeared poorly absorbed via dermal application, potentially due to volatility, and so will not be further presented here. Initial 72-hr studies characterized the tissue distribution and elimination of a 10 mg/kg gavage (water vehicle) dose of BCM. Parent BCM and 14C-CO2 were quantified in expired air, and total 14C was quantified in urine, feces and tissues from male and female mice and male rats. The routes, rates and extent of elimination appeared similar in male and female mice, with combined urinary and fecal elimination accounting for 60-74% of the dose at 14 hours and with urine accounting for 50-60% and approximately 25% of the dose excreted in urine and feces, respectively, at 72 hours. Approximately 10-12% was excreted as 14C-CO2 in breath, cumulative to 72 hours; less than 0.12% was excreted as BCM in breath of male mice. Cumulative elimination via all routes accounted for greater than 90% of dose in each sex.

Tissue distribution in male and female mice was similar, and body burdens approximated less than 1% of the administered dose. After 24 hours, 14C in blood was unextractable. At 72 hours, blood concentrations of 14C (in BCM equivalents) were 162 ng/gram, and 118 ng/gram for male and female mice, respectively. For males, tissues with 14C concentrations higher (ratios of tissue:blood concentrations in parentheses) than blood included liver (2.88), kidney (2.48), thymus (1.72), skin (1.33), lung (1.31), spleen (1.29), and adipose (1.18). For female mice, tissues with 14C concentrations higher than blood included liver (3.10), thymus (2.72), kidney (2.61), adipose (1.86), ovaries (1.82), lung (1.56), spleen (1.41), and skin (1.05). Heart tissue contained concentrations of 14C approximating 85% that of blood for both sexes.

As in mice, BCM was rapidly eliminated from orally-exposed male rats, but higher rates and extent of elimination occurred via the urine; this route accounted for more than 50% of the dose at 8 hours, and for 90% of the dose at 72 hours. Feces accounted for approximately 0.4% of the dose at 72 hours. Exhalation of 14C-CO2 accounted for approximately 7% of the dose, and exhaled BCM accounted for less than 0.2% of the administered dose. Less than 2.5% of the dose's 14C equivalent was retained in the body at 72 hours. Blood concentrations of 14C (in BCM equivalents) were 390 ng/gram. For male rats, tissues with 14C concentrations higher (ratios of tissue:blood concentrations in parentheses) than blood included liver (1.74) and thymus (1.69). While higher blood concentrations in the rat may lead to speculation that species differences in the apparent concentrations of BCM in blood may shift the pattern of blood:tissue distribution, most rat solid tissues also contained higher concentrations of BCM equivalents than their mouse counterparts.

Male mice were dosed with 1.0 mg/kg, i.v. and female mice were dosed i.v. with BCM at 0.1 and 1.0 mg/kg. For all mice, urinary and fecal elimination was characterized for 72 hours; tissue distribution was evaluated for male mice. Combined urinary and fecal elimination for all dose groups approximated 85 to 95% at 72 hours, with urine accounting for 65 to 72% of the administered dose. Sex-dependent differences in the fraction exhaled seemed evident for the 1 mg/kg mice. This route accounted for nearly 10% of the dose in males and approximately 5% of

dose in females. Males eliminated nearly twice as much of the dose unchanged in expired air than did females, and approximately three-fold more of the dose as CO2 than did females. In females administered an i.v. dose of 0.1 mg/kg, a slightly lower fraction of the dose was eliminated in urine and feces, and a slightly higher fraction of the dose was eliminated as expired CO2 when compared to females administered 1.0 mg/kg via i.v.

In male mice administered 1.0 mg/kg BCM i.v., at 72 hours, approximately 4% of the administered dose was retained in the body. Blood concentrations were approximately 19 ng equivalents/gram, and tissues with 14C concentrations higher (ratios of tissue:blood concentrations in parentheses) than blood included kidney (2.33), liver (1.94), adipose (1.45), thymus (1.24), and lung (1.08). Heart contained approximately 71% the concentration of BCM equivalents as blood.

In male and female rats administered 1.0 mg/kg BCM i.v., the time course profile demonstrated rapid and marked decline of BCM, where levels circulating dose approximated 2% of administered dose within 15 minutes. BCM equivalents demonstrated a biphasic decline with the terminal slope appearing largely defined by the proportion of unextractable 14C residues. For example, for males and females, total BCM equivalents decreased from 362 to 67 and from 283 to 45 ng equivalents/ gram blood between 15 minutes and 24 hours, respectively. During this time the percentage of blood 14C present as unextractable fraction increased from approximately 20% to approximately 75% for males and from approximately 22% to approximately 95% for females. Similar results were demonstrated in male mice administered 1.0 mg/kg BCM. In addition to blood, liver and thymus tissues were analyzed for extractable radioactivity. At 15 minutes post-dosing, less than 30% of the total radioactivity in liver was extractable, with the majority of extracted radiolabel represented by parent compound. At 8 hours post-dosing, less that 5% of the total radioactivity present in liver tissue was extractable, and virtually no parent BCM was demonstrated. Results in thymic tissue were qualitatively the same: at 8 hours approximately 85% of the total radioactivity was extractable, and approximately 45% of the extractable radioactivity represented parent BCM; at 8 hours post-dosing extractable radiolabel in thymus represented approximately 10% of total radioactivity, with parent BCM levels approaching zero. The high level of binding early in the time profile (15 minutes) seems inconsistent with incorporation of radiolabelled moiety into protein.

Mathews and Jeffcoat (2002) also reported the results of investigations of BCM metabolism. The results of an experiment in which cytochrome P4502E1 was inhibited demonstrated no change in the blood concentration-time profile in male mice administered 1.0 mg/kg BCM. Urine collected from rats administered 10 and 0.1 mg/kg BCM orally and male rats administered 1.0 mg/kg i.v. demonstrated three distinct peaks, accounting for 80 to 88% of urinary 14C, when analyzed by high performance liquid chromatography, and none of these peaks was altered when urine was incubated with sulfatase, acylase and beta-glucoronidase. One of these metabolites co-eluted with thiodiglycolic acid; subsequent gas chromatography/mass spectrometric analysis confirmed that metabolite as thiodiglycolic acid. This metabolite accounted for 49 to 51% of recovered 14C. The peak that co-eluted with the sulfoxide of thiodiglycolic acid accounted for 25-31% of urinary radiolabel. Combined recoveries for these two peaks accounted for between 74 and 82% of urinary radiolabel. With the preponderance of

radiolabel eliminated in urine, these data support thiodiglycolic acid as the major metabolite of BCM.

Oral-Dermal Dose Comparison. Data from 90-day studies conducted via the dermal route of exposure in rats (Battelle, 2002a) and mice (Battelle, 2002b) offer additional insights on the dose-response relationship for several toxicities. However, in order for advantage to be made from these results, some measure of absorbed, rather than applied dose is required. The relationship between dermally applied and absorbed dose can be developed from information from a distribution study also recently available (Mathews and Jeffcoat, 2002). Twenty-four hours after administration, 15.73 and 15.44% of dermally applied doses were absorbed by rats, and urinary elimination accounted for 91.1 and 88.1% of the absorbed dose in male rats receiving dermal doses of 0.1 and 10 mg/kg. The absorbed dose from these two exposures corrects to 0.016 and 1.5 mg/kg. In mice, 24 hours after application, approximately 9% of a 0.1 mg/kg dose was absorbed, and urinary elimination accounted for 95.5% of the absorbed dose. In mice dermally exposed to 10 mg/kg, approximately 18% of the dose was absorbed, and urinary elimination accounted for 68.8% of the absorbed dose. In mice, the study authors noted the confounding issue of cross contamination of urine and feces occurring in the metabolism cage. Combined urinary and fecal elimination in 10 mg/kg-dosed mice accounted for 78.3% of the absorbed dose. While the fraction of absorbed 14C eliminated in urine is similar between oral and dermal exposures, there is no information on the comparative metabolism of 14C-labelled BCM, and there is evidence that the thiodiglycolic acid metabolite may be responsible for the noted cardiotoxicity.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC RfDs FOR BIS(2-CHLOROETHOXY)METHANE

No pertinent data regarding the oral toxicity of bis(2-chloroethoxy)methane in humans are available. Only one subchronic study of oral administration of bis(2-chloroethoxy)methane to rats was located: a 90-day oral gavage study conducted by Bio/Dynamics (1990a), wherein Sprague-Dawley rats (10/sex/dose group) received oral doses of 0, 10, 20, 40, 80, or 120 mg/kg-day of bis(2-chloroethoxy)methane in corn oil. Subchronic and chronic oral RfDs for bis(2-chloroethoxy)methane can be derived using a NOAEL/LOAEL approach, based on liver lesions (centrilobular hepatocellular hypertrophy) in male rats receiving 20 mg/kg-day or more of bis(2-chloroethoxy)methane. This study identified a NOAEL of 10 mg/kg-day for the critical effect. The finding that the liver is a sensitive target for bis(2-chloroethoxy)methane is supported by the short-term range-finding study (Bio/Dynamics, 1990b).

To the rat NOAEL of 10 mg/kg-day for liver lesions established by Bio/Dynamics (1990a), a combined uncertainty factor of 300 was applied. The uncertainty factors included a 10 for interspecies extrapolation, a 10 for human variability, and a 3 for database deficiencies (including lack of reproductive and developmental toxicity tests), resulting in a combined uncertainty factor of 300. A provisional **subchronic oral RfD of 0.03 mg/kg-day** was calculated as follows:

p-sRfD = NOAEL / UF
= 10 mg/kg-day / 300
= 0.03 mg/kg-day or 3E-2 mg/kg-day

A provisional chronic oral RfD can also be derived by dividing the NOAEL of 10 mg/kg-day established by Bio/Dynamics (1990a) by a combined uncertainty factor of 3000. The uncertainty factors included a 10 for extrapolation from a subchronic study, a 10 for interspecies extrapolation, a 10 for human variability, and a 3 for database deficiencies, resulting in a combined uncertainty factor of 3000. A provisional **chronic oral RfD of 0.003 mg/kg-day** was calculated as follows:

p-RfD = NOAEL / UF
= 10 mg/kg-day / 3000
= 0.003 mg/kg-day or 3E-3 mg/kg-day

Confidence in the principal study is low. The principal study examined a number of relevant endpoints; however, the study used only minimally adequate group sizes, failed to conduct histopathology on all tissues at lower exposure doses, and appears to have used a dose that was too high based on the range-finding study (Bio/Dynamics, 1990b). Confidence in the database is also low: the database is lacking human data, supporting subchronic or chronic animal studies, and studies of developmental, reproductive, or neurological effects of exposure to bis(2-chloroethoxy)methane. Reflecting low confidence in the principal study and low confidence in the database, confidence in the provisional RfD is low.

FEASIBILITY OF DERIVING PROVISIONAL SUBCHRONIC AND CHRONIC RfCs FOR BIS(2-CHLOROETHOXY)METHANE

Derivation of a provisional subchronic or chronic RfC for bis(2-chloroethoxy)methane is precluded by the absence of inhalation toxicity data.

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Provisional Peer Reviewed Toxicity Values for

Chloroethane
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Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
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U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR CHLOROETHANE (CASRN 75-00-3)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and

circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

No reference dose (RfD) assessment is available for chloroethane (ethyl chloride) in the Integrated Risk Information System (IRIS) database (U.S. EPA, 2006a) or in the Health Effects Assessment Summary Tables (HEAST) (U.S. EPA, 1997). The Chemical Assessments and Related Activities (CARA) list (U.S. EPA, 1991, 1994a) includes a Health Effects Assessment for Ethyl Chloride (U.S. EPA, 1987). Although an Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile for Chloroethane (ATSDR, 1998) is available, no oral minimal risk levels (MRLs) were derived for chloroethane because no relevant oral data were located.

The IRIS database (U.S. EPA, 2006a) includes a reference concentration (RfC) of 10 mg/m^3 (verified 12/20/1990) for chronic exposure to ethyl chloride (chloroethane), based on a NOAEL of 4000 mg/m^3 and a LOAEL of 13,000 mg/m^3 for delayed fetal ossification in a mouse developmental inhalation study (Scortichini et al., 1986). The same critical effect (delayed ossification in mice) from the study of Scortichini et al. (1986) was used by ATSDR (1998) to derive an acute-duration inhalation MRL of 15 ppm (40 mg/m^3) and by CalEPA (2006a) to derive a chronic reference exposure level (REL) of 30,000 $\mu g/m^3$ (30 mg/m^3).

A cancer assessment for chloroethane is not available on IRIS (U.S. EPA, 2006a) or in the HEAST (U.S. EPA, 1997). CalEPA (2006b) includes chloroethane in its List of Chemicals Known to the State to Cause Cancer or Reproductive Toxicity (updated December 2, 2005). The National Toxicology Program (NTP) performed a 2-year inhalation toxicity and carcinogenicity study of ethyl chloride in rats and mice, resulting in the conclusion that there was equivocal

evidence of carcinogenic activity in rats and clear evidence of carcinogenic activity in female mice (NTP, 1989). The International Agency for Research on Cancer (IARC) assigned chloroethane to Group 3 (not classifiable as to its carcinogenicity to humans), based on limited evidence for the carcinogenicity of chloroethane in animals and no available human data (IARC, 1991). NIOSH (2006) includes a warning to handle ethyl chloride with caution in the workplace due to structural similarity to other chloroethanes shown to be carcinogenic in animals. A carcinogenicity assessment for chloroethane is not available from the World Health Organization (WHO, 2006).

An Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile for Chloroethane is available (ATSDR, 1998). Update literature searches for more recent information were performed for the time period of 1993 to December, 2005 in TOXLINE, MEDLINE (plus PubMed cancer subset), and DART/ETICBACK. Update search of the TOXCENTER database was performed for the time period of August, 2000 to December, 2005. Databases searched without date limitations included TSCATS, RTECS, GENETOX, HSDB and CCRIS. Search of Current Contents encompassed July to December, 2005.

REVIEW OF PERTINENT DATA

Human Studies

Oral Exposure

No data were located regarding the oral toxicity or carcinogenicity of chloroethane in humans.

Inhalation Exposure

Chloroethane has been used as a general anesthetic in humans at inhaled concentrations in the same range (3-4.5%) as its explosive concentration of 4% (40,000 ppm (105,521 mg/m^3))[*] in air. Blood levels required to achieve general anesthesia range from 20 to 30 mg% (mg/100 mL), whereas respiratory failure can be triggered by slightly higher blood levels (40 mg%) (Dobkin and Byles, 1971). Sublethal adverse effects of overexposure to inhaled chloroethane are predominantly neurological (Finch and Lobo, 2005; Hes et al., 1979; Nordin et al., 1988), but may include hepatic effects (Hes et al., 1979). Davidson (1925) reported the results of short-term inhalation exposure of human subjects to chloroethane. Exposure to 13,000 ppm (34,294 mg/m^3) for 12 minutes resulted in feelings of intoxication and reduced reaction time. At an exposure level of 19,000 ppm (50,123 mg/m^3), slight intoxication was reported within 1 minute and progressed to distinct intoxication and mild analgesia within 12 minutes. Higher concentrations (25,000 ppm for 15 minutes, 33,600 ppm for 8 minutes [5,957 and 88,638 mg/m^3 respectively]) resulted in concentration-related incoordination. At the highest exposure level (33,600 ppm), unconsciousness was achieved within 13-17 minutes. Sayers et al. (1929)

[*] Concentrations were determined using the following formulae:
xppm = (y mg/m^3)(24.45)/(molecular weight)
ymg/m^3 = (xppm)(molecular weight)/24.45

reported dizziness and abdominal cramping in two human subjects who inhaled two breaths of a 4% (40,000 ppm) concentration of chloroethane in air or three or four breaths of a 2% concentration.

No studies were located regarding the carcinogenicity of chloroethane in humans exposed by inhalation.

Animal Studies

Oral Exposure

Male and female Fischer 344 rats (10/sex/group) were given drinking water containing 0 or 5700 mg chloroethane/L water for 14 days (Dow Chemical Company, 1995). Estimated chloroethane doses to the male and female rats were 297 and 361 mg/kg-day, respectively. Rats were assessed for clinical signs of toxicity, body weight and food and water consumption. Other parameters evaluated included clinical chemistry [serum aspartate aminotransferase (AST), alanine aminotransferase (AST) and alkaline phosphatase (AP)], hematology, organ weights and gross and histopathological (liver only) examinations. There were no indications of chloroethane-induced toxicity from any of the parameters evaluated. Decreased water consumption (20-25% lower in chloroethane-treated rats, relative to controls) was considered to be the result of reduced palatability. Decreased food consumption and body weight were considered to be secondary to decreased water consumption. Slight changes in selected mean organ weights were within 10% of control values and were consistent with decreased water and food consumption.

In an early study in rabbits (Rowe et al., 1939), administration of 500 or 1000 mg/kg-day of chloroethane by gavage on work days through a total of 60 doses (assumed to be 5 days/week for 12 weeks) did not elicit clinical signs of toxicity or treatment-related effects on body weight gain. Histopathological examinations (tissues not specified) revealed no evidence of treatment-related effects. The available results of this study were limited to a summary statement.

Inhalation Exposure

Groups of male and female Fischer 344 rats (6/sex/exposure concentration) were exposed to chloroethane (99.7% pure) by inhalation at concentrations of 0, 1600, 4000 or 10,000 ppm (0, 4288, 10,720 or 26,800 mg/m^3) for 6 hours/day, 5 days/week for 2 weeks and observed for clinical signs of toxicity (Landry et al., 1982). Body weights were monitored during the study and clinical chemistry, urinalysis, hematology and comprehensive histopathological examinations were performed. Significant increases in relative liver weight (4.9 and 7.5% greater than controls) were noted in male rats of the 4000 and 10,000 ppm groups, respectively, in the absence of liver histopathology or increased levels of serum enzymes. There were no other signs of chloroethane-induced effects. No effects were seen in male beagle dogs (2/group) subjected to the same exposure scenario and analysis.

Landry et al. (1989) exposed groups of B6C3F1 mice (7/sex/group) to chloroethane (99.9% pure) by inhalation at vapor concentrations of 0, 250, 1250 or 5000 ppm (0, 670, 3350 or

13,400 mg/m^3) for 23 hours/day on 11 consecutive days. Body weights were recorded periodically during the study. On the day following the final exposure period, a neurobehavioral battery of tests was performed. Clinical chemistry, hematology and comprehensive histopathological analyses were conducted. The only indication of chloroethane-related effects consisted of significantly increased mean relative liver weight (approximately 9-12% greater than controls) and a minimal increase in degree of hepatocellular vacuolization in 4/7 of the 5,000-ppm male and female mice. These liver effects were not accompanied by increased serum enzyme levels and were considered to be an adaptive response.

In a study designed to assess chloroethane metabolism, Fedtke et al. (1994a) exposed groups of male and female F-344 rats and B6C3F1 mice (2 rats or 10 mice/sex/group) to chloroethane (>99% pure) by inhalation at exposure concentrations of 0 or 15,000 ppm (0 or 40,200 mg/m^3) for 5 days (6 hours/day). At necropsy, livers, lungs, kidneys and uteri were removed and weighed. The only indication of chloroethane-induced toxicity was significantly decreased mean uterine weight (approximately 35% lower than controls, data not shown) in the female mice of the 15,000 ppm exposure level. Body weights and relative uterine weights were not reported, but all groups of mice, including sham-exposed controls, were stated to have lost weight, possibly due to exposure-related stress.

In an unpublished study, Scortichini et al. (1986) assessed the developmental toxicity of chloroethane in CF-1 mice. In a range-finding study, groups of 8-10 bred female CF-1 mice were exposed to 0, 5000, 10,000 or 15,000 ppm of chloroethane (99.9% pure) for 6 hours/day on gestation days 6 through 15. The study authors reported increased locomotor activity and significantly decreased body weight and body weight gain in all chloroethane-exposed dams, but did not include actual data for these findings. In the main study, groups of bred female mice (30/group) were exposed to chloroethane (99.9% pure) by inhalation at target concentrations of 0, 500, 1500 or 5000 ppm (analytical concentrations of 0, 491, 1504 and 4946 ppm; approximately 0, 1300, 4000 and 13,000 mg/m^3) for 6 hours/day on gestation days 6 through 15. Dams were observed daily for clinical signs of chloroethane-induced toxicity. Maternal body weights and food and water consumption were monitored. At sacrifice on gestation day 18, maternal liver weights and gravid uterine weights were recorded. Numbers of pregnant dams, resorptions and live and dead fetuses were noted, as well as fetal weight and sex and gross external fetal alterations. Apparently nonpregnant mice were assessed for evidence of implantation sites. Examinations for signs of visceral alterations were performed on one-half of the fetuses from each litter. All fetuses were examined for evidence of cardiac and skeletal anomalies. Bones of the skull were examined for anomalies in approximately one-half of the fetuses; heads of the other fetuses were assessed for other effects.

There were no indications of chloroethane-induced maternal effects at any exposure level (Scortichini et al., 1986). Evaluation of reproductive parameters in pregnant mice revealed no indication of adverse effects on pregnancy rate, resorption rate, litter size, fetal sex ratios or fetal body weights. No significant exposure-related effects on incidences of fetal visceral anomalies were detected. A small, but significant ($p=0.05$) increase in the incidence of foramina of the skull bones (delayed fetal ossification) was noted in fetuses of the 4946 ppm exposure group (1/126, 1/142, 1/174 and 5/116 fetuses of the 0, 491, 1504 and 4946 ppm exposure groups, respectively). On a per litter basis, respective incidences were 1/22, 1/24, 1/25 and 5/22 litters.

Incidences of litters exhibiting supernumerary ribs were elevated at the higher exposure levels [2/22 (9%), 1/25 (4%), 5/26 (19%) and 4/22 (18%) in 0, 491, 1504 and 4946 ppm exposure groups, respectively]. The statistical significance of this effect was not indicated in the study report and did not appear to increase with increasing exposure concentration on a per fetus basis [2/257 (1%), 1/299 (0.3%), 6/311 (2%), and 2/242 (2%) in 0, 491, 1504, and 4946 ppm groups, respectively]. The authors considered this observed effect to be questionable. There were no other indications of chloroethane-induced fetal effects. Although the authors did not identify it as such, this study identified a NOAEL of 1504 ppm and a LOAEL of 4946 ppm for fetal effects (delayed fetal ossification).

A series of studies were conducted for the National Toxicology Program to assess the toxicity and carcinogenicity of inhaled chloroethane (99.5% pure) in male and female F344/N rats and B6C3F1 mice (NTP, 1989). Preliminary 4-hour and repeated 14-day and 13-week exposure studies (6 hours/day, 5 days/week) were performed prior to a 2-year toxicity and carcinogenicity study. In the 4-hour and repeated 14-day studies, no overt signs of chloroethane-induce toxicity were seen in the rats or mice (5/sex/species) exposed to chloroethane vapors at a concentration of 19,000 ppm (50,920 mg/m^3). No gross or histopathological signs of chloroethane-induced toxicity were seen in rats or mice in the 14-day studies.

In the 13-week repeated exposure study, groups of 10 animals/sex/species were exposed to chloroethane concentrations of 0, 2500, 5000, 10,000 or 19,000 ppm (0, 6700, 13,400, 26,800 or 50,920 mg/m^3) for 6 hours/day, 5 days/week for 13 weeks (NTP, 1989). Animals were observed daily for clinical signs of toxicity. Body weights were recorded weekly. Comprehensive gross and histopathological examinations were performed on each animal.

All rats survived until terminal sacrifice (NTP, 1989). No compound-related clinical signs of toxicity were observed in rats. Mean final body weights of all groups of chloroethane-exposed male and female rats ranged from 4 to 8% lower than respective controls, but were statistically significantly lower ($p<0.01$) only in the 19,000-ppm male rats. Relative mean liver weight was significantly increased only in 19,000-ppm male rats (approximately 14% higher than controls). Gross and histopathologic examinations revealed no signs of chloroethane-related adverse effects in male or female rats.

Chloroethane-exposed mice also survived until terminal sacrifice, with the exception of a single male mouse of the 10,000-ppm exposure group (NTP, 1989). No compound-related clinical signs of toxicity were observed in mice. Final body weights of chloroethane-exposed mice were generally slightly higher than controls. Relative mean liver weight was significantly ($p<0.01$) increased in 19,000-ppm female mice (approximately 18% higher than controls). There were no indications of chloroethane-induced gross or histopathologic effects. Observed nasal cavity hemorrhage of minimal severity in 3/10 male and 6/10 female mice of the 19,000 ppm exposure level was considered by NTP to be an artifact of necropsy in the absence of microscopic lesions in the nasal mucosa of these mice.

In the 2-year toxicity and carcinogenicity bioassay, groups of 50 animals/sex/species were exposed to chloroethane vapor concentrations of 0 (inhalation chamber controls) or 15,000 ppm (40,200 mg/m^3) for 6 hours per day, 5 days per week for 102 weeks (rats) or 100 weeks

(mice). NTP (1989) conducted the 2-year studies using air-exposed controls and a single chloroethane exposure level in order to obtain structure-activity comparative data with results of a concurrent study of bromoethane. The 15,000 ppm level was selected for the 2-year study due to concerns about the potential flammability and explosion hazard of higher concentrations and because no effects were seen in the subchronic study at a slightly higher exposure level. All animals were observed twice per day for clinical signs. Body weights were recorded weekly for the first 12 weeks and monthly thereafter. Comprehensive gross and histopathological examinations were performed for each animal in the study.

No chloroethane-induced clinical signs of toxicity were observed in rats of either sex exposed for 2 years (NTP, 1989). No significant differences in survival were noted between exposed and control groups of rats of either sex, but survival of exposed and control male rats was unusually low at the end of the study. The authors reported that unusually high incidences of mononuclear cell leukemia in both control and exposed groups of male rats may have contributed to the high mortality. The authors also reported that survival for all groups was sufficient through weeks 90 and 95 to evaluate carcinogenicity. At the end of the study (102 weeks), survival for male rats was 16/50 (controls) and 8/50 (exposed) and for female rats was 31/50 (controls) and 22/50 (exposed); however, at 90 weeks, survival was 37/50 (control) and 31/50 (exposed) for respective male groups and 43/50 (control) and 33/50 (exposed) for females. Mean body weights of exposed male rats were 4%-8% lower than those of controls after week 33 and in exposed female rats body weights ranged from 5-13% lower than controls after week 11.

Three exposed female rats displayed uncommon astrocytomas (malignant glial cell tumors of the brain) (NTP, 1989). The authors reported that although the overall incidence of malignant glial cell tumors (3/50) was not statistically significantly different ($p>0.05$) from the concurrent controls (0/50), it was statistically significantly increased ($p<0.05$) relative to incidences for previous chamber control groups at the study laboratory (1/297) or for untreated control female F344/N rats from previous NTP studies (23/1969 = 1%). Primary tumors of glial cell origin were also observed in exposed male rats. One control male had a malignant oligodendroglioma. A benign oligodendroglioma and a malignant astrocytoma were observed in two exposed males.

There were five exposed male rats that had epithelial tumors of several types with similar characteristics (trichoepithelioma, sebaceous gland adenoma and basal cell carcinoma) (NTP, 1989). The combined overall incidence (5/50) was not significantly different from the concurrent control incidence (0/50), but statistical significance ($p<0.05$) could be demonstrated when comparisons were made to historical incidences in chamber controls (2/300) at the study laboratory or in untreated controls (30/1936 = 1.5%) from NTP studies.

NTP (1989) concluded that the study provided equivocal evidence of carcinogenic activity in both male and female F344/N rats, even though comparisons with concurrent controls were negative, because comparisons with historical controls indicated significant differences.

In the 2-year study, chloroethane-exposed female mice, but not male mice or rats of either sex, were hyperactive during daily exposure, but returned to normal shortly after the exposure period ended (NTP, 1989). Survival of 15,000 ppm exposed mice was significantly

lower than that of control mice; statistical significance for reduced survival was demonstrated for exposed male mice after day 330 and for exposed female mice after day 574. All surviving mice were sacrificed at 100 weeks. Mean body weights of exposed male mice were up to 13% higher than control male mice. Mean body weights for exposed and control female mice were generally similar throughout the study.

Decreased survivability in exposed male mice was not related to tumor occurrences (NTP, 1989). The authors noted that greater than normal incidences of nonneoplastic urogenital lesions were observed in both control and exposed male mice and that this occurrence may have contributed to the reduced survival. The overall incidences of alveolar/bronchiolar adenomas (8/48) and of alveolar/bronchiolar adenomas and carcinomas (combined) (10/48) among exposed male mice were statistically significantly greater ($p<0.05$) than respective incidences for control male mice (3/50 and 5/50). The authors, however, considered the study of male B6C3F1 mice inadequate to evaluate carcinogenic activity because of the reduced survival.

Most of the early mortalities in exposed female mice were associated with carcinomas of the uterus (NTP, 1989). The overall incidence of uterine carcinomas (all of endometrial gland origin) in exposed female mice (43/50) was significantly ($p<0.001$) greater than that of the concurrent controls (0/49). Uterine carcinomas were first noted on day 469 of the study. The tumors were highly malignant, invasive and, in 34 animals, metastasized to other organs. Exposed female mice also displayed statistically significantly higher ($p<0.05$, according to a logistic regression test) overall incidences of hepatocellular carcinomas (7/48) and hepatocellular carcinomas and adenomas (combined) (8/48) compared to respective incidences in control female mice (3/49 and 3/49).

Picut et al. (2003) re-evaluated the pathology and incidence data from the NTP (1989) study and confirmed the NTP findings of increased incidences of uterine cancer in female B6C3F1 mice exposed to 15,000 ppm of chloroethane vapors 6 hours/day, 5 days/week for 100 weeks (NTP, 1989).

Based on the results of the NTP (1989) study in which high incidences of uterine carcinomas were observed in mice chronically exposed to chloroethane vapors at a concentration of 15,000 ppm, Bucher et al. (1995) designed a study to assess the potential for chloroethane to induce early changes on sex hormones (estradiol and progesterone). Groups of virgin female B6C3F1 mice (30/group) were exposed to 0 or 15,000 ppm of chloroethane (99.7% pure) by inhalation 6 hours/day for 21 days after having been sham-exposed for an initial 21-day period. There were no clinical signs of chloroethane-induced toxicity and no exposure-related effects on weight gain. No changes were seen in weights of the liver, uterus, or ovary, or in histopathology of the ovaries, pituitary, uterus, or adrenal glands. Blood concentrations of sex hormones were not significantly affected by chloroethane exposure, but variability was high. Compared to the mean duration of estrous cycle during the 21 days of sham exposure (5.15 ± 0.15 days), the mean duration of estrous cycle during the subsequent 21 days of chloroethane exposure (5.52 ± 0.15 days) was slightly but significantly ($p<0.05$) increased. There was also a significant difference ($p<0.05$) in the proportion of time spent in the different estrous stages during exposure compared to the time period of sham exposure in both control and chloroethane-exposed mice. Thus, no

consistent exposure-related patterns of change were found in estrous cyclicity or circulating levels of sex hormones.

In an early study of rabbits (4/group) and rats (12/group) exposed to chloroethane vapors at a concentration of 26,400 mg/m^3 (9847 ppm) for 7.5-8 hours/day, 5 days/week for 6.5 months, no exposure-related clinical signs or effects on weight gain, liver weights or histopathology were observed (Rowe et al., 1939).

Troshina (1964) reported adverse respiratory and liver effects in rats (sex and species unspecified) exposed to chloroethane by inhalation at a concentration of 14,000 mg/m^3 (5222 ppm), 2 hours/day for 60 days. In a subsequent report, Troshina (1966) described several exposure-related effects including disturbed liver function, lowered blood pressure, fatty liver and apparent intraalveolar thickening in the lungs of rats exposed to chloroethane 4 hours/day, 6 days/week for 6 months at chloroethane concentration as low as 8.5 mg/m^3 (3.17 ppm). Both reports are deficient in numerous study details and control groups, which preclude their usefulness for quantitative risk assessment.

Other Studies

Two reports provide evidence for the mutagenicity of chloroethane in the closed-desiccator *Salmonella typhimurium* test for reverse mutations. Riccio et al. (1983) observed mutations in strains TA98, TA100, TA1535 and TA1537 in both the presence and absence of metabolic activation. NTP (1989) observed mutagenic activity in strain TA1535 with or without activation and in strain TA100 only with activation, but no mutagenic activity was observed in strain TA98 with or without activation. Chloroethane was mutagenic to the HPRT (hypoxanthine-guanine phosphoribosyl transferase) locus of Chinese hamster ovary cells both with and without metabolic activation (Ebert et al., 1994). However, exposure of female B6C3F1 mice to chloroethane at a concentration of 25,000 ppm (6 hours/day for 3 days) did not induce unscheduled DNA synthesis; similar exposure of male and female B6C3F1 mice did not result in increased numbers of micronuclei in bone marrow cells (Ebert et al., 1994).

DERIVATION OF A PROVISIONAL SUBCHRONIC RfD FOR CHLOROETHANE

No information was found regarding the oral toxicity of chloroethane in humans. Information regarding repeated-dose oral toxicity of chloroethane in animals was restricted to the results of two limited studies in which no adverse effect levels were identified.

Rowe et al. (1939) reported no clinical or histopathological signs of toxicity, or treatment-related effects on body weight gain among rabbits administered chloroethane doses of 500 or 1,000 mg/kg-day by gavage for 60 doses (assumed to be 5 days/week for 12 weeks). However, available results for this study were limited to a summary statement reporting few details.

Chloroethane did not appear to be toxic to rats given the chemical in drinking water for 14 days at a concentration (5700 mg/L) resulting in doses estimated in the report (Dow, 1995) to be 297 mg/kg-day in male rats and 361 mg/kg-day in female rats. The authors considered decreased water consumption among treated animals (20-25% less than controls) to result from reduced palatability. They concluded that decreased food consumption was secondary to the decreased water consumption and that reduced weight gains and slightly reduced organ weights resulted from reductions in consumption of food and water.

Although Rowe, et al (1939) provide the highest oral NOAEL for the longest dosing period, an unacceptably low level of confidence in the study makes these data unacceptable for use as the point of departure for deriving an oral RfD. The Dow (1995) study reported free-standing drinking water NOAELs of 361 mg/kg-day among female rats and 297 mg/kg-day in male rats dosed for 14 days. The slightly higher dose in female rats was chosen as the point of departure (POD) for deriving a subchronic oral RfD, because both values were freestanding NOAELs. A composite uncertainty factor of 3,000 for a subchronic oral p-RfD was calculated from the following individual uncertainties:

- 10 - inter-human variability
- 10 - mouse to human extrapolation
- 10 - database deficiencies (e.g., no developmental or reproductive oral studies; inhalation developmental data are available)
- 3 - adjustment from 14-day study to subchronic RfD

Subchronic oral p-RfD = (361 mg/kg-day)/3,000 = **0.1 mg/kg-day**

Confidence in the key study, Dow (1995), is medium because the duration of exposure was less than subchronic and because a LOAEL was not identified. Confidence in the database is low because of the lack of studies of appropriate duration and the absence of reproductive and developmental toxicity studies. Consequently, confidence in the subchronic p-RfD is low.

The existing database does not support the derivation of a chronic oral p-RfD because of the lack of 90-day or chronic exposure studies.

DERIVATION OF A PROVISIONAL SUBCHRONIC RfC FOR CHLOROETHANE

As discussed earlier, chloroethane has been used as a general anesthetic in humans. Information regarding chloroethane-induced neurological effects is available for short-term high-level exposure (Davidson, 1925; Dobkin and Byles, 1971; Finch and Lobo, 2005; Hes et al., 1979; Nordin et al., 1988; Sayers et al., 1929). One case report described possible liver effects from repeated abuse of inhaled chloroethane (Hes et al., 1979). These limited human reports are not adequate for purposes of quantitative risk assessment for chloroethane.

Repeated inhalation exposure of adult male and female F344/N rats and B6C3F1 mice resulted in no evidence of exposure-related noncancer effects from exposures as high as 15,000

ppm (6 hours/day, 5 days/week) for up to 2 years, except for hyperactivity in female mice during exposure (NTP, 1989). Other reports (Landry et al., 1982, 1989; Rowe, 1939) found no adverse effects in adult rats, mice or rabbits repeatedly exposed to chloroethane vapors at the highest concentrations tested (10,000, 4843 and 9847 ppm, respectively). However, repeated inhalation exposure of female B6C3F1 mice to a chloroethane vapor concentration of 15,000 ppm (6 hours/day for 5 days) resulted in significantly decreased mean uterine weight (Fedtke et al., 1994a) and slightly increased duration of the estrous cycle (Bucher et al., 1995). Developmental effects (foramina of the skull bones) were noted in fetuses of CF-1 mice exposed to chloroethane at an analytical concentration of 4946 ppm for 6 hours/day on gestation days 6 through 15 (Scortichini et al., 1986). This study served as the basis for a chronic RfC of 10 mg/m^3 for ethyl chloride (chloroethane), which is available on IRIS (U.S. EPA, 2006a).

A point of departure for the provisional subchronic RfC for chloroethane is derived by benchmark dose (BMD) analysis of delayed fetal ossification in the Scortichini et al. (1986) study. All dichotomous models in the EPA Benchmark Dose Modeling Software (BMDS; Version 1.3.2) were fit to the incidence data for foramina of the skull bones on a per litter basis (see Table 1). For each model, a benchmark response (BMR) of 10% extra risk (as recommended by U.S. EPA, 2000) was used to calculate an Effect Concentration (EC_{10}) and its lower 95% confidence limit (LEC_{10}). Table 2 shows the modeling results for each of the dichotomous models.

Table 1. Incidences of foramina of the skull bones in fetuses of CF-1 mouse dams exposed to chloroethane by inhalation for 6 hours/day on gestation days 6 through 15 (Scortichini et al., 1986).

Exposure level (ppm)			
0	491	1504	4946
1/22[a]	1/24	1/25	5/22

[a] Number of affected litters/number of litters examined

All models provided acceptable global goodness of fit (chi square p-value ≥ 0.1). As recommended by U.S. EPA (2000), the model with the lowest Akaike Information Criterion (AIC) value (Gamma model) was selected as the best fitting model, which yielded an EC_{10} of 4442 ppm and an LEC_{10} of 1609 ppm. A plot of the observed and expected fraction of affected litters versus exposure concentration from the results of the Gamma model is shown in Figure 1. The LEC_{10} of 1609 ppm serves as the point of departure for the provisional subchronic RfC for chloroethane.

Table 2. BMD modeling results for foramina of the skull bones (number of litters affected) in fetuses of CF-1 mice (Scortichini et al., 1986).

MODEL	EC_{10} (ppm)	LEC_{10} (ppm)	χ^2 p-value	AIC
Gamma[a]	**4441.64**	**1609.46**	**0.996**	**52.438**
Quantal quadratic	3489.38	2405.34	0.918	52.609
Logistic	3449.15	2462.81	0.856	52.747
Probit	2289.76	3319.11	0.828	52.820
Quantal linear	2868.95	1405.82	0.615	53.497
Multi-stage[c]	2868.95	1405.82	0.615	53.497
Log-logistic[b]	4635.81	1480.59	0.925	54.438
Log-probit[b]	4400.96	2078.46	0.925	54.438
Weibull[a]	4655.54	1609.46	0.925	54.438

[a] Power restricted to >=1

[b] Slope restricted to >=1

[c] Betas restricted to >=0; Degree of polynomial = 1

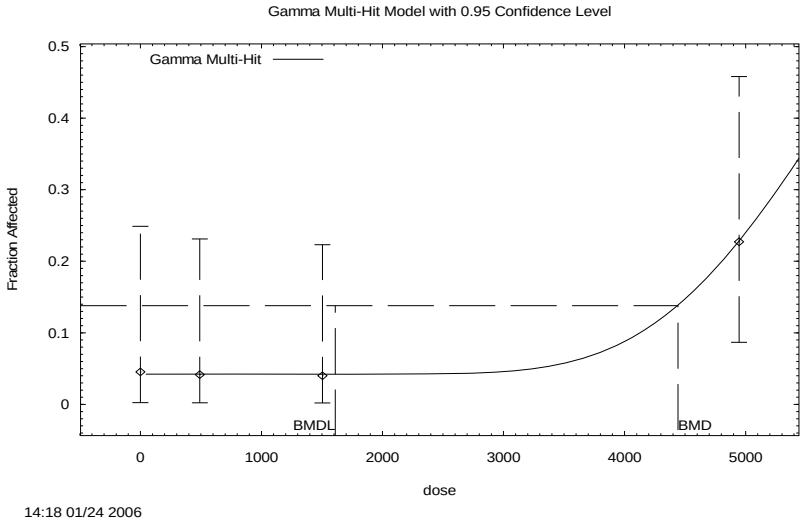


Figure 1. Exposure-response modeling of incidence data for foramina of the skull bones (fraction of litters affected) in fetuses of CF-1 mice exposed to chloroethane for 6 hours/day on gestation days 6 through 15 (Scortichini et al., 1986). BMD = EC_{10}; BMDL = LEC_{10}; Dose = Concentration (ppm)

For extrapolation of developmental effects, the intermittent exposure is duration adjusted as follows:

$$LEC_{10\,[ADJ]} = LEC_{10} \times \frac{6\ \text{hrs/day}}{24\ \text{hrs/day}} = 1609\ \text{ppm} \times \frac{1}{4} = 402\ \text{ppm}\ (1078\ \text{mg/m}^3)$$

Therefore $LEC_{10\ [ADJ]}$ = 402 ppm (1078 mg/m^3). According to U.S. EPA (1994b) methodology for extrarespiratory effects of a category three gas (such as chloroethane), the $LEC_{10[HEC]}$ (human equivalent concentration) is derived by multiplying the $LEC_{10\ [ADJ]}$ by the ratio of the blood:gas partition coefficients ($[H_{b/g}]_A/[H_{b/g}]_H$). A value of 1 is used for the ratio of the blood:gas partition coefficients if the animal blood:gas partition coefficient is greater than the human blood:gas partition coefficient, or if one or more of the blood:gas partition coefficients are not known. The value for humans is 2.69 (Gargas et al., 1989). In the absence of an available blood:gas partition coefficient for chloroethane in the mouse,

$LEC_{10[HEC]} = LEC_{10[ADJ]}$ = 1078 mg/m^3.

The **subchronic p-RfC of 4E+0 mg/m^3** based on delayed fetal ossification (foramina of the skull bones) in the mouse study of Scortichini et al. (1986) is derived by dividing the $LEC_{10[HEC]}$ of 1078 mg/m^3 by a composite uncertainty factor (UF) of 300, as shown below. The subchronic p-RfC of chloroethane is lower than the chronic RfC for this chemical on IRIS (U.S. EPA, 2006a) because of the application of BMDS to derive the LEC_{10}.

Subchronic p-RfC	=	$LEC_{10[HEC]}$ / UF
	=	1078 mg/m^3 / 300
	=	4 mg/m^3 or 4E+0 mg/m^3

The composite UF includes a factor of 3 ($10^{0.5}$) for animal-to-human extrapolation using dosimetric adjustment, 10 for interindividual variability and 10 for database deficiencies.

The interspecies UF of 3 ($10^{0.5}$) reflects a factor of one for pharmacokinetic differences across species (reduced from three due to application of the dosimetric equations) and a factor of 3 ($10^{0.5}$) for pharmacodynamic considerations.

The UF of 10 is used to account for variation in sensitivity within human populations because there is limited information on the degree to which humans of varying gender, age, health status, or genetic makeup might vary in the disposition of, or response to chloroethane.

The default UF of 10 for database deficiencies is selected due to the lack of multigeneration reproductive toxicity study and a developmental toxicity study in a second animal species.

Confidence in the critical study is medium. Although the principal study (Scortichini et al., 1986) was well-conducted, it did not establish a firm exposure-response relationship with an adverse effect and did not include a maternally-toxic exposure level. Confidence in the database is medium. Although well-conducted inhalation studies of repeated exposure of rats and mice are available, most studies did not identify a LOAEL in adult animals. This may be due to the explosion hazard of chloroethane in air at concentrations above 15,000 ppm. Although the selection of developmental toxicity as a critical effect for derivation of a p-RfC is protective of a group considered to be a sensitive subgroup, the database lacks some longer-term exposure studies which might be useful for derivation of both subchronic and chronic provisional values.

Other limitations of the database include the lack of multigeneration reproductive toxicity data and the lack of additional developmental toxicity data to support the results of the principal study. The application of a database deficiencies UF was considered to adequately compensate for the database limitations. Overall, confidence in the subchronic p-RfC is medium.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR CHLOROETHANE

Weight-of-Evidence Descriptor

No data were found on the carcinogenicity of chloroethane in humans. In NTP (1989) animal studies, a high incidence of malignant uterine tumors was observed in chloroethane-exposed female B6C3F1 mice. Inhalation exposure of B6C3F1 mice (but not F344/N rats) resulted in a high incidence of uterine carcinomas (43/50 in chloroethane-exposed mice versus 0/49 in controls), which demonstrates clear evidence of chloroethane carcinogenicity (NTP, 1989). The tumors were invasive and in 34 animals metastasized to a wide variety of organs. Exposed female B6C3F1 mice also displayed significantly increased incidences of hepatocellular carcinomas (7/48) and hepatocellular carcinomas and adenomas (combined) (8/48) compared to respective incidences in controls (3/49 and 3/49), according to a logistic regression test. Other neoplastic lesions that exhibited significantly increased incidences relative to historical (but not concurrent) controls included benign and malignant epithelial neoplasms of the skin in chloroethane-exposed male F344/N rats (trichoepithelioma, 1/50; sebaceous gland adenoma, 1/50; basal cell carcinoma, 3/50; squamous cell carcinoma 2/50) and malignant astrocytomas in the brain of chloroethane-exposed female F344/N rats (3/50). Thus, there is clear evidence for carcinogenicity in female B6C3F1 mice and equivocal evidence for carcinogenicity in male and female F344/N rats. In the absence of data to indicate otherwise, the finding of chloroethane-induced uterine carcinomas in female B6C3F1 mice is considered to be relevant to humans. Chloroethane has not been extensively tested for genotoxicity, but the available studies indicate that chloroethane may be mutagenic (Riccio et al., 1983; NTP, 1989; Ebert et al., 1994). The limited mechanistic data for chloroethane do not provide clear evidence of a specific carcinogenic mode of action.

Based on these observations and in accordance with the U.S. EPA (2005) cancer guidelines, chloroethane is classified as *likely to be carcinogenic to humans* based on two factors: 1) a lack of human data and; 2) animal data that demonstrate a high degree of malignancy in chloroethane-exposed female mice.

Mode of Action Discussion

Several investigators (Fedtke et al., 1994a,b; Gargas et al., 1989; Pottenger et al., 1992) have studied the metabolism of chloroethane in an effort to discern the mechanism for induction of rare uterine tumors in female mice (NTP, 1989). A high-dose dependent disposition and GSH-dependent metabolism in mice has been suggested to account for the development of tumors in mice and not in rats (Pottenger et al., 1992). Fedtke et al. (1994a,b) examined cytochrome P450-dependent and GSH-dependent metabolism in a series of *in vitro* and *in vivo*

experiments in groups of male and female rats and mice exposed to 15,000 ppm chloroethane or air for 6 hours/day for 5 days. The authors concluded that chloroethane may be oxidatively dechlorinated by cytochrome P450 to form acetaldehyde, which enters the 2-carbon pool and is further metabolized to ethanol and acetic acid and that species differences in oxidative metabolism were not significant. In addition, rate constants estimated for rats from these experiments were consistent with those estimated earlier by Gargas et al. (1989) in a PBPK model for chloroalkanes in the rat. In assessing GSH-dependent chloroethane metabolism in rats and mice, Fedtke et al. (1994b) noted the following: 1) chloroethane could be conjugated with glutathione, converted to the mercapturic acid and excreted in the urine as the mercapturic acid (S-ethyl-N-acetyl-L-cysteine) or the non-acetylated intermediate S-ethyl-L-cysteine (mice only); 2) the rate of hepatic glutathione conjugation of chloroethane (measured by GSH-transferase specific activity) was found to be higher in both sexes of mice compared with rats; 3) when GSH concentrations were measured in the lungs, liver, kidneys and uterus, GSH was decreased in the lung and uterus of mice after exposure to 15,000 ppm, 6 hours/day for 5 days, compared with GSH concentrations in these tissues after exposure to air; and 4) decreases in GSH levels in the lungs of rats were smaller than those in mice. These results suggested that tumor formation may be dependent on chloroethane metabolism, which might explain species-specific differences in susceptibility to chloroethane carcinogenicity.

The mode of action by which chloroethane produces uterine tumors in mice is unknown. A hormonally-mediated mode of action has been postulated, but testing for the impact of early exposure (21 days) on sex hormones and estrous cyclicity did not reveal consistent exposure-related effects in B6C3F1 mice (Bucher et al., 1995). In addition, no histopathological effects were seen in ovary, uterus, pituitary or adrenals.

Although chloroethane has not been extensively assessed for genotoxicity, a genotoxic mode of action is plausible because chloroethane has been shown to produce mutagenic effects in several bacterial strains (Riccio et al., 1983; NTP, 1989) and in Chinese hamster ovary cells (Ebert et al., 1994). This genotoxic mode of action for chloroethane carcinogenicity is discussed below within the context of the modified Hill criteria of causality as recommended in the most recent Agency guidelines (U.S. EPA, 2005).

Mutagenic Mode of Action for Uterine Tumors

Key events

This mode of action hypothesizes that, following appearance in the uterine cells, chloroethane or one of its reactive metabolites reacts directly with DNA, or indirectly via induction of oxidative stress, to produce DNA damage leading to mutations in critical genes for tumor initiation.

Strength, consistency, specificity of association

Information to support this hypothetical genotoxic mode of action for chloroethane is limited to chloroethane-induced mutagenicity in several bacterial strains (Riccio et al., 1983; NTP, 1989) and in Chinese hamster ovary cells (Ebert et al., 1994).

Dose-response concordance

The only available chronic cancer bioassay (NTP, 1989) included only one high exposure concentration (15,000 ppm), which resulted in a high incidence (43/50) of uterine carcinomas in female B6C3F1 mice, and there are no dose-response data for precursor events, thus precluding an assessment of dose-response concordance.

Temporal relationships

No data are available to assess the temporal relationship between exposure to chloroethane and development of uterine carcinomas in B6C3F1 mice.

Biological plausibility and coherence

Support to the plausibility and coherence of a hypothetical genotoxic mode of action for chloroethane-induced uterine carcinomas in mice is provided by a limited number of genotoxicity assays in which chloroethane induced a mutagenic response. In the NTP (1989) 2-year cancer bioassay, chronic exposure to a high concentration of chloroethane resulted in a high incidence of uterine carcinomas in mice, but not rats. The basis for this species-specific difference in response is not known, although there is some indication that metabolic differences may play a role. The human relevance of chloroethane-induced uterine carcinomas in mice is assumed in the absence of data to indicate otherwise.

Conclusions

Based on available information regarding the carcinogenicity of chloroethane, increased incidences of uterine carcinomas in chloroethane-exposed mice are considered relevant to human health and marginally suitable for quantitative cancer assessment of chloroethane. Although a mutagenic mode of action is plausible, the available data are inadequate to establish a mode of action. Consistent with U.S. EPA Guidelines for Carcinogen Risk Assessment (U.S. EPA, 2005), a linear (e.g., non-threshold) extrapolation is indicated when a mode of action is not established.

Quantitative Estimates of Carcinogenic Risk

Oral Exposure

There are no human or animal oral data on which to base an oral cancer assessment for chloroethane.

Inhalation Exposure

The only available inhalation carcinogenicity bioassay (NTP, 1989) used a single choloroethane exposure level (15,000 ppm) at which a high proportion (86%) of female mice developed uterine tumors. Because a mutagenic mode of action cannot be discounted and no other mode of action has been proposed, a linear non-threshold dose-response model would be

appropriate. The U.S. EPA cancer guidelines (U.S. EPA, 2005) specify a linear extrapolation from a BMDL with a BMR in the 1% to 10% range, as determined from the multistage dose-response model. In this case, however, the lowest response (86%) is far from any BMR acceptable as a POD. Therefore, the data are deemed to be inadequate for the calculation of an inhalation unit risk.

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10-12-2006

Provisional Peer Reviewed Toxicity Values for

Chlorobenzene
(CASRN 108-90-7)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion

ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR CHLOROBENZENE (CASRN 108-90-7)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions or the EPA Headquarters Superfund Program sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

IRIS (U.S. EPA, 2006) lists an RfD of 2E-2 mg/kg-day for chlorobenzene based on a NOAEL of 27 mg/kg-day (adjusted dose of 19.6 mg/kg-day) and LOAEL of 54.5 mg/kg-day (adjusted dose of 39.3 mg/kg-day) for liver histopathology in dogs given gelatin capsules containing chlorobenzene for 13 weeks (Hazleton Laboratories, 1967a). The source document for this assessment is a Drinking Water Criteria Document for chlorobenzene (U.S. EPA, 1986). This RfD is also included on the Drinking Water Standards and Health Advisories list (U.S. EPA, 2004). The HEAST (U.S. EPA, 1997) indicates the availability of the chronic RfD on IRIS, but does not list a subchronic RfD. The CARA list (U.S. EPA, 1991a, 1994a) includes a Health Effects Assessment (HEA) for chlorobenzene (U.S. EPA, 1989) that derived a subchronic RfD of 0.3 mg/kg-day and chronic RfD of 0.03 mg/kg-day based on the same 13-week dog study, as well as an Ambient Water Quality Criteria Document (U.S. EPA, 1980) and Health Assessment Document (U.S. EPA, 1985) for chlorinated benzenes, neither of which included derivation of an RfD for chlorobenzene. ATSDR (1990) derived an intermediate duration MRL of 0.4 mg/kg-day for chlorobenzene based on a NOAEL of 60 mg/kg-day and LOAEL of 125 mg/kg-day for liver effects (increases in liver weight and serum biomarkers for hepatotoxicity) in rats and mice administered chlorobenzene for 13 weeks (NTP, 1985).

No RfC is available for chlorobenzene on IRIS (U.S. EPA, 2006). The HEAST (U.S. EPA, 1997) lists a chronic RfC of 2E-2 mg/m^3 for chlorobenzene based on a subchronic study in rats (Dilley, 1977); however, this RfC was prepared using outdated methodology. A subchronic RfC for chlorobenzene is not reported in the HEAST (U.S. EPA, 1997). The source document for the RfC in the HEAST was the HEA for chlorobenzene (U.S. EPA, 1989). An RfC for chlorobenzene was not included in the Ambient Water Quality Criteria Document (U.S. EPA, 1980) or the Health Assessment Document (U.S. EPA, 1985) for chlorinated benzenes. ATSDR (1990) has not derived inhalation-based Minimal Risk Levels (MRLs) for chlorobenzene. California EPA (OEHHA, 2006) has derived a chronic inhalation REL of 1 mg/m^3 based on the occurrence of liver, kidney, and testicular lesions in a multigeneration study in rats (Nair et al., 1987). ACGIH (2006) has adopted a TLV of 10 ppm (46 mg/m^3) based on liver effects in experimental animals (Dilley, 1977; Nair et al., 1987). The OSHA (2006) PEL is 75 ppm (350 mg/m^3). NIOSH (2006) has not established a REL for chlorobenzene, but has questioned whether the OSHA PEL is adequate to protect workers from the recognized health hazards.

The cancer assessment for chlorobenzene on IRIS (U.S. EPA, 2006) includes a classification of Group D, not classifiable as to human carcinogenicity. This classification is based on no human data, inadequate animal data, and predominantly negative genetic toxicity data in bacterial, yeast, and mouse lymphoma cells. A significant positive trend was observed in the incidence of hepatocellular neoplastic nodules in male (but not female) rats administered chlorobenzene by gavage for 103 weeks; no site-specific tumors or neoplastic pathology were observed in similarly-treated mice (NTP, 1985). Quantitative estimates of carcinogenic risk from oral or inhalation exposure were not made.

The toxicity of chlorobenzene was reviewed by WHO (1991). Updated literature searches for additional toxicity data for chlorobenzene were performed for the period from 1988 to June, 2003 in the following databases: TOXLINE (supplemented with NTIS and BIOSIS updates), CANCERLIT, MEDLINE, CCRIS, GENETOX, HSDB, EMIC/EMICBACK, DART/ETICBACK, RTECS, and TSCATS. The above listed documents and literature searches were used to identify relevant studies. Additional literature searches from June 2003 through October 2004 were conducted by NCEA-Cincinnati using MEDLINE, TOXLINE, Chemical and Biological Abstracts databases.

REVIEW OF PERTINENT DATA

Human Studies

Oral Exposure. No relevant data were located regarding the toxicity of chlorobenzene to humans following oral exposure.

Inhalation Exposure. Five human inhalation studies (Rosenbaum et al., 1947; Tarkhova, 1965; Ogata et al., 1991; Girard et al., 1969; and Syrovadko and Malysheva, 1977) were located. The Tarkhova (1965) and Ogata et al. (1991) studies are acute exposure studies and Rosenbaum et al. (1947), Girard et al. (1969), and Syrovadko and Malysheva (1977) are occupational exposure studies.

In a biological monitoring study conducted by Ogata et al. (1991), 4 humans were exposed once to 60.2 ppm (277 mg/m^3) chlorobenzene for 3 hours in the morning and 4 hours in the afternoon, with a 1 hour break between the morning and afternoon exposure sessions. All of the subjects complained of a sensation of a disagreeable odor and of drowsiness, three of a heavy feeling in the head and/or headache, two of throbbing pain in the eyes, and one complained of a sore throat. The authors did not report the incidence of these effects in the control group, thus the significance of the reported symptoms is not known. A significant decrease, as compared to a non-exposed control group, in mean flicker-fusion value was observed (no further details on the control group were given). No significant alterations in pulse rate or systolic or diastolic blood pressure were found.

Tarkhova (1965) exposed 4 subjects to 0.1, 0.2, and 0.3 mg/m^3 of chlorobenzene (0.02, 0.04, and 0.07 ppm) and measured changes in electroencephalographic (EEG) patterns in response to light flashes. All subjects were exposed to all three concentrations, but the author did not indicate how much time was allowed for recovery or the order of the exposures. It appears that the experiment was repeated at least "three times during three days for each subject". The subjects were exposed to chlorobenzene for 2½ minutes in each session. The exposure period was preceded by a 3 minute control period. No effects were observed at the 0.1 mg/m^3 concentration. A response was observed in 2/4 subjects at 0.2 mg/m^3 and in 3/4 subjects at 0.3 mg/m^3.

Several occupational exposure studies suggest a neurotoxic effect in workers exposed to chlorobenzene; however, the results do not allow for a definitive conclusion because workers were exposed to other chemicals in addition to chlorobenzene. Rosenbaum et al. (1947; as reviewed by U.S. EPA, 1985 and ATSDR, 1990) examined 28 factory workers intermittently exposed to chlorobenzene for 1-2 years. Exposure concentrations were not reported. Headaches and signs of somnolence and dyspepsia were common among the workers. Tingling, numbness, and stiffness of the extremities and hyperesthesia of the hands were observed in 8 of the 28 workers and spastic contractions of the finger muscles were observed in 9 of 28 workers. Without comparative data from non-exposed workers, it is not clear that these symptoms were caused by chlorobenzene exposure. Girard et al. (1969) reported anemia and symptoms of central nervous system effects (headaches, numbness, and lethargy) and eye and respiratory tract irritation in workers exposed to chlorobenzene at unspecified concentrations. These workers, however, were also exposed to other unspecified chemicals in addition to chlorobenzene. Increased number of birth anomalies and hormonal disturbances were associated with occupational exposure of chlorobenzene and tricresol in female workers (Syrovadko and Malysheva, 1977). However, it is not possible to attribute these effects to chlorobenzene exposure because workers were exposed to tricresol in addition to chlorobenzene.

Overall, the human data suggest that chlorobenzene may affect the nervous system. However, none of the human data are adequate for use in risk assessment either because the effects cannot be definitively attributed to chlorobenzene exposure or because only acute exposures were used.

Animal Studies

Oral Exposure. Subchronic oral studies in dogs (Hazleton Laboratories, 1967a), rats (Hazleton Laboratories, 1967b; NTP, 1985; Irish, 1963; Varshavskaya, 1967), and mice (NTP, 1985), chronic studies in rats and mice (NTP, 1985), and an oral developmental toxicity study in rats (IBT, 1977) were located. These studies are described below.

Groups of 4 male and 4 female young adult beagle dogs were treated with 0, 0.025, 0.05, or 0.250 mL/kg (0, 27.5, 55.0, 275 mg/kg-day using a specific gravity of 1.1) of pure chlorobenzene via capsule 5 days/week for 13 weeks (duration-adjusted doses of 0, 19.6, 39.3 or 196.4 mg/kg-day) (Hazleton Laboratories, l967a). The dogs were observed daily for appearance and behavior, and body weight and food consumption were determined weekly. Hematology, serum chemistry, and urine analyses were performed after 1 month of treatment and again after 3 months. The dogs were sacrificed after 3 months. All dogs, including those that died during the study, were examined for gross pathology. Organ weights were determined at necropsy. Histological examination was performed for 20 organs (brain, pituitary, thyroid, lung, heart, liver, gallbladder, spleen, kidney, adrenal, stomach, pancreas, duodenum, jejuneum, ileum, colon, urinary bladder, ovaries, bone, and bone marrow) in the control and high-dose dogs, but only suspected target organs were examined in the low- and mid-dose dogs.

Four of the 8 high-dose dogs (2 males and 2 females) died or were sacrificed in moribund condition within the first 5 weeks of the study (Hazleton Laboratories, l967a). Death was preceded by loss of appetite, weight loss, inactivity, and coma. High-dose dogs that survived had reduced appetite and loss of weight over the first 5-6 weeks of the study, but appetite returned and body weight held steady over the remainder of the experiment. Terminal weight loss in these dogs ranged from 0.7 to 2.0 kg. A number of changes in blood and urine parameters were observed in dogs from the high-dose group, including low blood sugar, high circulating levels of immature leukocytes, increased urinary concentrations of acetone and bilirubin, and slight-to-marked increases in serum alkaline phosphatase, alanine aminotransferase, bilirubin, and cholesterol. Gross pathology in high-dose dogs included grey-yellow discoloration of the hepatic parenchyma, distended gallbladder, and red discoloration of the renal medulla. Increases in relative weight of the liver, kidney, adrenals, heart, and thyroid were observed among high-dose dogs, reflecting the poor physical condition of dogs in this group.

Histopathological examination of high-dose dogs revealed moderate-to-severe vacuolation, formation of fatty cysts and bile stasis in the liver, glomerular swelling and swelling and vacuolation of tubular epithelium in the kidney, variations in mucus content of the gastrointestinal mucosa, and leukocytosis and moderate-to-high cellularity in the bone marrow (Hazleton Laboratories, l967a). Incidence data for the liver and kidney lesions are reported in Table 1. Although the small group sizes in this study limit the power of statistical tests to detect changes, statistically significant increases were shown for several of the liver lesions in the high-dose group (males and females combined, Fisher exact test conducted for this review). No liver or kidney lesions were observed in control animals. Histopathological changes in the liver and kidney were the only effects observed in mid-dose dogs. These changes included slight bile duct proliferation, slight swelling and vacuolation and leukocytic infiltration in the liver, and swelling of tubular epithelium and variations in cellularity in the kidney. No effects of any type were

Table 1. Incidence of Liver and Kidney Lesions in Male and Female Dogs (Combined) Administered Chlorobenzene Daily for 13 Weeks[a] (Hazleton Laboratories, 1967a)

Organ, Lesion	Dose (mg/kg-day)			
	0	19.6	39.3	196.4
Liver, bile stasis	0/8	0/8	0/8	4/8
Liver, pigment deposition	0/8	0/8	0/8	3/8
Liver, centrilobular degeneration	0/8	0/8	0/8	8/8[b]
Liver, vacuolation	0/8	0/8	1/8	6/8[b]
Liver, cytologic changes	0/8	0/8	1/8	4/8
Liver, bile duct hyperplasia	0/8	0/8	3/8	7/8[b]
Kidney, tubular dilation	0/8	0/8	2/8	4/8
Kidney, proximal convoluted tubule swelling	0/8	0/8	0/8	2/8
Kidney, proximal convoluted tubule vacuolation	0/8	0/8	1/8	4/8
Kidney, tubule epithelial degeneration	0/8	0/8	1/8	4/8
Kidney, terminal proximal tubule vacuolation	0/8	1/8	0/8	3/8
Kidney, epithelial pigment deposition	0/8	0/8	0/8	3/8

[a] Data reported as number of animals observed with the lesion/total number of animals in the dose group
[b] Incidence significantly greater than controls using the Fisher exact test ($p<0.05$) performed for this review

observed in low-dose dogs. This study, therefore, identified a LOAEL of 39.3 mg/kg-day for liver and kidney effects (histopathological changes) and a NOAEL of 19.6 mg/kg-day.

In a companion study to Hazleton Laboratories (l967a), Charles River CD rats (18/sex/group) were given 12.5, 50, 100, or 250 mg/kg-day of pure chlorobenzene by gavage in corn oil, daily for 93-99 days (Hazleton Laboratories, 1967b; Knapp et al., 1971). An additional group of 18 males and 18 females served as an untreated control group. The rats were observed daily for appearance and behavior. Rats in the test groups were weighed daily, while those in the control group were weighed weekly. Food consumption was determined weekly. Hematology, clinical chemistry and urine analyses were performed at 30 and 90 days using 5 males and 5 females from each group. Sacrifice was performed after 93-99 days of treatment. All animals, even those that died during the study, received a gross necropsy. Organ weights were determined at necropsy. Histopathological examination (on 5 males and 5 females from each group) included 17 organs (brain, pituitary, thyroid, lung, heart, liver, spleen, kidney, adrenal, stomach, pancreas, intestines, urinary bladder, gonads, femur, and bone marrow) in the high-dose and control groups, but only the thyroid, heart, liver, kidney and adrenals were examined from the other groups. Although a few deaths occurred during the course of the study, there was no clear relationship between treatment and mortality. There was a statistically significant decrease in body weight gain among high-dose males (terminal body weight reduced approximately 7%), but growth was not affected in other groups. Food consumption did not differ from controls. The only clinical sign clearly related to treatment was salivation following dosing throughout the first week of the study. Salivation generally occurred in about half of the rats exposed to 50 mg/kg-day, a majority of those exposed to 100 mg/kg-day and all of those exposed to 250 mg/kg-day. Hematology, clinical chemistry and urinalysis results were unremarkable. The only gross pathological observation of interest was a high incidence of mottled and discolored livers in rats exposed to 50, 100, or 250 mg/kg-day, that did not, however, increase in incidence or intensity as dose increased from 50 to 250 mg/kg-day. Absolute and relative liver weights were significantly increased in females exposed to 100 or 250 mg/kg-day and males exposed to 250 mg/kg-day. Absolute and relative kidney weights were also significantly increased at these doses. Histopathological examination failed to detect any compound-related effects in rats of any dose group. NOAEL and LOAEL values of 50 and 100 mg/kg-day, respectively, may be derived from this study based on weight increases in the liver and kidney. Although the organ weight increases were not accompanied by histopathological changes or other clear indicators of toxicity, the results of the companion study on dogs (Hazleton Laboratories, 1967a) showed that these organs are targets of chlorobenzene toxicity.

Supporting data also come from subchronic and chronic studies in rats and mice conducted by NTP (1985). In the subchronic studies, groups of 10 F344/N rats and 10 B6C3F1 mice of each sex were given chlorobenzene at 0, 60, 125, 250, 500, or 750 mg/kg-day, 5 days/week for 13 weeks by gavage in corn oil. Duration-adjusted doses were 0, 43, 89, 179, 357 or 536 mg/kg-day, respectively. Clinical signs of toxicity were noted daily and body weights were determined weekly. Urine samples for analysis were obtained during the 13th week of treatment. Blood samples for hematology and clinical chemistry analyses were collected prior to sacrifice. The major organs were weighed at necropsy. Comprehensive histopathological examinations were given to rats from the two highest dose groups and mice from the three highest dose groups, as well as controls. Only suspected target organs were examined

microscopically in the other groups. Chlorobenzene produced death in rats exposed to 500 mg/kg-day (4/10 males and 3/10 females) and 750 mg/kg-day (9/10 males and 8/10 females). Body weight gain was reduced about 20% in both males and females from these groups. The most frequent histopathological lesions in these groups were moderate centrilobular hepatocellular necrosis, mild-to-moderate nephrosis (characterized by degeneration and necrosis of the proximal tubule) and minimal-to-moderate myeloid depletion of the bone marrow. Other lesions observed were hepatic degeneration and lymphoid depletions of the thymus and spleen. Further effects observed in rats from these dose groups included decreased white blood cell count, increased reticulocytes, increased serum alkaline phosphatase and gamma glutamyl transpeptidase, increased urinary output, increased urinary excretion of uroporphyrin and coproporphyrin, increased absolute and/or relative liver and kidney weights and decreased absolute and relative spleen weight. Effects in rats exposed to 250 mg/kg-day included reduced body weight gain (>20%, males only), increased absolute and relative liver weight, decreased absolute and relative spleen weight and a few observations of minimal hepatic necrosis and nephropathy. The only effects at lower doses were increased absolute and relative liver weight in females exposed to 125 mg/kg-day and decreased absolute and relative spleen weight in males exposed to 60 or 125 mg/kg-day. Taken together, the liver was identified as the most sensitive target organ. Increased liver weight was observed at $\geq$125 mg/kg-day, and hepatic necrosis occurred at $\geq$250 mg/kg-day. Although spleen weights were decreased at all doses, microscopic lesions (lymphoid depletion) were only observed at the high dose (750 mg/kg-day). Therefore, these results suggest a NOAEL and LOAEL in rats of 60 and 125 mg/kg-day, respectively (43 and 89 mg/kg-day, respectively, when adjusted for a 5 day/week dosing schedule).

Results in mice were similar in pattern to those in rats, although mice appeared to be more sensitive to chlorobenzene toxicity, as indicated by an increase in mortality in this species at 250 mg/kg-day (5/9 males and 4/10 females) and above (37/40 mice) (NTP, 1985). Body weight gain was reduced 50-80% in these groups. Histopathological lesions were generally limited in occurrence to these same dose groups; lesions included severe hepatic necrosis, moderate renal tubular necrosis, myeloid depletion of the spleen and bone marrow, lymphoid depletion of the spleen and thymus, and necrosis of the thymus. Absolute and relative liver weights were significantly increased in surviving males and females from these groups. Other changes in these dose groups were increased urinary output and increased urinary excretion of coproporphyrins. The only effect in mice exposed to 125 mg/kg was significantly increased absolute and relative liver weight in males. Based on liver toxicity in mice, NOAEL and LOAEL values of 60 and 125 mg/kg-day (duration adjusted doses of 43 and 89 mg/kg-day) can be derived.

In the chronic studies, groups of 50 rats of each sex and 50 female mice were administered chlorobenzene by gavage in corn oil at 0, 60 or 120 mg/kg-day 5 days/week for 103 weeks (NTP, 1985). Duration-adjusted doses were 0, 43, and 86 mg/kg-day, respectively. Groups of 50 male mice were similarly treated with 0, 30 or 60 mg/kg-day (duration adjusted doses of 0, 21, 43 mg/kg-day, respectively). Survival was significantly reduced in male rats in the 120 mg/kg group, but not in lower dose male rats or female rats. Body weight gain was not affected in rats of any group. From the original microscopic examination, there appeared to be a slightly increased incidence of hepatic necrosis in treated rats of both sexes (males at 60 mg/kg and females at 120 mg/kg), but a second independent review did not support these findings.

Other than effects on immune system at substantially high doses, no other chemical-related non-carcinogenic effects were identified in the rats. In mice, survival was marginally reduced in males at 30 and 60 mg/kg; however, survival trend did not follow a dose-response relationship and no effect was noted in females. Body weight gain was similar in treated and control mice and no treatment- related non-neoplastic lesions were identified.

Irish (1963) briefly reported the results of an unpublished Dow Chemical study, in which rats were treated orally with chlorobenzene 5 days per week for approximately 6 months. Doses of 144 and 288 mg/kg-day (duration adjusted doses of 103 and 206 mg/kg-day) produced significant increases in liver and kidney weight and slight liver pathology. No effects were detected in rats treated with 14.4 mg/kg-day (duration adjusted dose of 10.3 mg/kg-day). Further details regarding this study were not provided.

In contrast to the results of the studies described above, toxicity was reported at much lower doses by Varshavskaya (1967). Groups of 7 male albino rats weighing 180-200 g were treated with 0, 0.001, 0.01 or 0.1 mg/kg-day of chlorobenzene in sunflower oil by stomach tube for 9 months. Effects reported at 0.1 mg/kg-day included inhibition of higher nervous system activity (i.e., prolonged formation and accelerated loss of conditioned reflexes), a statistically significant inhibition of erythropoiesis (i.e., decreased red blood cell count and hemoglobin), increased serum alkaline phosphatase and aminotransferase levels, and immune system effects (increased leukocytes and gamma globulin). Many of these endpoints were also marginally affected by exposure to 0.01 mg/kg-day. No effects were reported at 0.001 mg/kg-day. Although some of the effects reported in this study are consistent with those observed in other studies, the effective doses are much lower. Varshavskaya (1967) also reports effects for o-dichlorobenzene that are over 3 orders of magnitude lower than other published values. Therefore, U.S. EPA (1980, 1985) considered the results of this study to be questionable.

Chlorobenzene was the subject of a developmental toxicity study in rats (IBT, 1977). Pregnant Charles River albino rats (20-22 per dose) were administered chlorobenzene at 100 or 300 mg/kg-day on gestation days 6-15 via oral gavage. Maternal body weight, mortality, and clinical signs of toxicity were recorded at regular intervals throughout exposure. All dams were sacrificed on gestation day 20 and were administered via Caesarian section. Implantation sites and the number of corpora lutea were determined, and the number of viable fetuses was recorded. All fetuses were removed from the uterus, weighed, and examined for external malformations. Two-thirds of the fetuses were examined for skeletal effects; the remaining fetuses were evaluated for internal development. No treatment-related effects were noted at any dose; however, the study did not test up to maternally toxic doses. The results of this study do not rule out developmental effects at high doses, but indicate that developmental toxicity is not likely a sensitive toxicological endpoint for chlorobenzene toxicity.

Inhalation Exposure. Several studies have examined the subchronic toxicity of inhaled chlorobenzene in animals (IBT, 1979; Roloff, 1980; Dilley, 1977; Irish, 1963; Zub, 1978). John et al. (1984) and Nair et al. (1987) have examined the developmental and reproductive toxicity, respectively, of inhaled chlorobenzene.

In a study conducted by IBT (1979), groups of male and female rats (15/sex/group) and beagle dogs (4/sex/group) were exposed to 0, 0.76, 1.47, or 2 mg/L (0, 760, 1470, or 2000 mg/m^3) of chlorobenzene 6 hours/day, 5 days/week for 90 days (62 exposure days). Controls were exposed to "clean air." All animals were observed for mortality and clinical signs of toxicity daily throughout the exposure period, and body weights were recorded weekly. Blood was taken from all surviving dogs at Day 28 (blood was taken from several dogs earlier than Day 28 because they were expected to be sacrificed moribund prior to the bleed) and from 5 control and high-concentration rats per sex at Days 39 and 91. Hematology, clinical chemistry, and urinalysis examinations were conducted at each bleed. At scheduled sacrifice, all animals were subjected to a gross pathology evaluation, the adrenal glands (dogs only), brain (cerebrum, cerebellum, and pons), lungs, pancreas, pituitary gland (dogs only), spleen, and thyroid gland (dogs only) were weighed (absolute weights and organ weight relative to the brain and terminal body weight were determined), and 29-32 tissues were microscopically examined from the control and high-concentration groups. Tissues from low- and mid-concentration animals were examined only if "significant pathologic findings" were observed at the high concentration.

No effects on rats were observed for any of the parameters evaluated (IBT, 1979). In dogs, however, a number of potential treatment-related effects were observed. An apparent concentration-related increase in mortality was observed. Mortality rates in dogs exposed at 0, 760, 1470, and 2000 mg/m^3, respectively, were 0/4, 0/4, 1/4, and 2/4 in males and 0/4, 0/4, 1/4, and 3/4 in females. Hypoactivity was observed in 0/4, 1/4, and 4/4 dogs at the low-, mid-, and high-concentrations, respectively, in both males and females (control incidences were not reported). Conjunctivitis occurred at the same incidence rates in both males and females. Also, one high-concentration female dog was observed with glazed eyes. There were no clear effects on body weight, although final mean body weights of high-concentration dogs were less than controls. No chlorobenzene-related alterations in hematological, serum clinical chemistry, or urinalysis parameters were observed. A number of statistically significant changes in absolute and relative organ weights were found; however, only pancreas weights of female dogs appeared to show a concentration-response relationship (although the lack of several organ weights from the low- and mid-concentration groups precludes a full evaluation of potential treatment-related effects). The toxicological relevance of the change in pancreas weight, however, is not clear because no microscopic lesions were observed in the pancreas.

Icterus (characterized by yellow discoloration of the aorta) and enlarged hardened livers were observed in dogs that were killed *in extremis* (IBT, 1979). Microscopic lesions were observed in the liver, kidney, testes, and bone marrow in treated dogs. At 2000 mg/m^3, slight to moderate vacuolation of the liver (2/4 males, 3/4 females), aplastic bone marrow (2/4 males, 3/4 females), epithelial cytoplasmic vacuolation in the kidneys (1/4 males, 3/4 females), and atrophy of the seminiferous epithelium in the testes (2/4 males) were observed. At 1470 mg/m^3, vacuolation of the liver (1/4 males) and juvenile testes (1/4 males) were observed. These lesions were not seen in controls. No tissues from low-concentration males or females were microscopically examined. This study was not peer-reviewed, and statements from the researchers highlighted that only a limited quality assurance review was given to this report. Therefore, reliable NOAEL or LOAEL values cannot be derived from this study. However, the study does provide suggestive evidence that the liver, kidneys, bone marrow, and testes may be target organs for chlorobenzene in dogs.

As a follow-up study, Roloff (1980) exposed beagle dogs (6 per sex and concentration) to chlorobenzene (96.5% pure) 6 hours/day, 5 days/week for 6 months at 0, 0.79, 1.59, or 2.06 mg/L (0, 790, 1590, or 2060 mg/m^3). Clinical signs of toxicity were recorded at regular intervals during the 6-hour exposure periods, detailed physical examinations were conducted weekly, and body weight was recorded weekly. After six months of exposure, animals were sacrificed, the adrenals, brain, heart, kidney, liver, pituitary, and testes were weighed, and 24 tissues were microscopically examined. A number of hematology, clinical chemistry, and urinalysis parameters were determined twice prior to study initiation, twice during the first four weeks of exposure, monthly thereafter, and at terminal sacrifice.

Body weight, food consumption, and general health of the dogs were unaffected by chlorobenzene exposure (Roloff, 1980). A concentration-related, statistically significant increase in the number of dogs observed to vomit ($p \leq 0.01$) or pass abnormal stools ($p \leq 0.01$) was reported, suggesting gastrointestinal irritation at all concentrations. However, histopathology did not reveal any treatment-related lesions of the GI tract, and other studies have not observed gastrointestinal effects. Therefore, the toxicological significance of this observation is not clear. A statistically significant ($p \leq 0.05$) increase in liver-to-body weight ratio was observed in mid- and high-concentration females and a significant ($p \leq 0.05$) decrease in absolute adrenal weight was observed in the mid- and high-concentration males. Kidney weight was not affected by treatment. In the absence of microscopic lesions in these tissues, the biological significance of the organ weight changes is not clear. Although chlorobenzene exposure has been shown to affect the liver in other studies, only relative weights in females were significantly increased compared with controls and no microscopic lesions were observed in the liver in this study. Also, relative liver weights in females did not show a clear concentration-related increase. Relative liver weights at 0, 790, 1590, and 2000 mg/m^3, respectively, were 2.4%, 3.2%, 3.1%, and 3.1%. Therefore, it does not appear that the increase in relative liver weight in female dogs was related to treatment. Statistically significant changes in various clinical chemistry parameters were observed; however, these changes appeared to be random and not related to chlorobenzene exposure. A clear LOAEL was not observed in this study.

Taken together, these 90 day and 6-month studies in dogs resulted in contradictory results and, therefore, do not allow for reliable NOAEL or LOAEL derivations. In one study, (IBT, 1979), an apparent concentration-related increase in mortality and effects on the kidney, liver, and testes were observed. In a follow-up study (Roloff, 1980), however, no effects were observed in dogs at comparable concentrations. Therefore, a clear NOAEL or LOAEL in dogs was not established.

In a study reported by Irish (1963), groups of rats, rabbits, and guinea pigs were exposed to 0, 200, 475, or 1000 ppm (0, 920, 2189, or 4604 mg/m^3) of chlorobenzene for 7 hours/day, 5 days/week for 44 days. In the guinea pigs exposed at 4604 mg/m^3, increased mortality was observed. Unspecified histological alterations were observed in the liver, kidney, and lungs in exposed animals at 4604 mg/m^3 (the study report did not specify which effects were associated with each species tested). At 2189 mg/m^3, slight histological alterations were also observed in the liver. No effects were observed at 920 mg/m^3. Additional details were not available.

Zub (1978) exposed male and female white Swiss mice (5 per sex and concentration) to chlorobenzene vapors at 100 mg/m^3 daily (7 hours per day) for 3 months or 2500 mg/m^3 daily for 3 weeks. Additional experimental design parameters were not reported. Five of 10 mice exposed at 2500 mg/m^3 died. Loss of appetite, general emaciation, marked somnolence, decreased body weight, fatty degeneration and atrophy in the liver were also observed at 2500 mg/m^3. Slight leukopenia and lymphocytosis were the only haematological effects in mice exposed to 100 mg/m^3 for 3 months. Although these data support the conclusion that chlorobenzene may affect the liver, the data are limited because sufficient detail on experimental methods and results were not reported in the published article to permit critical evaluation of the study.

Dilley (1977) exposed groups of 32 male Sprague-Dawley rats and 32 male rabbits (strain not specified) to 0, 73, or 248 ppm (0, 336, or 1142 mg/m^3, respectively) of chlorobenzene for 7 hours/day, 5 days/week for 24 weeks. Groups of 10 rats and 10 rabbits were killed after 5, 11, or 24 weeks of exposure. Animals were weighed weekly for 5 weeks, every 2 weeks for the next 4 weeks and monthly thereafter. All animals were observed daily for clinical signs of toxicity. The brain, heart, lungs, liver, spleen, kidneys, and gonads were weighed. These tissues and the adrenal glands, bone marrow, eye, skin, and abnormal tissues were microscopically examined. A number of hematology and clinical chemistry parameters were evaluated.

In rats, no deaths, unusual clinical observations or changes in body weight gain were observed (Dilley, 1977). The kidney and liver weights generally increased with increasing concentration (Table 2). Significant increases in absolute and relative liver weights were observed in male rats exposed to 248 ppm for 24 weeks (Table 2) compared with controls. Relative kidney weights were also significantly greater than controls after 24 weeks.

Hematology evaluations found decreased hematocrit and mean corpuscular volume, and increased mean corpuscular hemoglobin concentration, in rats exposed to chlorobenzene at $\geq$73 ppm after 11 weeks of exposure, consistent with microcytic anemia; however, similar effects were not observed at 24 weeks (Dilley, 1977). Therefore, the biological significance of this observation is not clear. The only consistent and significant change in the rat clinical chemistry profile was reduced serum aspartate aminotransferase (AST) activity in the high-dose group at all three sacrifice times. The toxicological significance of this observation is not clear. Histopathology revealed no consistent concentration-related increase in the incidences of any lesions. Chronic respiratory disease was observed in 8-10 rats in all treatment and control groups. It is not known if the chronic respiratory disease made the animals unusually sensitive to the toxicity of chlorobenzene or masked some aspects of chlorobenzene toxicity. Therefore, a NOAEL and LOAEL suitable for RfC derivation cannot be identified from this study. However, the organ weight data provide supportive evidence that the liver and kidneys are possible targets of chlorobenzene toxicity.

Table 2. Selected Organ Weights in Male Rats Exposed to Chlorobenzene via Inhalation for 24 Weeks (Dilley, 1977)

Organ	Absolute or Relative Weight	0 ppm	73 ppm	248 ppm
Liver	Absolute (g)	16±0.8[a]	18±0.9	21±2.0[b]
	Relative, body	34±0.6	38±1.0	44±1.9[c]
	Relative, brain	7.3±0.4	8.0±0.4	9.7±0.8
Kidneys	Absolute (g)	3.5±0.2	3.7±0.1	4.1±0.2
	Relative, body	7.5±0.2	7.9±0.2	8.5±0.2[b]
	Relative, brain	1.6±0.08	1.6±0.06	1.8±0.08

[a] mean ± standard deviation
[b] statistically significant ($p \leq 0.05$)
[c] statistically significant ($p \leq 0.01$)

In rabbits, no treatment-related deaths, unusual clinical observations, or changes in body weight gain were observed (Dilley, 1977). Overall, there were no consistent concentration-related changes in hematology, clinical chemistry, or gross or microscopic lesions. Encephalitozoonosis (caused by *Escherichia cuniculi* infection) and respiratory illness associated with atelectasis and emphysema; lymphocytic foci near bronchi and bronchioles, focal edema and congestion were observed in a number of treated and control animals that may have affected the rabbits' sensitivity to chlorobenzene-induced toxicity. Therefore, these data are not suitable for RfC derivation.

Nair et al. (1987) conducted a two-generation reproductive study in rats. In this study, groups of 30 male and 30 female CD Sprague-Dawley rats were exposed to chlorobenzene (>99.9% pure) in a dynamic air chamber at target concentrations of 0, 50, 150, or 450 ppm (0, 230, 691, or 2072 mg/m^3) for 6 hours/day, 7 days/week for 10 weeks before mating, and during mating, gestation, and lactation. The male and female F_0 rats were sacrificed after the lactation period. Groups of 30 male and 30 female F_1 rats were exposed to the same concentrations of chlorobenzene (beginning 1 week post-weaning) for 11 weeks before mating and during mating, gestation, and lactation. The F_1 rats were also sacrificed after the lactation period. The F_2 pups were sacrificed after weaning. Mortality and clinical signs of toxicity were recorded twice each day, detailed physical examinations were conducted weekly, body weights were recorded weekly except that female body weights were also recorded at additional regular intervals throughout gestation and lactation, and food consumption was recorded weekly during the growth period. Complete gross postmortem examinations were conducted on all sacrificed animals. Liver and brain weights of F_0 and F_1 adults were recorded. Liver, kidneys, pituitary gland, and reproductive organs (males: testes, epididymides, seminal vesicle, and prostate; females: vagina, uterus, and ovaries) were examined microscopically for all F_0 and F_1 adult animals in the control and high-concentration groups. Liver, kidneys, and testes of male rats in the low- and mid-

concentration groups were microscopically examined. Hematology or clinical chemistry parameters were not evaluated.

No deaths were observed in the F_0 or F_1 groups, and no significant alterations in body weight gain were observed (Nair et al., 1987). No apparent alterations in the mating, pregnancy (number of pregnant females/number mated), fertility, pup viability, pup survival, or litter survival indices were observed in the F_0 or F_1 rats. Absolute and relative liver weights were clearly and significantly increased in F_0 and F_1 male rats exposed to $\geq$150 ppm and F_0 and F_1 female rats exposed to $\geq$450 ppm (Table 3). Much smaller, but still statistically significant, increases in relative liver weight at lower doses were consistent with the observed trend, but do not themselves indicate a toxicologically significant effect at the lower doses. Histopathology examinations identified the liver, kidneys, and testes as target organs for chlorobenzene in male rats. Table 4 shows incidence data reported by the investigators and the results of statistical tests conducted for this review (statistical tests of the incidence data were not performed by the original investigators). In the liver, the incidence of centrilobular hepatocellular hypertrophy was significantly increased in the 150 and 450 ppm F_0 males in a dose-related manner, and marginally increased in the 450 ppm F_1 males. In the kidneys, significant increases in the incidences of tubular dilation, chronic interstitial nephritis, and foci of regenerative epithelium were observed at 150 and 450 ppm in the F_0 males, but primarily at 450 ppm in the F_1 males. The incidence of small and flaccid testes was significantly increased in the F_1 males at 450 ppm, and was also observed in both F_0 and F_1 males at 150 ppm. Degeneration of the testicular germinal epithelium was seen in F_0 and F_1 males at 150 and 450 ppm, and appears to have been treatment-related. Although incidence levels were low at 150 ppm and just approached statistical significance at 450 ppm, the lesion was graded as moderate or severe in 1 F_0 and 2 F_1 males at 150 ppm and in 3 F_0 and 5 F_1 males at 450 ppm. The two observations of this lesion in controls were both graded as minimal. No concentration-related microscopic lesions were observed in female rats.

The kidney lesions observed in this study included tubular dilation, chronic interstitial nephritis, and foci of regenerative epithelium (Nair et al, 1987). Because the lesions observed in this study only occurred in male rats and are consistent with those typical of alpha-$_{2u}$-globulin accumulation (U.S. EPA, 1991b), and because other chlorobenzene derivatives have been shown to cause alpha-$_{2u}$-globulin accumulation (WHO, 1991), it is possible that the kidney effects observed in this study may not be relevant to human health risk assessment. However, there is insufficient evidence to attribute the kidney effects observed in this study to alpha-$_{2u}$-globulin accumulation. The presence of alpha-$_{2u}$-globulin was not tested for in the Nair et al. (1987) study, and other studies have demonstrated the occurrence of kidney effects in animals other than male rats. Hazleton Laboratories (1967a) reported kidney effects in orally treated dogs (including tubule dilation, vacuolation, and leukocytic infiltration), and NTP (1985) reported kidney effects in male and female mice (tubular necrosis) and male and female rats (degeneration and necrosis of the proximal tubule) orally administered chlorobenzene in subchronic studies. It is possible that the absence of kidney lesions in female rats in the Nair et al. (1987) study was due to generally lower sensitivity of the females to chlorobenzene toxicity, as liver lesions were also observed only in males in this study. Therefore, there is insufficient evidence to attribute the kidney lesions observed in this study to alpha-$_{2u}$-globulin accumulation, and the kidney

Table 3. Mean Absolute and Relative Liver Weights of F_0 and F_1 Rats Exposed to Chlorobenzene Vapor (Nair et al., 1987)

Concentration (ppm)	Males		Females	
	Absolute Liver Weight (g)	Relative Liver Weight (g)	Absolute Liver Weight (g)	Relative Liver Weight (g)
F_0 Animals				
0	19.3±2.2[a]	3.6±0.35	11.5±1.3	3.8±0.30
50	19.0±3.1	3.6±0.34	12.0±1.3	3.9±0.23
150	21.5±2.3[c]	4.1±0.30[c]	12.1±1.1	4.0±0.21[b]
450	21.9±3.8[c]	4.1±0.61[c]	13.3±1.5[c]	4.4±0.33[c]
F_1 Animals				
0	18.3±2.2	3.5±0.32	12.4±2.3	4.2±0.60
50	19.5±2.6	3.7±0.36[b]	12.7±1.6	4.2±0.35
150	21.7±3.5[c]	4.2±0.46[c]	13.1±1.6	4.4±0.41
450	23.4±4.1[c]	4.4±0.40[c]	14.0±2.0[c]	4.6±0.37[c]

[a] mean ± standard deviation
[b] statistically significant ($p \leq 0.05$)
[c] statistically significant ($p \leq 0.01$)

Table 4. Incidences of Liver, Kidney, and Testicular Lesions Observed in Adult Male Rats Exposed to Chlorobenzene via Inhalation in a 2-Generation Reproductive Toxicity Study (Nair et al., 1987)[a]

Organ, Lesion	Generation	Concentration (ppm)			
		0	*50*	*150*	*450*
Liver, hepatocellular hypertrophy	F_0	0/30[b]	0/30	5/30[c]	14/30[d]
	F_1	2/30	0/30	3/30	7/30
Kidney, tubular dilation/eosinophilic material (unilateral or bilateral)	F_0	0/30	4/30	6/30[c]	18/30[d]
	F_1	8/30	7/30	14/30	22/30[d]
Kidney, chronic interstitial nephritis (unilateral or bilateral)	F_0	1/30	2/30	7/30[c]	10/30[d]
	F_1	1/30	3/30	7/30[c]	11/30[d]
Kidney, foci of regenerative epithelium (unilateral or bilateral)	F_0	0/30	1/30	5/30[c]	8/30[d]
	F_1	1/30	0/30	5/30	11/30[d]
Testes, small and flaccid	F_0	0/30	0/30	1/30	3/30
	F_1	0/30	0/30	1/30	5/30[c]
Testes, degeneration of germinal epithelium	F_0	1/30	0/30	2/30	6/30
	F_1	1/30	0/30	3/30	6/30

[a] statistical analysis (Fisher Exact test) performed for this review and not by original investigators
[b] number of animals with lesion/total number of animals exposed
[c] statistically significant ($p \leq 0.05$)
[d] statistically significant ($p \leq 0.01$)

effects are considered relevant to human health risk assessment until conclusive evidence is obtained indicating otherwise.

Nair et al. (1987) demonstrated dose-related effects on the liver, kidney, and testes. Male rats were more sensitive than females. In all three organs, there was some evidence for an effect at 150 ppm, and more clear evidence at 450 ppm. In the liver, significant increases in liver weight and the incidence of hepatocellular hypertrophy were seen at 150 and 450 ppm. In the kidneys, the incidences of tubular dilation, chronic interstitial nephritis, and foci of regenerative epithelium were increased at both 150 and 450 ppm. The kidney effects are considered relevant to human health risk assessment, as previously discussed. In the testes, degeneration of the germinal epithelium was not statistically increased in incidence even in the 450 ppm group, but appeared to be related to treatment in both the 150 and 450 ppm groups based on severity of the lesions observed. Although the testes appeared to be a target for chlorobenzene, reproductive

performance was not affected at any exposure level. Based on these endpoints, this study identified a LOAEL of 150 ppm (691 mg/m^3) and NOAEL of 50 ppm (230 mg/m^3).

Chlorobenzene was the subject of several developmental toxicity studies. John et al. (1984) exposed groups of 32-33 pregnant Fischer 344 rats to 0, 75, 210, or 590 ppm (0, 345, 967, or 2716 mg/m^3) of chlorobenzene 6 hours/day on gestation days (GDs) 6-15. The dams were sacrificed on GD 21. At necropsy, the uterine horns were examined for (1) number and position of fetuses; (2) number of live and dead fetuses; (3) number and position of resorption sites; (4) number of corpora lutea; (5) the sex, body weight, and crown-rump length of each fetus; and (6) gross external abnormalities. One half of each litter was examined under a dissecting microscope for soft tissue alterations, and the heads of these animals were also examined by sectioning. All fetuses were examined for skeletal alterations.

No maternal deaths or changes in general appearance or behavior were observed in the chlorobenzene-exposed rats (John et al., 1984). In dams exposed to 590 ppm, significant decreases in body weight gain were observed on GDs 6-8 (Table 5); however, weight gains over subsequent intervals and total weight gains over GDs 6-20 were not significantly affected. Significant increases in absolute and relative liver weights were observed at 590 ppm (Table 5). Mean litter size and incidence of resorptions were not affected by chlorobenzene exposure, and no alterations in the incidence of malformations were observed in the rat fetuses. The incidences of some minor skeletal variations were altered in some groups, but no consistent concentration-related changes were observed. Therefore, chlorobenzene was not considered a developmental toxicant in this study. A maternal NOAEL and LOAEL of 210 ppm and 590 ppm, respectively, was identified from this study based on increased maternal liver weight and decreased body weight. The developmental NOAEL was 590 ppm, the highest concentration tested.

Table 5. Body and Liver Weights of Female Rats Exposed to Chlorobenzene (John et al., 1984)

Concentration (ppm)	Body weight gain GD 6-8[a] (g)	Liver weight (absolute) (g)	Liver weight (relative)
0	3 ± 2[b]	9.8 ±1.1	3.8 ± 0.28
75	4 ± 3	10.0 ± 0.81	3.9 ± 0.28
210	2 ± 3	10.1 ± 0.54	3.9 ± 0.21
590	-2 ± 5[c]	11.0 ± 0.83[c]	4.3 ± 0.42[c]

[a] body weight gains at other time periods were comparable to controls and are not reported
[b] mean ± standard deviation[c] statistically significant ($p \leq 0.05$)

John et al. (1984) conducted two developmental toxicity studies in rabbits. In the first study, groups of 30 pregnant New Zealand white rabbits were exposed to 0, 75, 210, or 590 ppm (0, 345, 967, or 2716 mg/m^3) of chlorobenzene for 6 hours/day on GDs 6-18 and sacrificed on GD 29. Other details of the protocol were the same as described for rats (John et al. 1984). No

effect on body weight or weight gain was observed in the does. Absolute and relative liver weights in the does were reported to be significantly increased at 210 and 590 ppm, but the data were not shown. No effects on reproductive or fetal parameters were found. There was a statistically significant ($p \leq 0.05$) increase in the incidence of fetuses with extra rib at 590 ppm. The number of litters affected, however, was comparable to controls (Table 6). There were also several observations of historically rare malformations (head/facial anomalies, heart defects, spina bifida, acephaly) in treated rabbits that were not seen in controls (Table 6). Because it was not clear that any of these effects were directly related to chlorobenzene treatment, a second experiment was conducted in rabbits at 0, 10, 30, 75, and 590 ppm.

Table 6. Fetal Alterations in Chlorobenzene Exposed Rabbits - Experiment 1 (John et al., 1984)

Concentration (ppm)	Extra Rib	Head/Facial Anomalies	Heart Anomalies	Spina Bifida	Acephaly
0	79 (24)[a]	0	0	0	0
75	68 (19)	1 (1)	0	0	0
210	92 (33)	0	1 (1)	1 (1)	0
590	113[b] (26)	1 (1)	2 (2)	1 (1)	1 (1)

[a] number of fetuses affected (number of litters affected in parentheses)
[b] statistically significant ($p \leq 0.05$)

In the second study (John et al., 1984), groups of 30-32 pregnant New Zealand White rabbits were exposed to 0, 10, 30, 75, or 590 ppm (0, 46, 138, 345, or 2716 mg/m^3) of chlorobenzene 6 hours/day on GDs 6-18. An increase in maternal liver weight was observed in the 590 ppm group. No significant alterations in the number of litters, number of fetuses per litter, or the number of implantations resorbed were observed; however, there was a significant increase in the number of litters with resorptions at 590 ppm. This observation, however, was not considered to be related to chlorobenzene exposure by the researchers because the incidence was within the range of historical controls (details on the historical controls were not reported) and because this effect was not observed in the first rabbit study. The incidence of malformations was not altered in the chlorobenzene-exposed groups. The malformations observed in the first rabbit study were either not observed at all in the second study or were seen at comparable incidence in the control group. An increased incidence of fetuses with extra ribs was found at 10 ppm, but the number of affected litters was similar to controls. No increases in extra ribs were seen at $\geq$30 ppm. Overall, no consistent developmental effects were observed in the two studies conducted in rabbits. The NOAEL for developmental toxicity was the high concentration of 590 ppm. Increased liver weights were observed at $\geq$210 ppm in maternal animals in the first study; the second study did not test any concentration between 75 and 590 ppm. Therefore, the maternal NOAEL for these studies was 75 ppm (345 mg/m^3) and the maternal LOAEL was 210 ppm (967 mg/m^3), based on increased liver weights.

Tarkhova (1965) exposed groups of 15 male white rats (strain not specified) to 0, 0.1, or 1.0 mg/m^3 (0, 0.02, 0.2 ppm) for an "uninterrupted" 60-day period. No alterations in body weight or appearance were observed. In the 1.0 mg/m^3 group, the conduction speeds of nerve impulses to sets of flexor and extensor muscles had changed on day 39. The ratios of chronaxias of the flexor and extensor muscles in the 1 mg/m^3 exposed animals were measured every 9-10 days as the experiment progressed. Ninety-nine percent (99%) reliability of changes by comparison to the control were observed starting day 39. A significant increase in blood cholinesterase and changes in the ratio of albumin:α-globulin ratio (direction of the change can not be determined) was also observed in the 1.0 mg/m^3 group. The rise in blood cholinestrase activity was observed in the 1 mg/m^3 exposed groups of animals on the 36th day of the treatment.

Aranyi et al. (1986) tested the immunotoxicity of a number of potentially hazardous air contaminants, including chlorobenzene. Female CD_1 mice (135/group) 4-5 weeks old were exposed to either 0 or 75 ppm (0 or 345 mg/m^3) of chlorobenzene for 3 hours/day for 5 days. The mice were exposed simultaneously to an aerosol of viable *Streptococcus zooepidemicus*, and deaths over a 14-day observation period were recorded. Pulmonary bactericidal activity of *in vivo* alveolar macrophages was also monitored in animals (23/group) simultaneously exposed to ^{35}S-*Klebsiella pneumonia* and either chlorobenzene or air. The ratio of viable bacterial counts to radiolabeled bacteria was used to determine bactericidal activity. Exposure to chlorobenzene resulted in no significant increase in mortality in female CD_1 mice due to *S. zooepidemicus* challenge after 5 days of simultaneous exposure for 3 hours/day, in comparison with filtered-air controls. There was also no evidence of any adverse effect on the bactericidal activity of alveolar macrophages due to chlorobenzene exposure. The data indicate that immunotoxicity is not likely a sensitive toxicological endpoint for chlorobenzene.

DERIVATION OF A PROVISIONAL SUBCHRONIC RfD FOR CHLOROBENZENE

No relevant data were located regarding the subchronic or chronic toxicity of chlorobenzene to humans following oral exposure. Subchronic studies in dogs (Hazleton Laboratories, 1967a), rats (Hazleton Laboratories, 1967a; NTP, 1985; Irish, 1963; Varshavskaya, 1967), and mice (NTP, 1985) and chronic studies in rats and mice (NTP, 1985) were located. Overall, the data indicate that the liver and kidneys are the most sensitive target organs of orally administered chlorobenzene in experimental animals, and that the dog is the most sensitive species evaluated to chlorobenzene toxicity. In dogs, increased incidence of liver and kidney pathology was reported by Hazleton Laboratories (1967a) at ≥39.3 mg/kg-day. Effects on the bone marrow and GI tract were observed at higher chlorobenzene doses. In rodents, increased liver and kidney weights and liver pathology was observed at ≥≈100 mg/kg-day of chlorobenzene (Hazleton Laboratories, 1967b; NTP, 1985; Irish, 1963). The kidney, bone marrow, thymus, and spleen were affected by treatment at higher chlorobenzene doses (NTP, 1985). The available data indicate that the developing fetus is not a sensitive target of orally administered chlorobenzene (IBT, 1977). Although no reproductive toxicity data from oral studies were located, the available inhalation data indicate that reproductive toxicity is not the most sensitive toxicological endpoint for chlorobenzene toxicity (Nair et al., 1987). Effects on immune system tissues were observed in the study conducted by NTP (1985); however, these

effects were only observed at substantially higher doses than those that induced liver toxicity. An inhalation exposure immune function assay indicated that the immune system is not likely a sensitive indicator of chlorobenzene toxicity (Aranyi et al., 1986). No neurotoxicity studies using oral exposure were located. Inhalation data appear to indicate that neurotoxicity data could be a sensitive endpoint of chlorobenzene toxicity in humans (Rosenbaum et al., 1947; Tarkhova, 1965; Ogata et al., 1991; Girard et al., 1969; and Syrovadko and Malysheva, 1977), although none of these studies were sufficient to definitively conclude that chlorobenzene causes adverse effects on the nervous system.

The 13-week study in dogs (Hazleton Laboratories, 1967a) was chosen as the basis for the subchronic RfD because this study demonstrated that the dog is the most sensitive species that has been evaluated in subchronic studies. In this study, chlorobenzene was administered to male and female dogs (4 per sex and dose) in gelatin capsules containing 0, 27.5, 55.0, 275 mg/kg-day of chlorobenzene 5 days per week for 13 weeks (duration-adjusted doses of 0, 19.6, 39.3 or 196.4 mg/kg-day). This study revealed treatment-related effects in the liver, kidneys, GI tract, and bone marrow at 196.4 mg/kg-day. At 39.3 mg/kg-day, effects on the liver (slight bile duct proliferation, slight swelling and vacuolation and leukocytic infiltration) and kidneys (swelling of tubular epithelium and variations in cellularity) were observed. No effects were observed in dogs administered 19.6 mg/kg-day chlorobenzene. Although none of the increased incidences at 39.3 mg/kg-day were significantly greater than controls, the study used only 8 dogs (4 per sex) per dose and the small number of animals resulted in low power of statistical analysis to detect a change. The study did show a clear increase in the incidence and severity of liver and bile duct hyperplasia with increasing dose. Therefore, the marginal increase in liver lesions and bile duct hyperplasia observed at 39.3 mg/kg-day was considered related to chlorobenzene treatment. This study, then, identified a NOAEL of 19.6 mg/kg-day and a LOAEL of 39.3 mg/kg-day for liver and bile duct hyperplasia.

The provisional **subchronic RfD of 7E-2 mg/kg-day** is derived from the NOAEL of 19.6 mg/kg-day by applying an uncertainty factor of 300 (10 to extrapolate from dogs to humans, 10 to protect sensitive subpopulations, and 3 for database deficiencies, including the lack of reproductive and neurological oral toxicity studies), as follows:

subchronic p-RfD	=	NOAEL ÷ UF
	=	19.6 mg/kg-day ÷ 300
	=	0.07 or 7E-2 mg/kg-day

Confidence in the principal study is medium. This study demonstrated a progression of effects with increasing dose, enabling identification of both a NOAEL and a LOAEL. However, the study was limited by small group sizes, lack of statistical analysis and only marginally adequate reporting of results. Confidence in the database is medium. Supporting oral toxicity data are available, but reproductive effects have been studied only by inhalation exposure, and neurotoxicity, which has been identified as a potential effect of chlorobenzene in humans exposed by inhalation, has not been systematically studied by any route. Medium confidence in the p-RfD follows.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC RfCs FOR CHLOROBENZENE

Human data suggest that the nervous system may be a target for chlorobenzene toxicity (Rosenbaum et al., 1947; Girard et al., 1969; Tarkhova, 1965; Ogata et al., 1991). Headaches and drowsiness have been reported by workers and experimental subjects (Rosenbaum et al., 1947; Girard et al., 1969; Ogata et al., 1991), and tingling, numbness, and stiffness of the extremities have been observed in workers (Rosenbaum et al., 1947). However, none of these studies reported control data for these effects and the workers may have been exposed to other chemicals in addition to chlorobenzene. Thus, the observations may not have been related to chlorobenzene exposure. Tarkhova (1965) found alterations in the EEG pattern in response to rapid light flashes in humans exposed at 0.2 mg/m^3; however, the toxicological significance of these alterations is not known. Tarkhova (1965) also reported effects of unclear relevance (changes in the conduction speeds of nerve impulses to sets of flexor and extensor muscles) in rats exposed to chlorobenzene at 1.0 mg/m^3 for 60 days. The reliability of these data is uncertain because these effects have not been confirmed by other studies. Taken together, the data suggest that chlorobenzene may affect the nervous system. However, none of the data are adequate for use in risk assessment, either because the effects cannot be definitively attributed to chlorobenzene exposure, only single exposures were used, or the toxicological relevance of the effects is not clear.

The available animal data indicate that the liver and kidneys are the most sensitive target organs for chlorobenzene toxicity. Liver effects included increased weight, hepatocellular hypertrophy, fatty change, and other unspecified microscopic lesions (IBT, 1979; Nair et al., 1987; Dilley, 1977; Irish, 1963; Zub, 1978). Kidney effects included increased weights, cytoplasmic vacuolation, tubule dilation, inflammation of the interstitial cells, and regeneration of the epithelium in male rats (IBT, 1979; Irish, 1963; Nair et al., 1987; Dilley, 1977). The NOAEL and LOAEL for both liver and kidney effects were 50 and 150 ppm (230 and 691 mg/m^3, respectively) in the only adequately conducted and reported study (Nair et al., 1987). Kidney lesions have only been reported in male rats (or rats of unspecified sex) in the available inhalation studies, which suggests that the observed kidney effects may be related to alpha-$_{2u}$-globulin accumulation, a male rat-specific effect that is not predictive for health effects in humans (U.S. EPA, 1991b). Such an effect is known for other chlorinated benzene compounds (WHO, 1991). However, there does not appear to be sufficient evidence to attribute the kidney lesions observed by Nair et al. (1987) to alpha-$_{2u}$-globulin accumulation. Although the lesions were consistent with those associated with alpha-$_{2u}$-globulin, Nair et al. (1987) did not test for the presence of alpha-$_{2u}$-globulin directly. Chlorobenzene produced kidney lesions, including tubule dilation, vacuolation, and leukocytic infiltration, in dogs treated by oral exposure (Hazleton Laboratories, 1967a). NTP (1985) reported kidney effects in male and female mice (tubular necrosis) and male and female rats (degeneration and necrosis of the proximal tubule) in oral subchronic studies on chlorobenzene. The absence of kidney lesions in females (Nair et al., 1987) may reflect general lower sensitivity of females to chlorobenzene toxicity, as liver lesions were also observed only in males in this study. For these reasons, there is insufficient evidence to attribute the kidney lesions observed in this study to alpha-$_{2u}$-globulin accumulation, and the kidney effects are considered potentially relevant to human health risk assessment.

The testis was also identified as a target for chlorobenzene in male rats. Possible effects on the testes were observed in male rats exposed to chlorobenzene at 150 or 450 ppm (Nair et al., 1987). However, it does not appear that the testes are as sensitive a target as the liver and kidney because the incidence of the testicular lesions was only marginally increased in rats exposed at chlorobenzene concentrations that induced significant increases in the incidences of animals with microscopic liver and kidney lesions, and because reproductive performance was not affected.

Other studies suggested that the blood may be a potential target for chlorobenzene. Effects on the blood were observed by Zub (1978), who reported slight leukopenia and lymphocytosis in mice exposed to 100 mg/m^3 for 3 months. Dilley (1977) reported microcytic anemia in rats exposed at $\geq$ 336 mg/m^3. However, neither of these studies was adequate to base a definitive conclusion regarding effects on the blood, either because sufficient detail was not available to allow for an independent evaluation of study adequacy (Zub, 1978) or because the animals were sick during exposure (Dilley, 1977). Anemia was also reported in workers potentially exposed to unspecified concentrations of chlorobenzene; however, the workers were also exposed to other chemicals (Girard et al., 1969). Clear effects on the blood were not observed in dogs exposed to chlorobenzene for 6 months (IBT, 1979; Roloff, 1980) and blood effects have not been consistently reported in chlorobenzene exposed animals in subchronic studies; therefore, the data suggest that the blood is not likely a sensitive indicator of chlorobenzene toxicity.

Developmental toxicity studies in two species were located, which indicate that chlorobenzene is not a developmental toxicant (John et al., 1984). In a 2-generation reproductive toxicity study in rats (Nair et al., 1987), marginal increases in testicular lesions were associated with chlorobenzene exposure at concentrations that induced significant increases in the incidences of microscopic liver and kidney lesions. Reproductive impairment was not observed at any concentration. Therefore, it does not appear that reproductive toxicity is a sensitive endpoint for chlorobenzene toxicity.

Although a number of subchronic inhalation studies in animals were located (IBT, 1979; Roloff, 1980; Dilley, 1977; Irish, 1963), none of the these studies were considered adequate for RfC derivation for the following reasons: a clear LOAEL was not established (combined data from IBT, 1979 and Roloff, 1980); infection occurred in the test animals during exposure (Dilley, 1977); sufficient detail on the experimental design and results were not reported (Irish, 1963; Zub, 1978); or only one concentration was used (Zub, 1978). The only available study suitable for RfC derivation was the 2-generation study conducted by Nair et al. (1987). In this study, Sprague-Dawley rats (30 per sex and dose) were exposed to chlorobenzene (>99% pure) in a dynamic air chamber at target concentrations of 0, 50, 150, or 450 ppm (0, 230, 691, or 2072 mg/m^3) for 10 weeks before mating, then during mating, gestation, and lactation. Their offspring (F_1 rats) were exposed for 11 weeks beginning 1 week after weaning. Clear treatment-related effects were observed in the kidneys and liver of chlorobenzene exposed rats, and possible effects on the testes were observed. Kidney effects included increased weights, tubule dilation, inflammation of the interstitial cells, and regeneration of the epithelium in male rats; liver effects included increased organ weight and hepatocellular hypertrophy. The NOAEL and LOAEL for these effects was 50 and 150 ppm (230 and 691 mg/m^3, respectively). A marginal increase in the incidence of degeneration of the germinal epithelium was also observed at 150 ppm.

In order to derive the point of departure for derivation of the RfC, the LED_{10} (lower bound on dose estimated to produce a 10% increase in the extra risk of the modeled effects over background) was estimated for all kidney and liver lesions reported by Nair et al. (1987) using the U.S. EPA (2000) benchmark dose methodology. A 10% response level was modeled, as recommended for dichotomous endpoints by U.S. EPA (2000). The sensitivity of the study does not appear to warrant the use of a different response level (e.g., 1% or 5%). All available models for dichotomous data in the EPA Benchmark Dose Software (version 1.3.2) were fit to the incidence data for all treatment-related kidney and liver lesions observed in Nair et al. (1987) (incidence data reported in Table 7 below). Because each of the lesions were considered potentially relevant in human health risk assessment, the lesion that resulted in the lowest LED_{10} that was adequately described by modeling was chosen as the point of departure for the RfC. As illustrated in Table 7, renal tubular dilation resulted in the lowest LED_{10}. Tubular dilation can be caused by alpha-$_{2u}$-globulin accumulation in male rats. However, tubular dilation was observed in dogs orally administered chlorobenzene, and tubular necrosis, vacuolation, and/or regeneration was observed in male and female rats and mice orally administered chlorobenzene for 13 weeks. Therefore, tubular dilation is not necessarily a result of alpha-$_{2u}$-globulin accumulation and is potentially relevant to human health risk assessment; it was chosen as the point of departure for RfC derivation.

The dichotomous models estimated concentrations between 17 and 125 ppm associated with a 10% extra risk (ED_{10}) for tubular dilation (Table 8). As assessed by Akaike's Information Criterion (AIC), the best fitting models were the gamma, quantal linear, and Weibull models. Each of these models calculated ED_{10} values of 53.8 ppm and a lower 95% confidence interval (LED_{10}) of 39.7 ppm. Therefore, 39.7 ppm was selected as the point of departure to derive the p-RfC.

The LED_{10} of 39.7 ppm (183 mg/m^3) was converted to a human equivalent concentration using the following equations (U.S. EPA, 1994b):

$$LED_{10\ ADJ} = LED_{10} \times \text{duration adjustment}$$
$$LED_{10\ ADJ} = 183\ mg/m^3 \times 6\ hours/24\ hours \times 7\ days/7\ days$$
$$LED_{10\ ADJ} = 46\ mg/m^3$$

$$LED_{10\ HEC} = LED_{10\ ADJ} \times L_R/L_H$$

where,

L_R/L_H = rat to human blood:air partition coefficient ratio

L_R/L_H = default ratio of 1, because L_R (59.4; Gargas et al., 1989) is greater than L_H (30.0; Gargas et al., 1989)

$$LED_{10\ HEC} = 46\ mg/m^3 \times 1$$
$$LED_{10\ HEC} = 46\ mg/m^3$$

Table 7. LED_{10} Values Calculated for Chlorobenzene Based on Liver and Kidney Lesions in Nair et al. (1987)[a]

Organ, Lesion	Generation	Concentration (ppm)				LED_{10} (ppm)
		0	*50*	*150*	*450*	
Liver, hepatocellular hypertrophy	F_0	0/30[b]	0/30	5/30[c]	14/30[d]	97.3
	F_1	2/30	0/30	3/30	7/30	NA
Kidney, tubular dilation/eosinophilic material (unilateral or bilateral)	F_0	0/30	4/30	6/30[c]	18/30[d]	39.7
	F_1	8/30	7/30	14/30	22/30[d]	55.0
Kidney, chronic interstitial nephritis (unilateral or bilateral)	F_0	1/30	2/30	7/30[c]	10/30[d]	55.9
	F_1	1/30	3/30	7/30[c]	11/30[d]	49.5
Kidney, foci of regenerative epithelium (unilateral or bilateral)	F_0	0/30	1/30	5/30[c]	8/30[d]	73.0
	F_1	1/30	0/30	5/30	11/30[d]	116.7

[a] statistical analysis (Fisher Exact test) performed for this review and not by original investigators
[b] number of animals with lesion/total number of animals exposed
[c] statistically significant ($p \leq 0.05$)
[d] statistically significant ($p \leq 0.01$)
NA not assessed because statistical significance was not observed at any concentration

Table 8. ED_{10}, LED_{10}, and Selected Goodness of Fit Parameters from Modeled Incidence of Tubular Dilation/Eosinophilic Material (Unilateral or bilateral) Observed in Adult Male Rats Exposed to Chlorobenzene via Inhalation (Nair et al., 1987)

MODEL	ED_{10} (ppm)	LED_{10} (ppm)	χ^2 statistic	AIC
Gamma[a]	53.8	39.7	0.786	97.0
Quantal linear	53.8	39.7	0.786	97.0
Weibull[a]	53.8	39.7	0.786	97.0
Multi-stage[b]	56.6	39.8	0.586	99.0
Log-logistic[c]	51.33	17.0	0.501	99.4
Log-probit[c]	96.3	66.1	0.137	102.4
Probit	131.5	103.5	0.230	102.5
Logistic	143.4	111.6	0.210	102.9
Quantal quadratic	152.7	125.2	0.133	103.7

[a] Restrict power ≥ 1
[b] Restrict betas ≥ 0, Degree of polynomial = 2
[c] Slope restricted to >1

The $LED_{10\ HEC}$ of 46 mg/m^3 was divided by an uncertainty factor of 100 (3 to account for interspecies extrapolation using dosimetric adjustments, 10 to protect sensitive subpopulations, and 3 for database uncertainties [including the lack of adequate neurotoxicity data and the absence of a study that examined the entire respiratory tract]) to yield a provisional **subchronic RfC of 5E-1 mg/m^3**, as follows:

$$\text{subchronic p-RfC} = LED_{10\ HEC} \div UF$$
$$= 46\ \text{mg/m}^3 \div 100$$
$$= 0.5 \text{ or } 5\text{E-}1\ \text{mg/m}^3$$

Because no chronic inhalation toxicity studies were located in the literature, an additional subchronic-to-chronic uncertainty factor of 10 was applied to the provisional subchronic RfC to derive the provisional **chronic RfC of 5E-2 mg/m^3**, as follows:

$$\text{p-RfC} = \text{subchronic p-RfC} \div UF$$
$$= 5\text{E-}1\ \text{mg/m}^3 \div 10$$
$$= 5\text{E-}2\ \text{mg/m}^3$$

One area of uncertainty in the inhalation toxicity database for chlorobenzene is the lack of a study in which the entire respiratory tract was examined. None of the studies discussed in this issue paper examined the upper respiratory tract. Dilley (1977) examined the lungs, but the high incidence of chronic respiratory disease observed in the controls and chlorobenzene-exposed animals limited the ability of this study to detect chlorobenzene-related lung effects.

Data reported by Irish (1963) indicate that the lungs are not more sensitive than the liver or kidneys to chlorobenzene effects, although data from this study were not adequately reported and, therefore, cannot be independently assessed. In the Ogata et al. (1991) human study, none of the subjects complained of nose or eye irritation, although one of the subjects did complain of a sore throat following a 7-hour exposure to 60.2 ppm (277 mg/m^3). Another area of uncertainty is the lack of neurological testing. The available human data (Ogata et al., 1991) suggest that the nervous system may be a sensitive target of chlorobenzene toxicity. Headaches and drowsiness were reported by experimental subjects during exposure to 60.2 ppm (277 mg/m^3). The subchronic and chronic RfCs that were derived from Nair et al. (1987) (0.5 and 0.05 mg/m^3, respectively) are substantially lower than concentrations associated with these effects. Although Tarkhova (1965) reported changes in electroencephalographic (EEG) patterns in response to light flashes in 2/4 human subjects exposed at 0.2 mg/m^3, the toxicological relevance of this effect is not clear, and the reliability of these data is uncertain. Other studies have reported potential neurological effects in exposed humans (Rosenbaum et al., 1947; Girard et al., 1969); however, there is some uncertainty whether these effects were related to chlorobenzene exposure because neither of these studies reported data from unexposed controls. None of the repeated-dose animal studies observed overt signs of neurological effects. Tarkhova (1965) reported potential effects in rats at 0.2 ppm (1 mg/m^3); however, the toxicological significance of the reported effect (changes in the conduction speeds of nerve impulses to sets of flexor and extensor muscles on Day 39) is not clear, and these results have not been confirmed by other studies.

Confidence in the principal study (Nair et al. 1987) is high. It is a well designed two-generation study examining relevant endpoints with an adequate number of animals. Confidence in the database is low. As discussed above, the database lacks a study that adequately examined the entire respiratory tract, and also lacks an adequate neurotoxicity study. Because the available data suggest that neurotoxicity may be a sensitive toxicological endpoint for chlorobenzene, confidence in the provisional chronic and subchronic RfC is low.

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1-15-2002

Provisional Peer Reviewed Toxicity Values for

Cobalt

(CASRN 7440-48-4)

Derivation of Subchronic and Chronic Inhalation RfCs

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

1-15-2002

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR COBALT AND COMPOUNDS (CASRN 7440-48-4)
Derivation of Subchronic and Chronic Inhalation RfCs

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

IRIS (U.S. EPA, 2000) does not report an RfC for cobalt. The HEAST (U.S. EPA, 1997) likewise does not list an RfC for cobalt. The CARA lists (U.S. EPA, 1991, 1994) report a HEA for cobalt (U.S. EPA, 1987), which derived a subchronic inhalation RfD of 9E-5 mg/m^3 based on a LOAEL of 0.1 mg/m^3 for respiratory effects in a 3-month study in swine (Kerfoot et al., 1975). A chronic inhalation RfD of 9E-6 mg/m^3 was derived from the same study. An updated HEA prepared by SRC (1990) for U.S. EPA, but never finalized, dropped the RfC because, it was argued, such an RfC would not be protective for individuals already sensitized to cobalt. ATSDR (1992) has published a Toxicological Profile for cobalt and compounds. A chronic inhalation MRL was not derived, due to a lack of a suitable chronic inhalation study. A subchronic inhalation MRL of $3x10^{-5}$ mg cobalt/m^3 was derived based on a LOAEL of 0.11 mg cobalt/m^3 for metaplasia of the larynx in rats exposed for 13 weeks (6 hours/day, 5 days/week)

(NTP 1991). ACGIH (2000) has set a TLV-TWA of 0.02 mg/m^3 for cobalt and inorganic cobalt compounds, expressed as cobalt, based on respiratory and cardiovascular effects. OSHA (1989, 1993) established a PEL of 0.05 mg/m^3 for cobalt in its 1989 ruling, which has since reverted to the previous PEL of 0.1 mg/m^3 following the court-ordered vacating of the 1989 ruling; the values are based on effects in the respiratory system. The NIOSH (2000) REL (TWA) for cobalt is 0.05 mg/m^3, also based on respiratory effects. An IARC Monograph on cobalt and compounds (IARC, 1991) and the NTP Status Reports (NTP, 2000) were also searched for relevant information. The WHO (2000) has not published an Environmental Health Criteria document about cobalt. Literature searches were conducted from 1991 to November, 2000 for studies relevant to the derivation of an RfC. The databases searched were: TOXLINE, MEDLINE, CANCERLIT, and TSCATS.

REVIEW OF PERTINENT DATA

Overview

Respiratory effects, including respiratory irritation, wheezing, asthma, pneumonia and fibrosis, have been widely reported in humans exposed to cobalt by inhalation (ATSDR, 1992). Cardiomyopathy has also been reported, although this effect is better known from oral exposure. Other effects of oral exposure in humans are polycythemia and thyroid effects. Cobalt is a sensitizer in humans by any route of exposure. Sensitized individuals may react to inhalation of cobalt by developing asthma; ingestion or dermal contact with cobalt may result in development of dermatitis. Several studies have suggested that cross-sensitization may occur between cobalt and nickel (Bencko et al., 1983; Lammintausta et al., 1985; Rystedt and Fisher, 1983; Shirakawa et al., 1990).

Animal studies have generally found similar effects to those observed in humans. One additional target found in animal studies that has not been identified as a target in humans is the reproductive system.

Urinary cobalt levels are a widely used and well accepted biomarker of exposure to cobalt in humans and animals, with many studies demonstrating good correlations between cobalt concentrations in the urine and ambient air (ATSDR, 1992; Gennart and Lauwerys, 1990; Nemery et al., 1992; NTP, 1991; Swennen et al., 1993). Some researchers have concluded that measurement of urinary cobalt is a more effective and more accurate means to monitor worker exposure than monitoring of air concentrations (Cugell, 1992; Nemery et al., 1992).

Human Studies

Numerous studies have investigated health effects in workers occupationally exposed to cobalt dust (Auchincloss et al., 1992; Cugell, 1992; Davison et al., 1983; Demedts et al., 1984; Gennart and Lauwerys, 1990; Kusaka et al., 1986a,b; Meyer-Bisch et al., 1989; Nemery et al., 1992; Prescott et al., 1992; Raffn et al., 1988; Shirakawa et al., 1988, 1989; Sprince et al., 1988; Swennen et al., 1993). However, many of these studies are of limited utility for risk assessment due to inadequate characterization of exposure and/or effects. In addition, many studies were of hard metal workers exposed to tungsten carbide as well as cobalt. There is substantial evidence from animal studies that tungsten, although it acts as an inert dust by itself, can potentiate the effects of cobalt on the respiratory tract (Lasfargues et al., 1992; Swennen et al., 1993). Therefore, studies of hard metal workers were not given further consideration. Four studies were considered to be potentially suitable bases for RfC derivation. Two of these focused exclusively on respiratory effects, one studied only thyroid effects, and one considered multiple endpoints. The populations studied included diamond-cobalt saw manufacturers, diamond polishers, plate painters and cobalt production workers. All four studies were cross-sectional in design.

Gennart and Lauwerys (1990) studied ventilatory function in workers at a plant producing diamond-cobalt circular saws. The exposed population consisted of 48 workers (34 males and 14 females) who agreed to participate in the study (an additional 27 workers declined). Exposure duration for these workers ranged from 0.1 to 32 years, with an average of about 6 years. The work involved weighing and mixing cobalt powder and microdiamond particles (and possibly small amounts of other undisclosed substances), cold pressing, heating and hot pressing. After sintering, the pieces were welded onto steel disks. These operations were performed in two rooms called the mixing room and the oven room, where all the examined workers spent most of their time. Controls were 23 workers (11 males and 12 females) from other factories in the same area who were not exposed to known pneumotoxic chemicals. Personal air samples were collected at different workplaces during half of a workshift. Subjects filled out a questionnaire regarding occupational and medical histories, smoking habits and pulmonary symptoms, gave a urine sample for cobalt determination and submitted to lung function tests. Cobalt concentrations varied from 9.4-2875 $\mu g/m^3$ in the mixing room (geometric mean = 135.5 $\mu g/m^3$) and 6.2-51.2 $\mu g/m^3$ (geometric mean = 15.2 $\mu g/m^3$) in the oven room. The prevalence of respiratory symptoms, such as cough, sputum and dyspnea, were significantly increased in the exposed workers. Mean predicted values of FEV_1 (forced expiratory volume in one second) and FVC (forced vital capacity) were significantly reduced, and the prevalence of abnormal values increased, in the exposed workers (both smokers and non-smokers). Among non-smokers, the spirometric effects were greater in workers exposed for 5 years or more than in those exposed for a shorter period of time.

Nemery et al. (1992) conducted a cross-sectional study of cobalt exposure and respiratory effects in diamond polishers. The study group was composed of 194 polishers working in 10

different workshops. In two of these workshops (#1,2), the workers used cast iron polishing disks almost exclusively, and in the others they used cobalt-containing disks primarily. The number of subjects from each workshop varied from 6-28 and the participation rate varied from 56-100%. The low participation in some workshops reflects the fact that only workers who used cobalt disks were initially asked to be in the study, rather than a high refusal rate (only 8 refusals were documented). More than a year after the polishing workshops were studied, an additional three workshops with workers engaged in sawing diamonds, cleaving diamonds or drawing jewelry were studied as an unexposed control group (n=59 workers). Subjects were asked to fill out a questionnaire regarding employment history, working conditions, medical history, respiratory symptoms and smoking habits, to give a urine sample for cobalt determination, and to undergo a clinical examination and lung function tests. Both area air samples and personal air samples were collected (always on a Thursday). Sampling for area air determinations started 2 hours after work began and continued until 1 hour before the end of the work day. Personal air samples were collected from the breathing zone of a few workers per workshop for four successive one-hour periods. Air samples were analyzed for cobalt and iron. In addition, personal air samplers were used to sample the air 1 cm above the polishing disks. These samples were analyzed for the entire spectrum of mineral and metallic compounds. Air samples were not obtained at one of the polishing workshops (#4), but this workshop was reported to be almost identical to an adjoining workshop (#3) for which samples were obtained. Urinary cobalt levels were similar between workers in these two workshops, so exposure was considered to be similar as well.

There was a good correlation (R=0.92) between the results of area and personal air sampling, with area air sampling reporting lower concentrations than personal air samples in all workshops except one (#9) (Nemery et al., 1992). In this workshop, personal air samples appeared to be artificially low in comparison to area air samples and urinary cobalt levels of the workers. When this workshop was excluded, there was a good correlation (R=0.85-0.88) between urinary cobalt and cobalt in the air. Based on urinary cobalt levels, the concentration of cobalt expected in personal air samples from workshop #9 was about 45 $\mu g/m^3$ (the mean value actually reported was 6 $\mu g/m^3$). The polishing workshops were divided into two groups: those with low exposure to cobalt (#1-5, n=102) and those with high exposure to cobalt (#6-10, n=91). Mean cobalt exposure concentrations were 0.4, 1.6 and 10.2 $\mu g/m^3$ by area air sampling and 0.4, 5.3 and 15.1 $\mu g/m^3$ by personal air sampling in the control, low-exposure and high-exposure groups, respectively. The inclusion of the apparently biased personal air samples from workshop #9 means that the reported mean cobalt exposure in the high-exposure group obtained by personal air sampling (15.1 $\mu g/m^3$) may be lower than the true value. Air concentrations of iron were highest in the two polishing workshops that used iron disks and the sawing workshop (highest value = 62 $\mu g/m^3$), and were not correlated with cobalt levels. Analysis of samples taken near the disks showed the presence of cobalt, with occasional traces of copper, zinc, titanium, manganese, chromium, silicates and silicon dioxide. No tungsten was detected. There is a possibility that some workers had previously been exposed to asbestos, since pastes

containing asbestos had been used in the past to glue the diamonds onto holders. However, the degree of asbestos exposure had apparently been insufficient to produce functional impairment. The researchers considered cobalt to be the only relevant exposure. Smoking habits were similar in workers from the high-exposure, low-exposure and control groups. Duration of exposure was not discussed.

Workers in the high-exposure group were more likely than those in the other groups to complain about respiratory symptoms; the prevalences of eye, nose and throat irritation and cough, and the fraction of these symptoms related to work, were significantly increased in the high-exposure group (Nemery et al., 1992). Workers in the high-exposure group also had significantly reduced lung function compared to controls and low-exposure group workers, as assessed by FVC (forced vital capacity), FEV_1 (forced expiratory volume in one second), MMEF (forced expiratory flow between 25 and 75% of the FVC) and mean PEF (peak expiratory flow rate), although the prevalence of abnormal values did not differ significantly between exposure categories. Results in the low-exposure group did not differ from controls. Two-way analysis of variance was used to show that the effect on spirometric parameters in the high exposure group was present in both men and women. Women seemed to be affected more than men, but the interaction between exposure and sex was not significant. Smoking was found to exert a strong effect on lung function, but lung function level remained negatively correlated with exposure to cobalt, independently of smoking.

Swennen et al. (1993) conducted a cross-sectional study of workers exposed to metallic cobalt and inorganic cobalt compounds at a cobalt plant producing these materials from cobalt metal cathodes and scrap metal. The study group included 82 male workers from the cobalt plant who had not suffered from lung disease prior to employment and who had never been exposed to other pneumotoxic chemicals. It was not reported how this group was chosen from the pool of workers meeting these criteria or how many workers meeting these criteria refused to participate in the study. The control group comprised 82 age-matched workers from the mechanical workshop of a nearby plant owned by the same company. Workers filled out a questionnaire regarding occupational history, respiratory complaints and smoking habits, received a routine clinical examination, submitted to lung function tests, had a chest radiograph taken, and gave blood and urine samples (before and after working on Monday and Friday) for determination of cobalt content as well as hematological and serum chemistry analyses. Exposure was monitored by personal air samplers worn by each cobalt worker for 6 hours on both Monday and Friday.

Workers in the cobalt plant were exposed to cobalt concentrations ranging from 1 $\mu g/m^3$ to 7772 $\mu g/m^3$ (Swennen et al., 1993). The geometric mean exposure concentration was 125 $\mu g/m^3$. Exposure duration ranged from 0.3-39.4 years, with an average exposure of 8.0 years. On the questionnaire, a significantly higher number of exposed workers reported dyspnea than controls. The increase occurred primarily among smokers, although no significant interaction was found between smoking and exposure to cobalt. A logistic regression model was used to

show that the probability of dyspnea during exercise increased as a function of cobalt concentration in the air and urine. The clinical examinations detected significantly increased prevalence of skin disorders (eczema, erythema) (51% vs 25%) and wheezing (16% vs 6%) in the exposed group compared to controls. Lung function tests did not differ between the two groups, but a few significant trends were noted: the FEV_1/VC (forced expiratory volume in one second/vital capacity) ratio decreased with increasing concentration of cobalt in the air and urine, and the RV (residual volume) and TLC (total lung capacity) increased with increasing duration of exposure. No lung abnormalities were found by chest radiographs in either group. The researchers concluded that these results demonstrate "airway involvement" in workers exposed only to cobalt and suggest there may have been thyroid effects as well. Blood analyses did not show polycythemia, and in fact there were slight, but significant, decreases in red blood cell count, hemoglobin, and hematocrit in the exposed workers. White blood cell was significantly increased. Serum levels of the thyroid hormone T3 (triiodothyronine) were slightly (7%), but significantly, decreased in the exposed group, while T4 (thyroxine) and TSH (thyrotropin) were not affected. Serum markers for cardiomyopathy were unchanged.

Prescott et al. (1992) conducted a cross-sectional study to investigate the effects of cobalt exposure on thyroid volume and function in female plate painters. The test group included 61 female plate painters exposed to cobalt blue dyes in two porcelain factories. The control group consisted of 48 unexposed women working at the same factories. The dyes used in the two factories differed; factory I (36 workers) used cobalt aluminate, which is insoluble, and factory II (25 workers) used cobalt-zinc silicate, which was reported to be "semi-soluble." Workers were exposed to cobalt during the painting procedure when the plates were spray-painted (under a fume hood) two or three times with the water-based cobalt blue underglaze and when the excess color was removed with a brush after drying. Cobalt concentrations were reported to be around 0.05 mg/m^3 in the workplaces, but no further details were provided. Duration of exposure averaged 14.6 years in group I workers and 16.2 years in group II workers. Subjects were required to fill out a questionnaire regarding health, use of medicines, day of menstrual cycle, employment information and smoking habits, to give blood and urine samples for determination of thyroid hormones and cobalt, and to undergo ultrasonography to determine volume of the thyroid gland.

Urinary cobalt levels were similar in group I exposed workers and controls (Prescott et al., 1992). Group II workers had urinary cobalt levels that were roughly ten-fold higher than controls. Group I workers did not differ from controls for any of the thyroid parameters measured, but Group II workers had a significant 22% increase in serum T4 (thyroxine) levels. Thyroid volume appeared to be reduced in this group as well, although the difference from controls (16.1 ml in group II vs 19.2 ml in controls and 18.7 ml in group I) was not statistically significant. The occurrence of respiratory effects in these workers was not discussed.

Animal Studies

In a subchronic inhalation study, groups of 10 F344/N rats and 10 B6C3F1 mice of each sex were exposed to cobalt sulfate heptahydrate aerosol (MMAD=0.83-1.10 μm) at concentrations of 0, 0.3, 1, 3, 10 or 30 mg/m^3 (0, 0.11, 0.38, 1.14, 3.8 or 11.4 mg Co/m^3) 6 hours/day, 5 days/week for 13 weeks (Bucher et al., 1990; NTP, 1991). Animals were monitored for body weight and observed for clinical signs during the exposure period. Urine samples for urinalysis and cobalt determination were collected from rats prior to sacrifice. Following termination of exposure, all animals were sacrificed and necropsied. Blood samples were collected and analyzed for hematological parameters (rats and mice) and serum chemistry and thyroid function parameters (rats only). The major organs were weighed. Animals from the control and high-dose groups received comprehensive histopathological examinations, while those from the lower dose groups received more limited examinations focused on the respiratory tissues.

All rats survived until scheduled necropsy (Bucher et al., 1990; NTP, 1991). Gross evidence of toxicity was noted only in rats exposed to 30 mg/m^3, which displayed clinical signs of toxicity (ruffled fur, hunched posture) and reduced body weights. Polycythemia, indicated by significant increases in red blood cell count, hemoglobin and hematocrit, was noted in males exposed to ≥3 mg/m^3 and females exposed to ≥10 mg/m^3. In addition, platelets were significantly reduced in rats of both sexes at ≥10 mg/m^3 and reticulocytes were increased in females at 30 mg/m^3. Leukocyte counts and differentials were unaffected. Serum cholesterol was significantly reduced in males at ≥10 mg/m^3 and females at 30 mg/m^3. No other serum chemistry parameters were affected, including creatine kinase isozymes indicative of damage to cardiac muscle cells. Among the thyroid hormones, T3 (triiodothyronine) was significantly reduced in females at ≥10 mg/m^3 and TSH (thyrotropin) was significantly reduced in males at 30 mg/m^3, but T4 (thyroxin) was not affected in either sex at any dose and the researchers concluded that thyroid function was not consistently affected in this study. Urinalysis revealed a dose-related increase in the number of epithelial cells in the urine of males rats exposed to ≥3 mg/m^3 and granular casts in the urine of many exposed male rats (3-7 per group), but no controls. The researchers interpreted this finding to indicate minimal nephropathy in exposed male rats, although histopathological lesions were not detected in the kidney. No effects on sperm counts, sperm motility or the incidence of abnormal sperm were noted. Average estrus cycle of females exposed to 30 mg/m^3 was slightly longer than controls, but the difference was not significant. Absolute and relative lung weight were significantly increased in both male and female rats at ≥1 mg/m^3. Other organ weights were not affected by treatment. Compound-related lesions were found only in the respiratory tissues of exposed rats. Degenerative, inflammatory and regenerative lesions were found throughout the respiratory tract. The lesions were concentration-related and similar in incidence and severity in males and females. The most sensitive tissue was the larynx, with squamous metaplasia present at all exposure levels.

Among mice, 2/10 males exposed to 30 mg/m^3 died during the study (Bucher et al., 1990; NTP, 1991). The only clinical signs of toxicity observed were rapid breathing and skin discoloration in one of the mice that died. Body weights were reduced throughout the study in both males and females exposed to 30 mg/m^3. No dose-related hematological effects were found. Absolute and relative lung weight were significantly increased in male and female mice exposed to ≥ 10 mg/m^3. Respiratory lesions were similar to those observed in rats. As with rats, the most sensitive tissue was the larynx, with squamous metaplasia present at all exposure levels. Reproductive system effects were more prominent in mice than rats. Males had significantly decreased testicular and epididymal weight, testicular atrophy consisting of loss of germinal epithelium in the seminiferous tubules and foci of mineralization, and an increased percentage of abnormal sperm at 30 mg/m^3, and reduced sperm motility at ≥3 mg/m^3 (lower doses not tested). Females had a significantly increased length of the estrus cycle at 30 mg/m^3.

In a subsequent chronic inhalation carcinogenicity study by the same researchers, groups of 50 F344/N rats and 50 B6C3F1 mice of each sex were exposed to cobalt sulfate heptahydrate aerosol (MMAD=1.4-1.6 μm) at concentrations of 0, 0.3, 1, or 3 mg/m^3 (0, 0.11, 0.38, or 1.14 mg Co/m^3) 6 hours/day, 5 days/week for 105 weeks (Bucher et al., 1999; NTP, 1998). Animals were monitored for body weight and observed for clinical signs during the exposure period. Following termination of exposure, all animals were sacrificed and necropsied. At necropsy, all organs and tissues were examined for gross lesions, trimmed, and examined histologically.

In F344 rats, there were no changes in survival or mean body weights in males or females of any exposure group (Bucher et al., 1999; NTP, 1998). Irregular breathing was noticed more frequently in female rats exposed to 3 mg/m^3 than in controls or other groups; no changes in clinical signs were noted in any of the treated male rats. Both male and female rats in all exposure groups showed a high incidence (94% or greater) of squamous metaplasia of the alveolar epithelium, fibrosis of the pulmonary interstitium, and granulomatous inflammation, with all lesions increasing in severity with increasing exposure. Likewise, both sexes of rats showed dose-related increases in metaplasia of the larynx, atrophy of the olfactory epithelium, and hyperplasia of the lateral nasal wall. Significant increases in alveolar/bronchiolar adenomas or carcinomas were seen in high-dose male rats, while significant increases in alveolar/bronchiolar adenomas, alveolar/bronchiolar carcinomas, or squamous cell carcinomas were seen in the mid- and high-dose female rats. Increased incidence of pheochromocytomas were seen in the mid-dose male rats, but not the high-dose males, and in high-dose female rats.

In B6C3F1 mice, no changes in survival were noticed in any exposure group (Bucher et al., 1999; NTP, 1998). Male mice exposed to 3 mg/m^3 showed a decreased mean body weight relative to controls from week 96 through the end of the study. Mean body weights of exposed female mice were generally greater than those of controls throughout the study. Irregular breathing was noted slightly more frequently in female mice exposed to 1mg/m^3 than in controls or other exposed groups. A dose-related increase in the occurrence of cytoplasmic vacuolization

of the bronchus was seen in both sexes of mice, with incidences at all exposure levels being significantly different from controls. Mice of both sexes showed significantly increased incidences of squamous metaplasia of the larynx at all exposure levels examined. The incidence of alveolar/bronchiolar adenoma or carcinoma was significantly increased in high-dose male mice, and in mid- and high-dose female mice.

Other studies in animals have also reported respiratory lesions produced by inhaled cobalt. Johansson et al. (1987) observed effects in the alveolar region of the respiratory tract in rabbits exposed to 0.4 mg Co/m^3, 6 hours/day, 5 days/week for 1-4 months. Kyono et al. (1992) observed mild pulmonary lesions in rats exposed to 2.12 mg/m^3 of cobalt aerosols 5 hours/day for 4 days. Kerfoot et al. (1975) reported decreased pulmonary function, lethargy, and wheezing following exposure of groups of 5 miniature swine to 0, 0.1, or 1.0 mg/m^3 of cobalt dust for 6 hours/day, 5 days/week for 3 months.

No developmental toxicity studies were located following inhalation exposure to cobalt. Oral developmental toxicity studies did not find evidence that cobalt is a potent developmental toxicant; one study in rats and one in mice reported no developmental effects, while a second study in rats reported developmental effects (reduced number of litters and average litter weight, increased number of dead pups/litter) that were considered by the researchers to be secondary consequences of maternal toxicity (ATSDR, 1992). The NTP (1991) study (described above) demonstrated that cobalt can produce reproductive effects in male and female mice following inhalation exposure, although the effects were produced at relatively high dose levels. Oral studies have also identified the testes as a target for cobalt toxicity. No multi-generation reproduction studies were located by inhalation or oral exposure.

DERIVATION OF PROVISIONAL RfC

Of the four epidemiology studies discussed above, the study by Nemery et al. (1992) provides the best basis for derivation of an RfC. Workers in this study were exposed to far lower concentrations of cobalt, over a much more constrained range of exposures, than in the studies by Gennart and Lauwerys (1990) and Swennen et al. (1993). As a result, discrete NOAEL and LOAEL values can be derived from the Nemery et al. (1992) study, which would not have been possible using the Gennart and Lauwerys (1990) or Swennen et al. (1993) studies. The Prescott et al. (1992) study was not considered for RfC derivation because evidence of an effect on the thyroid was marginal (22% increase in serum levels of T4) and respiratory endpoints were not investigated. The human and animal database strongly suggests that respiratory effects are the most sensitive endpoints of cobalt toxicity. Respiratory effects have been widely reported in workers exposed to cobalt, while effects on the thyroid and other tissues have not (ATSDR, 1992). In addition, Swennen et al. (1993) found only marginal evidence of thyroid effects (7% decrease in T3) and no evidence of cardiomyopathy or polycythemia in workers clearly

displaying evidence of respiratory effects. The animal data also support the conclusion that the respiratory tract is the critical target for inhaled cobalt. NTP (1991) observed respiratory lesions in rats and mice at the lowest exposure concentration tested, while polycythemia and reproductive effects were seen only at higher concentrations, thyroid function was not consistently affected at any concentration, and cardiomyopathy was undetected even at the highest concentration.

Assuming the personal air samples to be more representative of worker exposure than the area air samples, the study by Nemery et al. (1992) identified a NOAEL of 5.3 $\mu g/m^3$ and a LOAEL of 15.1 $\mu g/m^3$ for effects on lung function. Although the LOAEL may be biased low due to inclusion of data from workshop #9, this does not affect the RfC derivation. The NOAEL for occupational exposure is adjusted to continuous exposure as follows:

$$5.3\ \mu g/m^3\ (10\ m^3/d\ /\ 20\ m^3/d)\ (5\ d\ /\ 7\ d) = 1.9\ \mu g/m^3$$

Dividing the $NOAEL_{ADJ}$ of 1.9 $\mu g/m^3$ by an uncertainty factor of 100 (3 to account for the fact that exposure duration may have been subchronic in some workers, 3 for lack of inhalation developmental toxicity studies and a multi-generation reproduction study, and 10 for human variability) yields an **RfC of 2E-5 mg/m^3** for cobalt. This RfC may not be protective for people with hypersensitivity to cobalt.

STATEMENT OF CONFIDENCE

Confidence in the key study is low. This was a cross-sectional study that looked at only respiratory endpoints, included a control group that was studied more than one year after the exposed population, included a study group exposed to iron and diamond dust in addition to cobalt (and possibly to asbestos in the past), had no discussion of duration of exposure, and encountered a number of procedural difficulties during its course. Confidence in the database is medium; choice of the critical endpoint is well supported by other studies in humans and animals, but reproductive and developmental effects have not been adequately studied. Medium-to-low confidence in the RfC follows.

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Provisional Peer Reviewed Toxicity Values for

Cobalt and Compounds

(CASRN 7440-48-4)

Derivation of a Carcinogenicity Assessment

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**

p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR COBALT AND COMPOUNDS (CAS NO. 7440-48-4)
Derivation of a Carcinogenicity Assessment

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and

circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

IRIS (U.S. EPA, 2000a) does not report a cancer classification, slope factor, or unit risk for cobalt. The HEAST (U.S. EPA, 1997) and Drinking Water Standards and Health Advisories list (U.S. EPA, 2000b) likewise do not report carcinogenicity assessments for cobalt. The CARA lists (U.S. EPA, 1991, 1994a) include a HEA for cobalt (U.S. EPA, 1987), which did not report a cancer classification or an estimate of the carcinogenic potency of stable cobalt compounds due to a lack of pertinent data. A draft of an updated HEA prepared by SRC (1990) for U.S. EPA, but never finalized, was also located, which likewise found insufficient data to assess the carcinogenicity of stable cobalt. An IARC Monograph on cobalt and compounds (IARC, 1991) classified cobalt and compounds as "possibly carcinogenic to humans." ACGIH (2000) has classified cobalt in category A3 - confirmed animal carcinogen with unknown relevance to humans. The ATSDR Toxicologic Profile for cobalt and compounds (ATSDR, 1992) and the NTP Status Reports (NTP, 2000) were also searched for relevant information. The WHO (2000) has not published an Environmental Health Criteria document about cobalt. Literature searches were conducted from 1991 to November, 2000 for studies relevant to the derivation of a provisional carcinogenicity assessment for cobalt. The databases searched were: TOXLINE, MEDLINE, CANCERLIT, and TSCATS.

REVIEW OF PERTINENT DATA

Human Studies

Morgan (1983) investigated the health and causes of death of 49 men occupationally exposed to cobalt salts and oxides in a manufacturing plant in South Wales. During the study period, 33 men died, 5 with lung cancer and 3 with cancer at other sites. The expected number of deaths was 0.3 for lung cancer and 4.1 for all cancers based on national statistics, resulting in mortality ratios of 16.7 and 0.73, respectively. U.S. EPA (1987) concluded that the scope of this study was too limited to demonstrate the carcinogenicity or noncarcinogenicity of occupational exposure to cobalt compounds.

Mur et al. (1987) analyzed the mortality of a cohort of 1143 workers in a plant that refined and processed cobalt and sodium. An increase in deaths resulting from lung cancer was observed in workers (SMR = 4.66 [1.46-10.64]) based on four cases observed in the exposed group and 1 case expected based on French national statistics. In a study within the cohort that controlled for age and smoking habits, 44% (four workers) in the exposed group and 17% (three workers) in the control group died of lung cancer. The authors indicated that the differences were not statistically significant and that the workers were exposed to arsenic and nickel in addition to cobalt. The exposure levels of cobalt were not reported.

Tuchsen et al. (1996) analyzed the cancer incidence of a cohort of 874 women (382 from one factory, 492 from a second factory) who worked in one of two factories applying a cobalt-based plate underglaze. 520 referents were selected from unexposed areas of factory 1. All groups were compared to statistics for all Danish women in the same calendar year. During the follow-up period, the overall cancer incidence was only slightly elevated in exposed workers, while the incidence of lung cancers was significantly increased (SIR 2.35, 95% CI 1.01-4.6). The incidence of lung cancers in the referents (not exposed to cobalt) was greater than that of all Danish women, but the difference was not significant. Exposure characterization prior to 1980 was not described, while exposures after 1980 were variable and reported as a mean concentration for a given year. Exposures were generally in the range of 0-1 mg cobalt/m^3 except for two years, during which they were greater.

Several studies examining the effects of hard metal, a mixture containing approximately 20% cobalt with the remainder being primarily tungsten carbide. Exposure of humans to hard metal has been shown to result in an increase in cancer mortality (Lasfargues et al., 1994; Moulin et al., 1998) as well as a number of other diseases, including asthma and fibrosis (for reviews, see Barceloux, 1999; Lison, 1996). There is substantial evidence from animal studies that tungsten, although it acts as an inert dust by itself, can potentiate the effects of cobalt on the respiratory tract (Lasfargues et al., 1995; Lison et al., 1995, 1996; Swennen et al., 1993). For this reason, studies of hard metal were not given further consideration.

Animal Studies

Wehner et al. (1977, 1979) exposed groups of 51 month old male Syrian golden hamsters by inhalation to cobalt oxide at 0 or 10 mg/m^3, 7 hours/day, 5 days/week for their lifetimes. The

incidence of tumors in treated hamsters was not statistically different from controls. There was "limited" histopathologic and ultrastructural examination in the study.

In a chronic inhalation carcinogenicity study, groups of 50 F344/N rats and 50 B6C3F1 mice of each sex were exposed to cobalt sulfate heptahydrate aerosol (MMAD=1.4-1.6 μm) at concentrations of 0, 0.3, 1, or 3 mg/m^3 (0, 0.11, 0.38, or 1.14 mg Co/m^3) 6 hours/day, 5 days/week for 105 weeks (Bucher et al., 1999; NTP, 1998). Animals were monitored for body weight and observed for clinical signs during the exposure period. Following termination of exposure, all animals were sacrificed and necropsied. At necropsy, all organs and tissues were examined for gross lesions, trimmed, and examined histologically.

Mortality in either sex of F344/N rats was not affected at any exposure level, nor did treatment result in alterations in body weight (Bucher et al., 1999; NTP, 1998). The combined incidence of alveolar/bronchiolar neoplasms (adenoma and carcinoma) in males were 1/50, 4/50, 4/48, and 7/50 in the control, 0.3, 1, and 3 mg/m^3 groups, respectively, while in females the incidences were 0/50, 3/49, 15/50, and 15/50, respectively. The incidences in the 3 mg/m^3 male rats and the 1 and 3 mg/m^3 female rats were significantly greater than those in controls animals, and a significant linear trend occurred in both sexes. A significant increase in the incidence of pheochromocytoma in 3 mg/m^3 females was also noted (2/48, 1/49, 4/50, and 10/50 in control, 0.3, 1, and 3 mg/m^3 groups, respectively). A marginally increased incidence of pheochromocytoma in males exposed to 1 mg/m^3, but not in those exposed to 3 mg/m^3, was not considered by the study authors to be related to treatment.

In B6C3F1 mice, no changes in survival were noticed in any exposure group (Bucher et al., 1999; NTP, 1998). Male mice exposed to 3 mg/m^3 showed a decreased mean body weight relative to controls from week 96 through the end of the study (~10 weeks). Mean body weights of exposed female mice were generally greater than those of controls throughout the study. As in rats, both sexes of mice showed a significant linear trend toward increased alveolar/bronchiolar tumors, with the 3 mg/m^3 male and the 1 and 3 mg/m^3 female groups attaining statistical significance. Incidence of combined alveolar/bronchiolar adenoma or carcinoma were 11/50, 14/50, 19/50, and 28/50 in males and 4/50, 7/50, 13/50, and 18/50 in females in the control, 0.3, 1, and 3 mg/m^3 groups, respectively. In male mice, but not in females, the incidence of hemangiosarcoma was significantly elevated in animals exposed to 1 mg/m^3, but not in other exposure groups (2/50, 4/50, 8/50, and 7/50 in the control, 0.3, 1, and 3 mg/m^3 groups, respectively).

Other Studies

Heath (1956) injected groups of 10 male and 20 female rats with a single intramuscular 28 mg dose of powdered cobalt in the thigh. Injection site sarcomas appeared in 18 (60%) of the treated rats within 5-12 months. Similar results were observed in Wistar rats by Gilman (1962) and Gilman and Ruckerbauer (1962), with single intramuscular doses of 20 mg of cobalt oxide and cobalt sulfide. Cobalt oxide and cobalt sulfide given intramuscularly at doses twice those used in rats did not induce sarcomas in mice (Gilman and Ruckerbauer, 1962). Shabaan et al. (1977) observed a high incidence of fibrosarcomas in rats given subcutaneous injections of cobalt chloride at 40 mg/kg-day for 10 days. Tumors developed in 8-12 months. Stoner et al. (1976) tested cobalt acetate in the strain A mouse pulmonary tumor test. Groups of 20 mice/sex

received three times per week intraperitoneal injections for a total of 19 cumulative doses of 0, 95, 237, or 475 mg/kg. Survival was high over the 30 week observation period, and the incidence of lung tumors in treated mice was not statistically different from controls.

The genetic toxicity of cobalt was reviewed by Beyersman and Hartwig (1992). Cobalt compounds have generally tested negative in bacterial mutagenicity assays, with the occasional positive result occurring only with the addition of an exogenous metabolic system. By contrast, cobalt compounds have generally tested positive in yeast and plant cells. In mammalian cell systems, cobalt has been shown to induce DNA strand breaks, sister-chromatid exchanges, and morphological cell transformation. Single oral exposure of male Swiss mice to 0, 4.96, 9.92, or 19.8 mg cobalt/kg as cobalt chloride resulted in significantly increased percentages of both chromosomal breaks and chromosomal aberrations, with significant linear trends toward increasing aberrations with increased exposure (Palit et al., 1991a,b,c,d). Thirty hours following single intraperitoneal injection of cobalt(II) chloride in BALB/c mice, an increase in micronucleus formation was seen at 12.4 or 22.3 mg cobalt/kg (as cobalt chloride), but not at 6.19 mg cobalt/kg (Suzuki et al., 1993). Single injection of 12.4 mg/kg $CoCl_2 \cdot 6H_2O$ resulted in significantly increased micronucleus formation at 24 hours post-injection, but not at 12, 48, 72, or 96 hours. Pedigo and Vernon (1993) reported that treatment with 400 ppm cobalt (99 mg cobalt/kg-day) in the drinking water of mice for 10 weeks resulted in an increase in dominant lethal effects.

While the precise mechanism of action of cobalt has not been determined, a number of potential mechanisms have been identified. The most likely mechanism for the carcinogenic effects of cobalt involves the generation of cobalt-induced oxidative stress. Exposure to cobalt compounds increases indices of oxidative stress, including diminished levels of reduced glutathione, increased levels of oxidized glutathione, increased levels of oxygen radicals, and increased free-radical-induced DNA damage (Kadiiska et al., 1989; Kawanishi et al., 1994; Lewis et al., 1991; Moorhouse et al., 1985; Zhang et al., 1998). The tungsten in hard metal is thought to enhance the generation of oxidants by cobalt, thus explaining the increased activity of hard metal relative to cobalt alone.

PROVISIONAL WEIGHT OF EVIDENCE CLASSIFICATION FOR COBALT

Under the 1986 Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1986), cobalt is classified as group **B1 (Probable Human Carcinogen)**, based on limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in animals, as evidenced by increased incidence of alveolar/bronchiolar tumors in both sexes of rats and mice. Under the proposed cancer guidelines (U.S. EPA, 1999), cobalt is considered likely to be carcinogenic to humans.

While available studies in humans have been suggestive of a possible association between exposure to cobalt and respiratory tumors (Morgan et al., 1983; Mur et al., 1987; Tuchsen et al., 1996), limitations of the studies, including small numbers of subjects, inadequate exposure assessment and/or potential exposure to other chemicals, make them inadequate for assessing the carcinogenic potential of cobalt. Available chronic animal studies have demonstrated the carcinogenic potential of inhaled cobalt in male and female rats and mice, with alveolar and

bronchiolar tumors being the most prevalent (Bucher et al., 1999; NTP, 1998). No studies suitable for evaluation of the oral carcinogenic potential for cobalt were located.

The precise mechanism of cobalt-induced carcinogenicity has not been fully determined. There is evidence that cobalt is capable of eliciting genotoxic effects. While evaluations for mutagenic effects in bacteria have generally yielded negative results, results in mammalian cell systems have suggested that cobalt may be genotoxic in mammalian cells. Limited data from *in vivo* animal studies have also suggested genotoxic effects of cobalt, including chromosomal breaks, chromosomal aberrations, and micronucleus formation. The most likely mechanism for the carcinogenic effects of cobalt involves the generation of cobalt-induced oxidative stress.

QUANTITATIVE ESTIMATES OF CARCINOGENIC RISK

Provisional Oral Slope Factor for Cobalt

No human or animal studies examining the carcinogenicity of cobalt following oral exposure were located. Therefore, derivation of an oral slope factor is precluded.

Provisional Inhalation Unit Risk for Cobalt

As available human studies were not sufficiently detailed, particularly with regards to analysis of exposure, the NTP (1998; Bucher et al. 1999) 2-year carcinogenicity study in rats and mice was chosen as the key study for the derivation of an inhalation unit risk. The concentrations were first adjusted to continuous exposure as follows:

$$Conc_{[ADJ]} = Conc \times \frac{5\,days\,/\,week}{7\,days\,/\,week} \times \frac{6\,hours\,/\,day}{24\,hours\,/\,day}$$

This adjustment resulted in duration-adjusted concentrations of 0, 0.020, 0.068, and 0.20 mg cobalt/m^3 for the control, 0.3, 1, and 3 mg/m^3 groups, respectively. Using the RDDR computer program, as specified in the RfC guidelines (U.S. EPA, 1994b), human equivalent concentrations (HECs, in mg cobalt/m^3) were calculated at each exposure level for each species and sex, assuming particulate effects (MMAD=1.5 μm, σ_g=2.2) in the thoracic portion of the respiratory tract. The results are displayed below.

	Male Rat	Female Rat	Male Mouse	Female Mouse
RDDR Multiplier	0.83	0.79	1.48	1.44
Control	0	0	0	0
Low	0.017	0.016	0.030	0.029
Medium	0.056	0.054	0.10	0.098
High	0.17	0.16	0.30	0.29

The GLOBAL86 computer program was then used to fit the incidence data to the HEC for each species and sex. Calculations were based on extra risk. The results of the analysis are presented in the table below:

Species	Sex	Control	Low	Med	High	q_1^* $(mg/m^3)^{-1}$	$LEC_{10}(mg/m^3)$	P-value#
Rat	M	1/50	4/50	4/48	7/50	1.5	$7.2x10^{-2}$	0.50
Rat	F	0/50	3/49	15/50	15/50	4.4	$2.4x10^{-2}$	0.0085
Rat	F	0/50	3/49	15/50	***	8.1	$1.3x10^{-2}$	0.40
Mouse	M	11/50	14/50	19/50	28/50	2.9	$3.6x10^{-2}$	0.95
Mouse	F	4/50	7/50	13/50	18/50	2.1	$5.1x10^{-2}$	0.55

- P value describing the goodness of fit of the model. A greater p value describes a better fit, with p>0.05 being a statistically significant fit.
*** - Because of a poor fit, the group was re-analyzed without the data from the high-exposure animals.

The model did not accurately fit the data from female rats, which appeared to be the most sensitive species and gender. If the high-dose group is dropped, the model better fits the data, but likely overestimates the risk, since the incidences of tumors in both the mid- and high-dose groups were the same. The most conservative (health-protective) value obtained with adequate model fit using all dose groups, calculated from male mice, was therefore selected.

In accordance with the proposed Guidelines for Carcinogen Risk Assessment (U.S. EPA, 1999), the unit risk was also calculated by drawing a straight line between the LEC_{10} and the origin. The linear dose-response model was utilized due to the lack of understanding of the mode(s) of action of cobalt-induced carcinogenesis. This method results in unit risk for pulmonary carcinogenesis of **$2.8x10^{-3}$ $(ug\ Co/m^3)^{-1}$**, calculated as follows:

$$IUR = Incidence / Dose$$
$$= 10\% \div LEC_{10}$$
$$= 0.1 \div 3.6x10^{-2} (mg\ Co / m^3)$$
$$= 2.8 (mg\ Co / m^3)^{-1}$$
$$= 2.8 \times 10^{-3} (ug\ Co / m^3)^{-1}$$

This value is similar to that generated by directly calculating the q_1^*, which was $2.9x10^{-3}$ $(\mu g/m^3)^{-1}$. From these values, the following air concentrations were calculated for the specified risk levels:

Risk Level	Concentration
E-4 (1 in 10,000)	4E-2 ug Co/m^3
E-5 (1 in 100,000)	4E-3 ug Co/m^3
E-6 (1 in 1,000,000)	4E-4 ug Co/m^3

In summary, cobalt is provisionally classified as group B1 (Probable Human Carcinogen), based on limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in animals, as evidenced by increased incidence of alveolar/bronchiolar tumors in both sexes of rats and mice, under the 1986 cancer guidelines (U.S. EPA, 1986). Under the proposed cancer guidelines (U.S. EPA, 1999), cobalt is considered likely to be carcinogenic to humans. A provisional **inhalation unit risk of 2.8×10^{-3} (μg Co/m^3)$^{-1}$** was derived for cobalt, based on the increased incidence of respiratory tumors in male B6C3F1 mice. Derivation of the unit risk under the proposed guidelines (U.S. EPA, 1999) and the 1986 guidelines (U.S. EPA, 1986) resulted in very similar values. Data were inadequate to derive an oral slope factor for cobalt.

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Provisional Peer Reviewed Toxicity Values for

Cobalt

(CASRN 7440-48-4)

Derivation of Subchronic and Chronic Oral RfDs

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

1-15-2002

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR COBALT AND COMPOUNDS (CASRN 7440-48-4)
Derivation of Subchronic and Chronic Oral RfDs

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

IRIS (U.S. EPA, 2000a) does not report an RfD for cobalt. The HEAST (U.S. EPA, 1997) and Drinking Water Standards and Health Advisories (U.S. EPA, 2000b) likewise do not list an RfD for cobalt. The CARA lists (U.S. EPA, 1991, 1994) report a HEA for cobalt (U.S. EPA, 1987). The 1987 HEA derived a chronic RfD of 0.005 mg cobalt/kg-day based on a NOAEL of 5 mg cobalt/kg-day for testicular effects in a subchronic rat study (Nation et al., 1983). An updated HEA prepared by SRC (1990) for U.S. EPA, but never finalized, dropped the RfD because, it was argued, such an RfD would not be protective for individuals already sensitized to cobalt. ATSDR (1992) has published a Toxicological Profile for cobalt and compounds, but no oral MRLs were derived due to the absence of suitable data. The WHO (2000) has not published an Environmental Health Criteria document about cobalt. An IARC Monograph on cobalt and compounds (IARC, 1991) and the NTP Status Reports (NTP, 2000)

were searched for relevant information. Literature searches were conducted from 1991 to November, 2000 for studies relevant to the derivation of an RfD. The databases searched were: TOXLINE, MEDLINE, CANCERLIT, and TSCATS.

REVIEW OF PERTINENT DATA

Cobalt has been found to stimulate the production of red blood cells in humans and, therefore, has been used as a treatment for anemia. In 12 anemic, anephric patients undergoing dialysis, treatment with 0.18 mg cobalt/kg-day as cobalt chloride for 12 weeks resulted in a significant rise in hemoglobin (Duckham and Lee, 1976). Taylor et al. (1977) reported similar effects in 8 anephric patients treated with 0.16-0.32 mg cobalt/kg-day as cobalt chloride for 12-32 weeks. In both studies, hemoglobin levels rapidly returned to pre-treatment levels following the cessation of treatment. Similar effects were reported in nonanemic humans and animals (Davis and Fields, 1958; Krasovskii and Fridlyand, 1971). Reversible polycythemia was reported in 6 normal male subjects following treatment with 1 mg cobalt/kg-day as cobalt chloride for 25 days (Davis and Fields, 1958). In normal rats, treatment with 0.5 mg cobalt/kg-day, but not 0.05 mg cobalt/kg-day, as cobalt chloride resulted in polycythemia and an increase in hemoglobin (Krasovskii and Fridlyand, 1971). An increase in hematocrit and hemoglobin levels was not observed, however, in pregnant women treated with 0.5-0.6 mg cobalt/kg-day for 90 days in an attempt to alleviate the anemia often found during pregnancy (Holly, 1955).

Much of the oral data in humans deals with the cardiomyopathy seen in people who drank large quantities of beer containing cobalt chloride (previously used to stabilize the foam) (Alexander, 1969, 1972; Morin et al., 1971). The people ingested 0.04-0.14 mg cobalt/kg-day (approximately 8-30 pints of beer daily) over a period of years (Alexander, 1969, 1972; Morin et al., 1971). The cardiomyopathy in the beer-drinkers, termed “beer-cobalt cardiomyopathy,” was fatal to 43% of the subjects within several years, with approximately 18% of these deaths occurring within the first several days following diagnosis. The beer-cobalt cardiomyopathy appeared to be similar to alcoholic cardiomyopathy and beriberi, but the onset of the beer-cobalt cardiomyopathy was much more abrupt. The practice of adding cobalt to beer to stabilize the foam has been discontinued. It should be noted, however, that the cardiomyopathy may also have been due to the fact that the beer-drinkers had protein-poor diets and may have had prior or concurrent cardiac and hepatic damage from alcohol abuse. Treatment of anemic patients, either resulting from pregnancy or other causes, with comparable or much higher doses of cobalt (0.09-1 mg cobalt/kg-day, ranging from 3-32 weeks) did not result in effects on the heart (Duckham and Lee, 1976; Davis and Fields, 1958; Holly, 1955; Taylor et al., 1977).

Studies in animals have noted cardiac effects following cobalt exposure (Haga et al., 1996; Mohiuddin et al., 1970; Pehrsson et al., 1991), though at higher exposure levels than examined in human studies. Pehrsson et al. (1991) exposed male rats (12/group) to protein-

restricted diets containing 8.4 mg Co/kg-day. Treated rats showed a significant decrease in body weight, but no differences in left ventricular function, relative to animals treated with protein-restricted diets without cobalt. In a followup study (Haga et al., 1996), in which groups of 12-16 rats were similarly exposed to 8.4 mg Co/kg-day for 16 or 24 weeks, animals exposed to cobalt showed reduced relative left ventricular weights, as well as diminished left ventricular function at both time points, with animals at the later time point demonstrating greater impairment. Groups of guinea pigs exposed to 20 mg cobalt/kg-day as cobalt sulfate in the diet for 5 weeks resulted in decreased absolute and relative heart weights and a greater incidence of abnormal electrocardiograms compared to animals not exposed to cobalt (Mohiuddin et al., 1970). Cellular alterations (observed at the light and electron microscopic level) in cardiac tissues included pericardial thickening and inflammation, myocardial degeneration and vacuolization, endocardial thickening, and myofibrillar damage.

The thyroid also appears to be a target for cobalt. Treatment of patients with 1 mg cobalt/kg/day as cobalt chloride for 2 weeks resulted in a greatly reduced uptake of radioactive iodine by the thyroid in 1 week, with uptake nearing 0 by the second week (Roche and Layrisse, 1956). When the cobalt treatment ended, the uptake values returned to normal. The decrease of radioactive iodine uptake found in patients administered 0.54 mg cobalt/kg/day for 10–25 days was found to result from cobalt blocking the organic binding of iodine (Paley et al., 1958).

Cobalt has been found to be a sensitizer in humans. Individuals are sensitized following dermal or inhalation exposure, but flares of dermatitis may be triggered following cobalt ingestion. One study was located that orally challenged cobalt-exposed workers in order to assess sensitization (Veien et al., 1987). In this study, several patients with eczema of the hands were challenged orally with 1 mg cobalt (0.014 mg cobalt/kg-day as cobalt sulfate) in tablet form once per week for 3 weeks; 28/47 patients had a flare of dermatitis following the oral challenge (Veien et al., 1987). All forty-seven patients had positive dermal patch tests to cobalt (13 to cobalt alone and 34 to nickel and cobalt) and 7 of the 13 patients that had patch-tested positive to cobalt alone reacted to the oral challenge. Comparing the results of the oral challenge and dermal patch tests, it was deduced that cobalt allergy was systemically induced. The exposure levels associated with sensitization to cobalt following inhalation or dermal exposure were not established.

Interrelationships have been found to exist between cobalt and nickel sensitization (Bencko et al., 1983; Rystedt and Fisher, 1983; Veien et al., 1987). In guinea pigs, nickel and cobalt sensitization appear to be interrelated and mutually enhancing (Lammintausta et al., 1985). Therefore, it is possible that in people sensitized by nickel, exposure to cobalt may result in an allergic reaction.

Four studies were located examining developmental effects of orally administered cobalt (given as cobalt chloride) in rodents (Domingo et al., 1985; Paternain et al., 1988; Pedigo and

Vernon, 1993; Seidenberg et al., 1986). Domingo et al. (1985) treated pregnant female rats with 5.4 to 21.8 mg cobalt/kg-day from gestation day 14 through lactation day 21. Maternal effects were not reported. Fetal effects at 5.4 mg cobalt/kg-day included stunted growth of the pups of both sexes, decreased body length and tail length in male offspring, and decreased spleen and liver weight in female offspring. Effects at the 10.9 mg cobalt/kg-day dose included decreased body weight in female pups, while at 21.8 mg cobalt/kg-day decreased survival was seen. These effects were at levels that were maternally toxic (authors did not specify the effects); therefore, the fetal effects at these levels may be a result of maternal toxicity rather than a direct effect of cobalt treatment.

No significant effects on fetal growth or survival were found in rats exposed to 6.2 to 24.8 mg cobalt/kg-day during gestation days 6-15 (Paternain et al., 1988), although a nonsignificant increase in the incidence of stunted fetuses was found in the animals treated with 12.4 or 24.8 mg cobalt/kg-day. Maternal effects, including reduced body weight gain and food consumption and altered hematological parameters, were reported at all exposure levels. No fetal effects were reported in mice exposed to 81.7 mg cobalt/kg-day during gestation days 8-12 (Seidenberg et al., 1986), but a significant decrease in maternal weight was found. Pedigo and Vernon (1993) exposed male rats to 93 mg cobalt/kg-day as cobalt chloride in the drinking water for 10 weeks, after which the males were mated with control females to examine for dominant lethal effects. Cobalt treatment resulted in a decreased percentage of pregnant females, decreased implantations per female, and increased preimplantation losses relative to controls. Recovery of reproductive function was seen by 8 weeks post-exposure.

Several studies reported testicular degeneration and atrophy in rats exposed to 6.1 to 24.4 mg cobalt/kg-day as cobalt chloride for 2-3 months in the diet or in the drinking water (Anderson et al., 1992, 1993; Corrier et al., 1985; Domingo et al., 1984; Mollenhauer et al., 1985; Nation et al., 1983; Pedigo et al., 1988). Pedigo et al. (1988) exposed male CD-1 mice to 100, 200, or 400 ppm of cobalt chloride (~6.1, 12.2, or 24.4 mg cobalt/kg-day, respectively) in the drinking water for 13 weeks. High-dose animals showed a significantly decreased testicular weight beginning at week 9 of treatment and a decreased epididymal sperm concentration by week 11 of treatment. All dose groups showed significantly decreased testicular weight and epididymal sperm concentration, and increased serum testosterone levels, by week 12 of exposure. Anderson et al. (1992, 1993) exposed groups of male CD-1 mice to 400 ppm of cobalt chloride (~24.4 mg cobalt/kg-day) in the drinking water for up to 13 weeks. A decrease in testicular weight and a progressive degeneration of the seminiferous tubules were seen beginning at 9 weeks of exposure, with no recovery seen after a 20-week non-exposure recovery period. Co-administration of 800 ppm of zinc chloride provided a partial protection against the effects of cobalt. Similar histology (degeneration of the testes, particularly the seminiferous tubules) was noted in Sprague-Dawley rats exposed to 20 mg cobalt/kg-day in the diet for up to 98 days (Corrier et al., 1985; Mollenhauer et al., 1985). Decreased testicular weight was seen in Sprague-

Dawley rats exposed to 500 ppm cobalt chloride (~17 mg cobalt/kg-day) for 3 months (Domingo et al., 1984).

Nation et al. (1983) exposed groups (n=6) of male Sprague-Dawley rats, 200-210 g, to diets containing 0, 5, or 20 mg cobalt/kg-day for a total of 69 days. Following 14 days of exposure, animals were trained for schedule (operant) or conditioned suppression neurobehavioral tests. Other than two seizures in the same high-dose animal, no overt signs of neurotoxicity were reported at any exposure level. A trend toward a decreased response rate in the schedule training behavior was observed in both the exposed groups, but only attained statistical significance in the high-dose animals near the end of the operant testing period (sessions 28-35, on exposure days 44-51). A trend toward decreased conditioned suppression behavior did not attain statistical significance in either group. Animals exposed to 20 mg cobalt/kg-day, but not 5 mg cobalt/kg-day, showed a significantly decreased weight of the testes following 69 days of exposure. This study established a NOAEL of 5 mg cobalt/kg-day and a LOAEL of 20 mg cobalt/kg-day for decreased testicular weight and changes in operant behavior in male Sprague-Dawley rats.

Several other studies have examined the effects of cobalt on neurobehavioral parameters (Bourg et al., 1985; Krasovskii and Fridlyand, 1971; Singh and Junnarkar, 1991). In groups of male Sprague-Dawley rats (n=8) exposed to 20 mg cobalt/kg/day as cobalt chloride for 57 days in the drinking water, cobalt enhanced behavioral reactivity to stress (the animals were less likely to descend from a safe platform to an electrified grid) (Bourg et al., 1985). Singh and Junnarkar (1991) reported a moderate reduction in spontaneous activity and mild hypothermia in rats exposed orally to 1/10 the LD50 of cobalt chloride or cobalt sulfate. Krasovskii and Fridlyand (1971) exposed groups of rats (number and sex not specified) to 0.05, 0.5, or 2.5 mg cobalt/kg-day for up to 7 months. Neurobehavioral tests showed that treatment with cobalt as cobalt chloride resulted in a significant increase in the latent reflex period at 0.5 mg cobalt/kg and above, and a pronounced neurotropic effect (disturbed conditioned reflexes) at 2.5 mg cobalt/kg.

DERIVATION OF A PROVISIONAL RfD FOR COBALT

The only known nutritional function of cobalt is as a vital component of vitamin B_{12}. All vitamin B_{12} is derived from bacterial synthesis, so inorganic cobalt can be considered essential for animal species, such as ruminants, that depend totally on their bacterial flora for their vitamin B_{12}. This may apply to some degree also to humans with strict vegetarian diets, whose intake of pre-formed vitamin B_{12} is severely limited (animal products are the primary source of vitamin B_{12} in the diet). However, there is no evidence that the intake of cobalt is ever limiting in the human diet, and therefore no RDA is deemed necessary for cobalt (NRC, 1989). Recent data based on a 1984 FDA Total Diet Study (Pennington and Jones, 1987) have suggested that daily cobalt intakes in humans are in the 0.003-0.011 mg cobalt/day range. A recent survey of 5 Canadian

cities also suggested dietary intakes in the range of 0.007-0.015 mg cobalt/day for all age groups (Dabeka and McKenzie, 1995). Using body weights from NRC (1989), both of these studies would suggest daily intake levels on the order of 10^{-4} mg cobalt/kg-day. Older studies suggested that the average daily intake of cobalt in humans was higher, ranging from approximately 0.002 to 0.008 mg cobalt/kg-day in adults (Tipton et al., 1966; Schroeder et al., 1967) and 0.01 to 0.06 mg cobalt/kg-day in children (NRC, 1989; Murthy et al., 1971).

The most sensitive indicators of the effects of cobalt following oral exposure appear to be the increase of hemoglobin in both humans and animals and the elicitation of dermatitis in sensitized individuals. Cardiomyopathy is an endpoint of concern for cobalt in humans, but it is highly likely that alcohol consumed in "beer-cobalt cardiomyopathy," as well as other factors, played a role in the effects that were seen. Other effects, including neurobehavioral, developmental, and testicular toxicity, were observed only in animals and at relatively high doses, and so were not considered critical for the risk assessment.

The elicitation of an allergic response in cobalt-sensitized workers was evaluated as a potential critical endpoint for the derivation of an oral RfD. However, the available data provide no information on the dose-response relationship of cobalt sensitization, nor is a NOAEL for the elicitation of the allergic response in humans defined. Interrelationships also exist between cobalt and nickel sensitization, so that people sensitized by nickel may have an allergic reaction following cobalt exposure. Sensitization was, therefore, not selected as the critical endpoint for RfD derivation.

Hematological effects of cobalt treatment (increased hemoglobin) have been reported in anemic dialysis patients (Duckham and Lee, 1976) and anephric patients (Taylor et al., 1977). In these patients, hemoglobin levels increased from levels clinically described as anemic to levels at or near "normal." Thus, the effect of cobalt administration in these patients was clinically beneficial to these patients, and not adverse. However, hematologic effects of cobalt were also found in studies of normal humans (Davis and Fields, 1958) and rats (Krasovskii and Fridlyand, 1971), indicating that the effect is not limited to anephric individuals. Davis and Fields (1958) reported hemoglobin increases of 6-11% over "normal" in healthy volunteers given 0.96 mg cobalt/kg-day as cobaltous chloride. In contrast to the situation in the anemia patients studied by Duckham and Lee (1976) and Taylor et al. (1977), polycythemia in normal people is considered to be an adverse effect. Therefore, this is considered to be a suitable endpoint for derivation of an RfD.

The study by Duckham and Lee (1976) was used as the critical study for derivation of the RfD. The study by Taylor et al. (1977) reported similar effects at similar exposure levels, but the Duckham and Lee (1976) study described the study results and methods in greater detail. The study by Davis and Fields (1958) in normal humans used a higher dose level. While the cobalt in the Duckham and Lee (1976) study was used therapeutically, it represents an effect on the most

sensitive endpoint in a sensitive population of humans, and is, therefore, appropriate for use as the critical study for derivation of an RfD. The provisional RfD was derived from the LOAEL of 0.18 mg cobalt/kg-day as follows:

RfD = LOAEL/UF x MF

Where:

LOAEL	=	0.18 mg/kg-day	
UF	=	10	Made up of component factors accounting for the use of a LOAEL (3) and deficiencies in the database (3), primarily the absence of chronic oral data leading to the use of a subchronic study.
MF	=	1	Default value for modifying factor.

Therefore:

RfD = 0.18/10 x 1

= **0.02** or **2E-2** mg/kg-day

An uncertainty factor to protect sensitive individuals was not considered to be necessary since the critical study was performed in a sensitive human population. The RfD of 0.02 mg Co/kg-day is higher than most estimates of dietary intake of cobalt, which range from 0.0001 mg/kg-day in the most recent studies (Pennington and Jones, 1987; Dabeka and McKenzie, 1995) to 0.002-0.008 mg/kg-day in older studies in adults (Tipton et al., 1966; Schroeder et al., 1967) and 0.01-0.06 in one study in children (Murthy et al., 1971). This RfD may not be protective for people with hypersensitivity to cobalt.

STATEMENT OF CONFIDENCE

Confidence in the critical study is low-to-medium. The study examined a small number of subjects over a subchronic duration, but examined what appears to be a sensitive endpoint in a group of sensitive humans. Confidence in the database is medium. There are supporting studies in both anemic and normal humans, and also in animals. However, there are no chronic oral data and only limited data on developmental effects. Low-to-medium confidence in the provisional RfD results.

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Superfund Technical Support Center

National Center for Environmental Assessment
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May 13, 2008

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U.S. EPA, Region 2

ASSISTANCE REQUESTED: PPRTVs for Dibenzofuran, Endosulfan, Hexachlorobutadiene and Iron (*Onondaga Lake*)

ENCLOSED INFORMATION:

Attachment 1: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR DIBENZOFURAN (CASRN 132-64-9)**

Attachment 2: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ENDOSULFAN (CASRN 115-29-7) Derivation of an Oral Slope Factor**

Attachment 3: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR HEXACHLOROBUTADIENE (CASRN 87-68-3)**

Attachment 4: **PROVISONAL PEER REVIEWED TOXICITY INFORMATION FOR IRON (CASRN 7439-89-6) AND COMPOUNDS Derivation of Subchronic and Chronic Oral RfDs**

Supported by ECFlex, Incorporated, under
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Attachment 5: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR IRON (CASRN 7439-89-6) AND COMPOUNDS Derivation of an Inhalation RfC**

Attachment 6: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR IRON (CASRN 7439-89-6) AND COMPOUNDS Derivation of a Carcinogenicity Assessment**

BE ADVISED: *Unless specifically indicated to have been peer reviewed, it is to be noted that the attached Provisional Toxicity Value Paper(s) have not been through the U.S. EPA's formal review process; therefore, they do not represent a U.S. EPA verified assessment.*

If you have any questions regarding this transmission, please contact the STSC at (513) 569-7300.

Attachments (6)

cc: STSC Files

Supported by ECFlex, Incorporated, under
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Provisional Peer Reviewed Toxicity Values for

Dibenzofuran
(CASRN 132-64-9)

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Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor

p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

6-11-2007

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR DIBENZOFURAN (CASRN 132-64-9)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

This document has passed the STSC quality review and peer review evaluation indicating that the quality is consistent with the SOPs and standards of the STSC and is suitable for use by registered users of the PPRTV system.

INTRODUCTION

RfD and RfC values for dibenzofuran (DBF) were not available on IRIS (U.S. EPA, 2007) or in the HEAST (U.S. EPA, 1997). There is a Class D cancer assessment on IRIS (U.S. EPA, 2007). Dibenzofuran was included in a Drinking Water Toxicity Profile from 1992 (U.S. EPA, 1992), although no oral toxicity value was listed. The Office of Water did not include dibenzofuran on the latest Drinking Water Regulations (U.S. EPA, 2006a) or the Drinking Water Contaminant Candidate List (U.S. EPA, 2006b). The CARA list (U.S. EPA, 1991, 1994)

included a Health Effects Assessment (HEA) (U.S. EPA, 1987) and a Reportable Quantity Document (U.S. EPA, 1989) for Dibenzofuran. The HEA concluded that additional toxicity testing was necessary and did not derive a toxicity value due to the lack of data (U.S. EPA, 1987). The 1987 HEA for Dibenzofuran neither identified nor included discussion of Thomas et al. (1940), the primary source of data used in this PPRTV document. By contrast, the 1989 Reportable Quantity Document for Dibenzofuran (U.S. EPA, 1989) used Thomas et al. (1940) as the basis for derivation of composite scores and the corresponding reportable quantities for dibenzofuran.

ATSDR had not published a Toxicological Profile for dibenzofuran (ATSDR, 2006). NTP did not study the toxicity of dibenzofuran (NTP, 2006). WHO (2006) provided no relevant information. Available data on carcinogenicity, mutagenicity, metabolism, and other biological effects were summarized for dibenzofuran by the National Cancer Institute (NCI, 2000). Data on the adverse health effects of various halogenated dibenzofurans were available; however, the biological activity varies greatly among these congeners. U.S. EPA (1986a) did not recommend risk assessment by analogy to any of these more widely studied chemicals. NCI (2000) reported that the most structurally related chemical was dibenzo-p-dioxin. NCI (1979) reported that no excess tumors were induced in rats or mice fed dibenzo-p-dioxin up to 10,000 ppm in the diet.

Updated literature searches for noncancer and cancer data were conducted for data available through April 2006. The databases searched included: TOXLINE, MEDLINE, CANCERLIT, CCRIS, TSCATS, HSDB, RTECS, GENETOX, DART/ETICBACK, and EMIC/EMICBACK. Inhalation RfC values were not derived for dibenzofuran, because no human or animal inhalation data were found and the marginal ingestion data seemed inadequate to consider for inter-route extrapolation. However, a subchronic oral p-RfD value was derived, based on a LOAEL point of departure (POD) in Thomas et al. (1940). Chronic toxicity of dibenzofuran is discussed in the appendix. No data were identified from which to derive cancer risk values.

REVIEW OF PERTINENT DATA

Human Studies

Two cross-sectional studies of exposed workers were identified in the OPPT TSCATS database (Koppers 1980a,b). However, these studies reported exposures to dibenzofuran only in complex mixtures of coal tar products. Neither report noted adverse health effects that could be attributed to dibenzofuran exposure. Existing review documents and a detailed literature search identified no other data regarding the toxicity of dibenzofuran in humans.

Animal Studies

The only long-term toxicity data available for dibenzofuran were from a 200-day rat feeding study reported by Thomas et al. (1940). However, this document also will address the NCI (1979) data for dibenzo-p-dioxin, which NCI (2000) considered to be the chemical most structurally related to dibenzofuran.

NCI (1979) reported that unsubstituted dibenzo-p-dioxin, a structural analog of dibenzofuran, exhibited very low toxicity and no evidence of carcinogenicity in Osborne-Mendel rats and B6C3F1 mice, even when the maximum tolerated dose was approached (10,000 ppm in diet). Groups of 35 rats of each gender ingested dibenzo-p-dioxin at 5000 or 10,000 ppm in diet for 110 weeks. Groups of 50 mice of each gender ingested the same doses for 87 or 90 weeks. Controls consisted of groups of 35 untreated rats of each gender and 50 untreated mice of each gender. Mean body weights of the dosed male and female rats and mice were lower than those of the corresponding controls; the depression in the amount of weight gained in the dosed male mice was, however, relatively slight. Except for the male rats, survival at the end of the bioassay was lower in the dosed groups of both rats and mice than in the corresponding control groups. At week 90, at least 57% of the rats and 54% of the mice were still alive. In some male and female rats there was a dose-related increase in the incidence of hepatotoxic alterations characterized by fatty metamorphosis or necrosis. Also in mice, toxic hepatic lesions including liver degeneration, necrosis, fibrosis and/or cirrhosis were observed in slightly increased numbers in the dosed mice ─ particularly in the high-dose females. No tumors were induced in rats or mice of either gender at incidences that were significantly higher in the dosed groups than in the corresponding control groups. The authors concluded that unsubstituted dibenzo-p-dioxin exhibited very low toxicity and was noncarcinogenic in Osborne-Mendel rats and B6C3F1 mice, even when the maximum tolerated dose was approached (10,000 ppm in diet).

The Thomas et al. (1940) report consisted of two studies, a primary 200-day dibenzofuran feeding study and a follow-up 78-day study. In the primary study, groups of five female albino rats (strain not specified), approximately 30 days old, consumed 0, 250, 500, 1000, 2000, or 4000 ppm of dibenzofuran in their food for 200 days. In addition, two female rats consumed 8000 ppm of dibenzofuran in their diet for a shorter period (approximately 100 days). According to the authors, none of the animals exhibited any abnormal activity or behavior, nor was food intake appreciably altered by dibenzofuran administration, although it was noted that the rats receiving dibenzofuran tended to consume more water than controls. The authors also reported no effect on body weight gain at any dose during the exposure period; however, decreases in body length and absolute organ weights were observed in all dibenzofuran-exposed groups at necropsy. The authors also reported that the treated animals had unusually large amounts of abdominal fat, which they interpreted as accounting for the lack of effect on body weight gain. Quantitative data were not provided to support the assertions of no appreciable

changes in food intake or body weight gain, decreases in organ weight and overall length, and excess abdominal fat. In addition, the authors did not report whether a dose-response effect was observed for changes in body length or organ weight, or for excess abdominal fat.

Histological examination of the liver, kidney, spleen, heart, and adrenals was performed in rats exposed to dibenzofuran at 500 ppm and higher, and in the control animals (Thomas et al., 1940). The low dose group (250 ppm) apparently was not examined for histopathology. In the kidney, histological examination of rats exposed to concentrations of 500 ppm and higher revealed fine, brown-pigmented granules in the epithelial cells of proximal convoluted tubules in the deeper parts of the renal cortex. This effect was noted among all rats receiving dibenzofuran, and both the amount of pigmented material within cells and the frequency of occurrence among cells increased with dose of dibenzofuran. In addition, the two rats fed diet containing 8000 ppm dibenzofuran exhibited prominent, irregular dilatation of the collecting tubules with coagulated material resembling protein; other tubules in these two rats were slightly dilated and contained more granular and amorphous material than controls. These effects were reported as occurring without cellular degeneration or glomerular abnormalities. Some (frequency not specified) of the kidneys from rats receiving 4000 ppm showed similar, but less severe, changes. These lesions were not reported among rats fed the lower doses of dibenzofuran. However, quantitative data were not reported. In the spleen, slight hyperplasia of the Malpighian bodies was reported among several rats (frequency not given) in the 4000 and 8000 ppm groups. No alterations, other than reduced organ weight, were noted in the liver, heart, or adrenals of the treated rats.

In the follow-up study to determine whether dietary dibenzofuran affected water balance, an effect noted qualitatively (increased water consumption) in female rats receiving dibenzofuran in their food, Thomas et al. (1940) exposed groups of five male rats (average initial body weight 255 grams) to 0 or 5000 ppm of dibenzofuran in the diet for 78 days. Treated rats exhibited greater water consumption and urine output than controls, suggesting that dibenzofuran altered water balance. The excess in urine output was greater than the excess in water consumption in the treated group, suggesting a slight dehydration of tissues. The authors reported that no alterations in hematological parameters were observed (hemoglobin and erythrocyte, leukocyte, and reticulocyte counts). Tables 1 and 2 have summarized the hematological data reported in the 78-day study.

TABLE 1. Blood cell types in rats exposed to DBF in normal diet for 78 days

Dose	Rats "N"	Hemoglobin	Erythrocytes	Reticulocytes	White cells
0	10	16.3%	8.12×10^6	3.0%	1.44×10^4
5000 ppm	5	16.6%	9.07×10^6	2.35%	1.65×10^4

TABLE 2. Average differential white blood cell counts in 78-day exposed rats vs. "normal rat blood"

Dose	Rats "N"	Lymphocytes	Polymorphonuclear nutrophils	Monocytes	Basophiles	Eosinophils
"Normal"	---	67.9%	27%	5.3%	0.77%	2.1%
5000 ppm	5	63.8%	33.5%	1.18%	0.64%	0.94%

In contrast to qualitative observations reported among the female rats exposed to similar concentrations in the 200-day primary study, the male rats treated for 78 days tended to consume less food than the controls and had a slightly lower rate of body weight gain than the control group. These data and water consumption data are summarized in Table 3. The authors noted that the odor and taste of dibenzofuran at 5000 ppm in the food was distinctly noticeable and may have contributed to this effect. Histological examination was not performed on tissues from these rats.

TABLE 3. Weight gain in male albino rats fed DBF for 78 days vs. controls

Dose	Rats "N"	Weight gain	Food ingestion	Water ingestion
0	5	321 g	6108 g	9652 cc
5000 ppm	5	243 g	5482 g	10,316 cc
Difference	- - - - -	78 g (24%)	626 g (10%)	664 cc (6.9%)

The literature search revealed additional, peripheral data for dibenzofuran, including those for soil nitrification organisms (Sverdrup et al., 2002), drought resistance of certain insects (Sjursen et al., 2001), plant seedling growth (Sverdrup et al., 2003), fungi-specific enzyme systems (Kurihara et al., 2002), and a study of human intellectual effects of exposure (Schantz, 2001) that mistakenly refered to unhalogenated dibenzofuran. Abstracts for these studies reported the following conclusions.

- 75 mg DBF/kg (soil) NOEL for soil nitrification and no effects on soil bacterial diversity (Sverdrup et al., 2002)

- No dose-related decrease in drought tolerance in adult soil-dwelling insects, *Folsomia fimetaria* (Sjursen et al., 2001)
- 20% reduction in plant seedling weight when exposed to 43-93 mg DBF /kg soil (Sverdrup et al., 2003)
- No change in expression of NADH-ubiquinone oxidoreductase (NUO) among DBF-exposed fungus, *Phanerochaete chrysosporium* (Kurihara et al., 2002)

DERIVATION OF A PROVISIONAL SUBCHRONIC ORAL RfD VALUE FOR DIBENZOFURAN

The only subchronic or chronic toxicity data available for dibenzofuran were from the 200-day and 78-day feeding studies described by Thomas et al. (1940). These studies, though of apparently high quality for their era, had a number of major short comings, including the following:

- only qualitative data were reported for most endpoints
- only five organs were examined in the pathology
- the lowest dose group was not subjected to pathology examinations

No pertinent developmental or reproductive data were found for dibenzofuran. The LOAEL data from the Thomas et al. (1940) 200-day feeding study provided the POD for this derivation, because no NOAEL was reported. Data from the 78-day study were used to confirm food ingestion rates estimated using default rates in U.S. EPA, 1986b. Benchmark dose modeling was considered infeasible because adverse effects and the dose-response nature of the response were reported only qualitatively.

The lowest dose tested in the 200-day Thomas et al., 1940 study, 250 ppm in diet, was selected as the LOAEL POD for the aggregate critical effects of reduced length and organ weight, and excess abdominal fat. Ingestion data from the 78-day study was used to estimate the actual doses to the animals treated at the LOAEL, as follows. The 78-day feeding study was conducted under the same conditions as the 200-day primary study. This estimation made the following assumptions.

- Data from the 78-day study (Thomas et al., 1940) were more likely to represent actual food intakes than the default reference food factor from U.S. EPA, 1986b
- Rats in the 200-day study (Thomas et al., 1940) eating a diet treated with 250 ppm dibenzofuran consumed quantities of food closer to the control amounts (6108 g/diet/5 rats) than to the quantities of food treated with 5000 ppm dibenzofuran (5482 g/5 rats) in the 78-day study

- Growth of rats eating the 250 ppm diet in the 200-day study (Thomas et al., 1940) more closely approximated controls than those eating 5000 ppm, and that the 78-day weight provided a reasonable average weight for the 200 day study period.

In the 78-day study, Thomas et al. (1940) reported that a group of 5 control rats ingested a total of 6108 grams of food over the 78 days and grew from 1.273 kg to 1.594 kg/group, while experimental rats ingested 5482 g of food treated with 5000 ppm dibenzofuran and grew from 1.274 kg to 1.517 kg/group of 5 treated rats. The following calculations used food consumption data from the 78-day study to estimate dibenzofuran consumption in the 200-day study at the POD (250 ppm) for the critical effect of reduced length and organ weight, and excess abdominal fat among the exposed rats.

(6108 g diet/5 rats) / 78 days = 78.3 g/diet/5 rats/day

(78.3 g/5 rats/day) x $(250/10^6)$ = 0.0196 g DBF/5 rats/day = 19.6 mg/5 rats/day

19.6 mg DBF/5 rats/day / (1.594 kg/5 rats) = 12.3 mg DBF/kg/day

The estimated dibenzofuran dose of 12.3 g/kg/day was essentially the same as the dose of 12.5 g/kg/day calculated using the EPA default reference food factor (U.S. EPA, 1986b).

Based on the data available, the following uncertainty factors were applied to derive a subchronic oral p-RfD.

- 10 for variability in human susceptibility
- 10 for the uncertainty in animal-to-human extrapolation
- 1 for using data from a 200-day study (in rats) to derive a subchronic p-RfD
- 3 ($10^{0.5}$) for using a minimal LOAEL instead of a NOAEL
- 10 for deficiencies in the database, including the lack of reproductive and developmental data, and the minimal data details reported in the key study

The uncertainty factors noted above provide a composite UF of 3000 ($10^{3.5}$).

In the absence of a NOAEL, a LOAEL could be several orders of magnitude above the actual no adverse effect dose, since it merely represents the lowest dose tested. Nevertheless, the uncertainty factor for using a minimal LOAEL instead of a NOAEL was reduced from 10 to 3 ($10^{0.5}$) because the following findings suggested that the smaller uncertainty factor would be more appropriate in this case. While many of the dose levels tested and the organism effects considered in the following reports would be difficult to relate to humans, together they seem to

emphasize the relatively low toxicity and mild effects of dibenzofuran across a variety of species.

- The Thomas et. al (1940) study noted relatively minor effects in rats, even at very high doses, up to thirty times the LOAEL dose selected as the POD
- Peripheral data in other species indicated very minor effects or no effects among organisms exposed to dibenzofuran
    - 75 mg DBF/kg (soil) NOEL for soil nitrification and for soil bacterial diversity (Sverdrup et al., 2002)
    - No dose-related decrease in drought tolerance in the adult soil-dwelling insects, *Folsomia fimetaria* (Sjursen et al., 2001)
    - 20% reduction in plant seedling weight when exposed to 43-93 mg DBF /kg soil (Sverdrup et al., 2003)
    - No change in expression of NADH-ubiquinone oxidoreductase (NUO) among DBF-exposed *Phanerochaete chrysosporium* fungi (Kurihara et al., 2002)
- NCI (1979) reported no tumors and relatively low toxicity among rats and mice fed diets containing 5000 ppm and 10,000 ppm dibenzo-p-dioxin, a structural analog to dibenzofuran. Effects reported were hepatic lesions, slight reductions in weight gain and nephropathy (in male rats)

Applying the composite UF of $10^{3.5}$ (~3000) to the dietary LOAEL POD of 12.3 mg DBF/kg-day for the combined critical effects of reduced length and organ weight and excess abdominal fat observed in female albino rats allowed the following calculation of the subchronic p-RfD.

Subchronic oral p-RfD = LOAEL / (UF x MF)
= (12.3 mg/kg/day) / ($10^{3.5}$ x 1)
= **$4x10^{-3}$ mg/kg-day**
= 4 µg dibenzofuran/kg-day

The data were insufficient to derive a chronic oral p-RfD value using an acceptable composite uncertainty. However, the Appendix of this document contains a Screening Value that may be useful in certain instances. Please see the attached Appendix for details.

DERIVATION OF PROVISIONAL INHALATION RfC VALUES FOR DIBENZOFURAN

Provisional inhalation RfC values were not derived for dibenzofuran because no useful inhalation exposure data were identified and data were insufficient to attempt inter-route extrapolation from the marginal ingestion data.

STATEMENT OF CONFIDENCE

Confidence in the principal study is low. Thomas et al. (1940) examined a number of endpoints, including histological examination of several major organs. The study had an adequate number of dose groups, but was limited by inclusion of only five rats in each group. Although only female rats were used for the 200-day portion of the study, male rats were used for the shorter water balance study (78 days). Thomas et al. (1940) did not report whether the critical effect selected displayed a dose-response relationship. However, the reductions in growth and organ weights, and the increase in abdominal fat were supported by histological changes noted in the kidney and impairment of water balance at higher doses. Because the critical effects were observed among rats receiving the lowest dose tested, one cannot be certain that the effects noted at 250 ppm (12.5 mg/kg-day), would not have been present at lower doses. Thus, it is uncertain whether 250 ppm is a true LOAEL. Confidence in the database and the resulting RfDs is low because of the limited toxicity data base for dibenzofuran, including lack of human studies and chronic, developmental, or reproductive oral animal studies. However, some confidence is gained from the relatively low toxicity and lack of tumors among rats and mice fed high doses of dibenzo-p-dioxin (NCI, 1979), the chemical identified by NCI (2000) as most structurally related to dibenzofuran. Nevertheless, risk managers are advised to consider any other available data before applying this p-RfD.

Suppliers and users of dibenzofuran should be encouraged to conduct toxicology studies, such as that initiated by EPA in 1978 (NCI, 2000) but then terminated because of lack of funding. The absence of inhalation, toxicokinetic, and metabolic data would justify especially encouraging studies to seek such information.

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APPENDIX

DERIVATION OF A SCREENING VALUE FOR DIBENZOFURAN

For reasons noted in the main PPRTV document, it is inappropriate to derive provisional toxicity values for Dibenzofuran, chronic RfD. However, information is available for this chemical which, although insufficient to support derivation of a provisional toxicity value, under current guidelines, may be of limited use to risk assessors. In such cases, the Superfund Health Risk Technical Support Center summarizes available information in an Appendix and develops a "Screening Value." Appendices receive the same level of internal and external scientific peer review as the PPRTV documents to ensure their appropriateness within the limitations detailed in the document. In the OSRTI hierarchy, Screening Values are considered to be below Tier 3, "Other (Peer-Reviewed) Toxicity Values."

Screening Values are intended for use in limited circumstances when no Tier 1, 2, or 3 values are available. Screening Values may be used, for example, to rank relative risks of individual chemicals present at a site to determine if the risk developed from the associated exposure at the specific site is likely to be a significant concern in the overall cleanup decision. Screening Values are not defensible as the primary drivers in making cleanup decisions because they are based on limited information. Questions or concerns about the appropriate use of Screening Values should be directed to the Superfund Health Risk Technical Support Center.

The Thomas et al. (1940) study provided insufficient data to derive a chronic oral p-RfD value with uncertainty in an acceptable range. The 200-day rat minimal LOAEL POD of 12.3 mg/kg-day was considered to derive a **screening chronic oral reference dose** by applying a composite uncertainty factor of 10,000 (10^4), including 10 for variability in human susceptibility, 10 for animal-to-human extrapolation, 3 ($10^{0.5}$) for extrapolating from 200-day rat data to a chronic screening value, 3 ($10^{0.5}$) for using a minimal LOAEL instead of a NOAEL, and 10 for deficiencies in the database, including the lack of developmental data and the minimal data details reported in the key study.

Applying the minimal LOAEL dietary POD of 12.3 mg DBF/kg-day and the composite uncertainty factor of 10,000 (10^4) allowed the following calculation:

Screening chronic oral p-RfD = LOAEL/UF
= (12.3 mg/kg-day)/10^4
= **$\underline{1x10^{-3}\ mg/kg\text{-}day}$**
= 1 μg dibenzofuran/kg-day

Confidence in the key study was low, because of the lack of detail on the critical effects and other deficiencies noted in this document. Given the lack of additional studies, confidence in the database also was low, leading to low overall confidence in the screening toxicity value. Users are advised to consider any other available data and to consult with the STSC before using this screening p-RfD.

5-31-2002

Provisional Peer Reviewed Toxicity Values for

Endosulfan

(CASRN 115-29-7)

Derivation of an Oral Slope Factor

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit

NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ENDOSULFAN (CASRN 115-29-7)
Derivation of an Oral Slope Factor

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

Endosulfan (CASRN 115-29-7) is a mixture of two stereoisomers, approximately 70% endosulfan I (endosulfan α; CASRN 959-98-8) and 30% endosulfan II (endosulfan β; CASRN 33213-65-9). An assessment of the carcinogenicity of endosulfan is not available on IRIS (U.S. EPA, 2002) or in the HEAST (U.S. EPA, 1997) or Drinking Water Standards and Health Advisories list (U.S. EPA, 2000). The CARA list (U.S. EPA, 1991a, 1994) includes a Health Effects Assessment for α- and β-endosulfan (U.S. EPA, 1987) that assigned endosulfan to cancer weight-of-evidence Group D, not classifiable as to human carcinogenicity, based on inconclusive animal data. A subsequent Health and Environmental Effects Document (U.S. EPA, 1991b) also assigned endosulfan to Group D. Based on more recent adequate negative studies, the Office of Pesticide Programs has classified endosulfan in Group E (U.S. EPA, 1999). IARC (2002) has not evaluated endosulfan for carcinogenicity. Review documents by ATSDR (2000) and WHO (1984), as well as the NTP (2002) status reports, were also consulted for relevant information. Literature searches were conducted from 1998 to December 2001 for studies relevant to the

derivation of an oral slope factor for endosulfan. The databases searched were: TOXLINE, MEDLINE, CANCERLIT, RTECS, GENETOX, HSDB, CCRIS, TSCATS, EMIC/EMICBACK and DART/ETICBACK.

REVIEW OF THE PERTINENT LITERATURE

Human Studies

Case control studies of 261 patients with breast cancer (Ashengrau et al., 1998) and 30 patients with gall bladder carcinoma (Shukla et al., 2001) did not find associations between serum levels of endosulfan and cancer.

Animal Studies

The available carcinogenicity studies for endosulfan following oral exposure have been reviewed previously (U.S. EPA, 1987, 1991b, 1999; ATSDR, 2000; WHO, 1984). There was no evidence of carcinogenicity in male or female NMRI mice fed endosulfan in the diet at concentrations up to 18 ppm (2.5 mg/kg-day) for 2 years (Hoechst Celanese Corporation, 1988; Hack et al., 1995), in male or female Sprague-Dawley rats fed up to 75 ppm (3.25 mg/kg-day) for 2 years (Hoechst Celanese Corporation, 1989; Hack et al., 1995), or in male or female Wistar rats fed up to 100 ppm (8 mg/kg-day) for 2 years (Keller, 1959). Oral exposure (gavage followed by diet) of male and female B6C3F1 and B6AKF1 mice to 1.0 or 2.15 mg/kg-day of endosulfan for 73-76 weeks produced some suggestive findings (statistically significant elevations in total tumor incidence and pulmonary adenomas in all treatment groups combined), but these were not considered biologically relevant because no significant differences were apparent for individual endosulfan treatment groups, and because no pulmonary carcinomas were diagnosed in endosulfan-treated animals (Innes et al., 1969; NCI, 1968). Low survival in all treated B6C3F1 mice and high-dose B6AKF1 mice complicates interpretation of this study.

The results of a subsequent NCI (1978) study were inadequate for evaluation of carcinogenicity. No evidence of carcinogenicity was observed in male or female B6C3F1 mice fed up to 6.9 or 3.9 ppm (1.3 or 0.76 mg/kg-day), respectively, for 78 weeks, female Osborne-Mendel rats fed up to 445 ppm (39 mg/kg-day) for 71 weeks, or male Osborne-Mendel rats fed up to 952 ppm (75 mg/kg-day) for 72-82 weeks. The maximum tolerated dose was clearly exceeded, as evidenced by high mortality in male rats and mice and other serious non-neoplastic effects (weight loss, kidney and testicular damage) in all treated rat groups. A re-evaluation of the histology slides (Reuber, 1981) reported statistically significant increases in certain types of tumors grouped across tissues in female rats (total neoplasia, malignant tumors, sarcomas, lymphosarcomas and reproductive system tumors) and male rats (endocrine organ tumors). The incidence of parathyroid adenomas in male rats was also reported to be increased. In mice, the re-evaluation found a marginally significant increase in the incidence of liver carcinomas in low-dose females, but not in high-dose females or males. Reuber (1981) failed to report details

regarding definitions of neoplasia used, tissue occurrence of neoplasia observed, and how his data compare with data from the original study (NCI, 1978). The conclusions of the reevaluation have not been independently confirmed.

Other Studies

Evidence of hepatic tumor-promoting activity was observed in one of two studies in male Sprague-Dawley rats initiated by partial hepatectomy and nitrosodiethylamine treatment. Flodstrom et al. (1988) did not observe an increase in hepatic foci positive for γ-glutamyltranspeptidase in rats exposed to α-endosulfan, β-endosulfan, or technical endosulfan for 10 weeks at doses up to 5 mg/kg-day. In contrast, Fransson-Steen et al. (1992) observed statistically significant increases in the number and volume of hepatic foci positive for γ-glutamyltranspeptidase in larger test groups of male rats fed α-endosulfan, β-endosulfan, or technical endosulfan for 20 weeks up to 15 mg/kg-day. Based on observations that endosulfan has exhibited activity as an endocrine disruptor (U.S. EPA, 1999) and induced proliferation in hormone-responsive human (endometrial and breast) cancer cell lines (Coumoul et al., 2001; Soto et al., 1994; Vonier et al., 1996; others), a hypothesis has been suggested that endosulfan may promote cancer formation in humans through a mode-of-action involving endocrine disruption. However, other studies have produced conflicting results (e.g., Arcaro et al., 1998; Newbold et al., 2001) and insufficient data are available to evaluate this theory.

Reviews generally consider endosulfan to be genotoxic (U.S. EPA, 1991b, 1999; ATSDR, 2000; WHO, 1984). Extensive mutagenicity testing in *Salmonella typhimurium* and *Escherichia coli* strains reported both positive and negative results with and without metabolic activation. Conflicting positive and negative results were also seen in assays for mutation, gene conversion and chromosome aberrations in *Saccharomyces cerevisae*, although no mutations were seen in *Schizosaccharomyces pombe*. Similarly, both positive and negative tests for gene mutation have been observed in cultured mouse lymphoma cells with and without metabolic activation. Endosulfan did not induce unscheduled DNA synthesis in primary rat hepatocytes. Endosulfan induced micronuclei in cultured sheep lymphocytes and sister chromatid exchange in both preimplantation embryos of hybrid mice and human lymphoid cells *in vitro*. Endosulfan also induced chromosome aberrations in bone marrow cells of Syrian hamsters. Both positive and negative results were seen in assays measuring the formation of micronucleated polychromatic erythrocytes in mice. Endosulfan induced sex-linked recessive lethal mutations and sex-chromosome loss in *Drosophila*. Both positive and negative results have been observed in dominant lethal mutation studies in male mice. A cluster of four women living near endosulfan-contaminated areas in Florida produced five children born with evidence of mitochondrial defects (global developmental delay and hypotonia, carnitine deficiency and β-hydroxy butyrate anomalies) suggestive of mitochondrial DNA damage (Thrasher, 2000). However, it is not clear that these effects can be attributed to endosulfan exposure.

FEASIBILITY OF DERIVING A PROVISIONAL ORAL SLOPE FACTOR FOR ENDOSULFAN

No evidence of carcinogenicity resulting from endosulfan exposure was observed in epidemiology or animal studies. On the basis of the available information, it is not possible to derive a provisional oral slope factor for endosulfan.

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7-13-2007

Provisional Peer Reviewed Toxicity Values for

Hexachlorobutadiene
(CASRN 87-68-3)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
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MF	modifying factor
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mg/kg	milligrams per kilogram
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MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR HEXACHLOROBUTADIENE (CASRN 87-68-3)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

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Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and

circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

No reference dose (RfD) or reference concentration (RfC) values are available for hexachlorobutadiene (HCBD) in the Integrated Risk Information System (IRIS) database (U.S. EPA, 2007). The Health Effects Assessment Summary Table (HEAST) lists a chronic oral RfD of 2E-4 mg/kg-day and no subchronic RfD (U.S. EPA, 1997). The source documents referenced for the RfD value in HEAST included a 2-year dietary study in rats (Kociba et al., 1977) and a 13-week dietary study in mice (NTP, 1991; Yang et al., 1989). The chronic oral RfD value cited in HEAST was derived from a LOAEL of 0.5 mg/kg-day, based on renal tubule regeneration observed in a 13-week dietary study in mice (NTP, 1991; Yang et al., 1989). The Drinking Water Standards and Health Advisories also includes an RfD of 2E-4 mg/kg-day for HCBD (U.S. EPA, 2004). The Chemical Assessments and Related Activities (CARA) list (U.S. EPA, 1991a, 1994) identifies a Health Effects Assessment (HEA) (U.S. EPA, 1984) and a Drinking Water Health Advisory report (U.S. EPA, 1987). No oral or inhalation RfD values were provided in the HEA (U.S. EPA, 1984). An RfD value of 0.002 mg/kg-day was calculated for use in the derivation of the drinking water equivalent level (DWEL) (U.S. EPA, 1987), based on kidney effects observed in the 2-year dietary study in rats (Kociba et al., 1977). A no-observed-adverse-effect level (NOAEL) of 0.2 mg/kg-day was identified from this study, based on functional and histopathological changes in the kidney, and a composite uncertainty factor (UF) of 100 was applied to account for interspecies and interindividual differences.

An Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile for HCBD (ATSDR, 1994) derived an intermediate-duration oral Minimal Risk Level (MRL) of 0.0002 mg/kg-day, based on the presence of kidney damage in female mice from a 13-week

dietary study (NTP, 1991). A lowest-observed-adverse-effect level (LOAEL) value of 0.2 mg/kg-day was identified, based on tubular cell degeneration and regeneration in the renal cortex, and a composite uncertainty factor (UF) of 1000 was applied to derive the intermediate-duration oral MRL (factors of 10 each to account for the interindividual variation in the human population, the uncertainty in extrapolating animal data to the case of human and uncertainty in using LOAEL data rather than NOAEL data). Because renal tubular hyperplasia was observed at 2 mg/kg-day in a chronic dietary study in rats (Kociba et al., 1977) and no effect was seen at 0.2 mg/kg-day in this study (the LOAEL for kidney effects in the 13-week mouse study), the intermediate-duration MRL was considered protective for chronic exposures and a chronic MRL was not proposed. Inhalation MRL values were not derived by ATSDR for HCBD due to the lack of sufficient data to identify a target organ or reliable NOAEL values (ATSDR, 1994). Occupational exposure standards and guidelines for HCBD, based on skin irritation and kidney effects, include American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value–time-weighted average (TLV-TWA) and National Institute for Occupational Safety and Health (NIOSH) TWA values of 0.02 ppm (0.24 mg/m^3) (ACGIH, 2005; NIOSH, 2005). An Occupational Safety and Health Administration (OSHA) Permissible Exposure Limit (PEL) value is not available for HCBD (OSHA, 2006).

A cancer assessment for HCBD is available on IRIS (U.S. EPA, 2007), in the HEAST (U.S. EPA, 1997), and on the Drinking Water Standards and Health Advisories list (U.S. EPA, 2004). HCBD is considered to be a possible human carcinogen (Group C) based on kidney tumors observed in male and female rats from one study. An oral slope factor of 0.078 $(mg/kg-day)^{-1}$ was derived, based on renal tubular adenomas and adenocarcinomas observed in rats given HCBD in the diet (Kociba et al., 1977). An inhalation unit risk value of $2.2x10^{-5}$ $(\mu g/m^3)^{-1}$ was calculated based on route extrapolation from the oral data (U.S. EPA, 2007). The International Agency for Research on Cancer (IARC) assigned HCBD to Group 3 (not classifiable as to its carcinogenicity to humans), based on limited evidence for the carcinogenicity of HCBD in animals and inadequate evidence in humans (IARC, 1999). The World Health Organization (WHO) Environmental Health Criteria document (WHO, 1994) also indicated that there was limited evidence for carcinogenicity of HCBD in animals and insufficient evidence in humans. HCBD was not included in the NTP (2005) 11^{th} Report on Carcinogens.

Literature searches were performed for the time period of 1965 to May, 2006 in TOXLINE, MEDLINE (plus PubMed cancer subset) and DART/ETICBACK. An update search of the TOXCENTER (BIOSIS) database was performed for the time period of 2000 to May, 2006. Databases searched without date limitations included TSCATS, RTECS, GENETOX, HSDB and CCRIS. Search of Current Contents encompassed November 2005 to May 2006.

REVIEW OF PERTINENT DATA

Human Studies

Oral Exposure. No data were located regarding the oral toxicity or carcinogenicity of HCBD in humans.

Inhalation Exposure. Very little information pertaining to effects of inhalation of HCBD in humans is available. Howse et al. (2001) investigated biomarkers of early renal dysfunction in a cohort of subjects exposed to HCBD. This study was presented as an abstract only and few details were provided regarding the subject cohort or the nature of the exposure to HCBD. Urinary markers of renal disease were evaluated in 70 subjects known to be environmentally exposed to HCBD. Twenty-five subjects were eventually eliminated from consideration due to age, preexisting renal disease, medication use or exposure to other nephrotoxic compounds. The parameters investigated for the remaining 45 subjects included urinary albumin, total protein, γ-glutamyl transpeptidase (GGT), N-acetyl-β-glucosaminidase (NAG), leucine aminopeptidase (LAP), α- and π-glutathione transferases (GST) and retinol binding protein (RBP). Results were compared to the laboratory reference range for healthy workers. Urinary abnormalities occurred in 21 subjects, with 11 subjects exhibiting 2 or more abnormal tests. The most common effects were seen with the tubular markers LAP, GGT and α- and π-GST. No further information was provided.

Driscoll et al. (1992) carried out a study investigating liver dysfunction in workers exposed to a variety of chlorinated solvents (mainly carbon tetrachloride and perchlorethylene) and HCBD at a solvent production plant. The study included all 53 members of the workforce, but a number of individuals were excluded from the analysis because their blood samples were inadequate (6 individuals), they had not fasted before the blood samples were taken (11 individuals) or were taking antibiotics (1 individual). This left 35 subjects who were included in the analysis. Workers were categorized in relation to both HCBD exposure and overall solvent exposure at the plant. The results of repeated environmental monitoring in the plant were used to assign each worker to one of four classes of exposure to HCBD (0.0, 0.005, 0.01 or 0.02 ppm). Overall solvent exposure for all workers was low (less than 1 ppm), but varied with task; routine monitoring data from the plant records were used to assign workers to either a "lower" or "higher" solvent exposure category. Workers assigned to the various categories were similar in age and duration of employment.

Blood samples were collected from each worker after an overnight fast (Driscoll et al., 1992). Serum bile acids were assayed by high performance liquid chromatography and compared for each group. Standard tests for liver function [serum protein, albumin and bilirubin concentrations and alkaline phosphatase (AP), alanine aminotransferase (ALT), aspartate aminotransferase (AST) and GGT activities] were also carried out. Total bile acids were not significantly increased in relation to HCBD exposure, but a positive exposure-effect relationship with HCBD concentration was found for three individual bile acids (deoxycholic acid, glycine deoxycholic acid, taurine chenodeoxycholic acid) and for total deoxycholate (this includes deoxycholic acid and glycine deoxycholic acid). Using multiple linear regression and controlling for age and overall solvent exposure, these parameters had significant positive log-linear relations with exposure to HCBD. With respect to overall solvent exposure, there was no significant positive relationship for total bile acids or any individual bile acids (the researchers suggested that significant negative relationships with glycine deoxycholic acid, taurine cholate and total cholate may have resulted from misclassification of exposure for some workers).

Although liver function tests did not show any significant relationship with exposure to either HCBD or solvents overall in the Driscoll et al. (1992) study, serum bile acid

concentrations may be a more sensitive indicator of liver damage than standard tests of hepatic function. Franco et al. (1986) compared liver function in workers occupationally exposed to a mixture of organic solvents and an unexposed control group. The results from conventional tests of hepatic function were compared with those of the serum bile acid test, and the researchers concluded that the serum bile acid test had a higher sensitivity for the detection of liver dysfunction for the solvent mixture tested. The bile acid test results of Driscoll et al. (1992) suggest that exposure to HCBD may affect liver function. However, there was no supporting evidence for hepatotoxicity from standard liver function tests, workers were exposed to multiple solvents, the study did not include a control group of individuals unexposed to any solvents and the study did not assess possible confounders, such as previous hepatic disease and alcohol intake.

The only other available study of effects of HCBD in humans is a study carried out in Russia (Krasniuk et al., 1969). Krasniuk et al. (1969) recorded multiple toxic effects in vineyard workers seasonally exposed to HCBD (0.8-30 mg/m^3) and polychlorobutane-80 (0.12-6.7 mg/m^3) in the air over fumigated areas. A total of 205 workers were examined medically; 153 workers had 4 years of exposure to HCBD and polychlorobutane-80, while 52 workers had worked under the same conditions without exposure to the chemicals. The study reported multiple toxic effects in exposed workers, including the development of hypotension, cardiac disease, chronic hepatitis and disturbance of nervous function. The effects, however, are not well documented and cannot be attributed solely to HCBD.

Animal Studies

Oral Exposure.

Jonker et al., 1993 — A 4-week dietary study was conducted in Wistar rats (five/sex/group, 10 controls/sex) fed HCBD (98% pure) at concentrations of 0, 25, 100 or 400 ppm (Jonker et al., 1993). Using reference values for body weight and food consumption in Wistar rats from a subchronic study (male body weight 0.217 kg, female body weight 0.156 kg, male food consumption 0.02 kg/day, female food consumption 0.016 kg/day) (U.S. EPA, 1988), daily dose estimates were calculated to be 0, 2.3, 9.2 or 37 mg/kg-day for male rats and 0, 2.6, 10.2 or 41 mg/kg-day for female rats. During the 4^{th} week of the study, rats were deprived of water for 24 hours and food for 16 hours. Urine was collected during the last 16 hours of water deprivation and urine volume and density were measured. Urine samples were also visually inspected and analyzed for pH, protein, glucose, ketones, occult blood, urobilinogen and bilirubin. Urine samples were centrifuged and the sediment was examined microscopically. Hematology parameters, including hemoglobin, packed cell volume, red blood cells (RBCs) and total white blood cells (WBCs), were evaluated for tail vein blood samples that were obtained during the 4^{th} week of the study. Blood samples obtained at necropsy were analyzed for serum AP, AST and ALT activities, protein, albumin, bilirubin, urea, creatinine, inorganic phosphorous, calcium, sodium and potassium. The organ weights of the kidneys, adrenals and liver were recorded at necropsy and kidney tissue was prepared for histopathological evaluation.

Growth retardation and decreased food and water consumption were observed in male and female rats exposed to 100 or 400 ppm. Mean body weights measured on day 28 were

reduced by 34% in both male and female rats given 400 ppm HCBD in the diet. At 100 ppm, 28-day body weights were decreased by 10% in male rats and 15% in female rats. Increased volume and decreased density of the urine were observed in male rats receiving 100 ppm only. An increase in urinary epithelial cells was seen at 100 and 400 ppm HCBD in male and female rats and urinary ketones were increased at 400 ppm HCBD in both males and females. Clinical chemistry findings demonstrated increased AST activity (400 ppm males and females, 46% and 22% increased respectively), decreased total protein and albumin (400 ppm males only, 5% decrease), decreased urea (all female treatment groups, maximal decrease of 34%; 400 ppm males, 25% decrease), decreased creatinine (400 ppm females, 12% decrease), increased total bilirubin (6.7-fold and 2.4-fold increase in 400 ppm males and females, respectively) and decreased calcium (400 ppm males, 8% decrease). HCBD treatment resulted in a 13% decrease in absolute kidney weight in high-dose (400 ppm) male rats. Absolute kidney weights were similar to controls for all other treatment groups. An increase in relative kidney weight (organ:body weight ratio) was seen in male and female rats given 100 or 400 ppm HCBD (12 and 31% increase for male rats; 21 and 40% increase for female rats). The absolute organ weight of the adrenals was decreased in female rats given 100 or 400 ppm, while the relative adrenal weight was increased in high-dose male rats. Absolute liver weight was decreased in male rats at 400 ppm and in female rats at 100 and 400 ppm. Relative liver weight was increased in male rats given 100 ppm HCBD only. Relative organ weight increases (kidney, adrenals, and liver) are likely due to the observed decreases in body weight in male and females rats exposed to 100 ppm or 400 ppm HCBD. Kidney histopathology evaluation showed diffuse tubular cytomegaly (females at 100 ppm, males and females at 400 ppm) and focal nephrosis (males at 400 ppm). Incidence data for these lesions were not provided. Histopathological changes in the kidney were further described for a separate group of male and female rats given 100 ppm HCBD in the diet for 4 weeks. In female rats, necrosis, karyomegaly, hypercellularity and variable nuclear size were observed in inner cortex (incidence of 5/5 treated rats, 0/10 controls). NOAEL and LOAEL values of 25 and 100 ppm (2.6 and 10.2 mg/kg-day, respectively) were derived from this study, based on the kidney histopathology data in female Wistar rats.

NTP, 1991; Yang et al., 1989 — Dietary studies with HCBD were conducted in B6C3F_1 mice (NTP, 1991; Yang et al., 1989). In a 2-week study, mice (five/sex/group) received diets containing 0, 30, 100, 300, 1000 or 3000 ppm for 15 days. Animals were observed twice daily and were weighed initially and on days 7 and 15. Food consumption was measured on day 3 and every 2 days thereafter. Necropsy was performed on all animals and histopathology was evaluated in bone marrow, kidneys and liver for animals in the control, 300, 1000 and 3000 ppm groups. Organ weights were measured for the liver thymus kidneys, heart, brain, lung and testis.

All mice that were fed 1000 or 3000 ppm HCBD died before the end of the study. Growth retardation was observed in all HCBD treatment groups. Terminal body weights were 10%, 17% and 20% lower than controls for the 30, 100, and 300 ppm treatment groups, respectively. Control mice gained an average of 2.2 g over the course of the study, while mice given 30 ppm HCBD did not gain weight and mice given 100 ppm and 300 ppm experienced an average weight loss of 1.7 g and 2.1 g, respectively. The study authors indicated that it was unclear whether the observed growth retardation was treatment-related, due to the variability in the measured food consumption caused by scattering of feed by mice in the treatment groups. Daily dose estimates were calculated by the study authors based on feed consumption and body

weight measurements. Dietary concentrations of 0, 3, 30 and 300 ppm resulted in dose estimates by the study authors of 0, 3, 12 and 40 mg/kg-day in male mice and 0, 5, 16 and 49 mg/kg-day in female mice. Lower dietary intakes were reported for the 1000 and 3000 ppm dose groups (19 and 24 mg/kg-day in males; 30 and 36 mg/kg-day in females) due to the decreased food consumption occurring in these dose groups.

Clinical signs of toxicity were seen in mice given dietary concentrations ≥300 ppm. Lethargy, rough hair coat, hunched position and incoordination were observed. Decreased organ weights were seen in male and female mice from the 300 ppm dose group (28-49% decrease in thymus weight, 69-75% decrease in heart weight). Although the report does not indicate whether organ weight decreases were absolute or relative to bodyweight, the study authors suggested that the reduced organ weights were the result of stress and growth retardation and may be only secondarily related to HCDB treatment. Kidney lesions were observed in mice from each HCBD treatment group examined (300, 1000 and 3000 ppm). Severe necrosis of the cortex and outer medulla of the kidney was seen in mice from the 1000 and 3000 ppm dose groups that died prior to the end of the study. The necrosis was less severe at 300 ppm and regeneration was evident, especially in the pars recta (outer stripe of the outer medulla). Other lesions were seen in mice from the two highest dose groups, including lymphoid necrosis and atrophy in the spleen, thymus and lymph nodes, atrophy and necrosis of the red pulp of the spleen, testicular degeneration, and vacuolization and necrosis of hepatocytes. Minimal to mild depletion of the bone marrow (decrease in hematopoietic cells) was observed in mice treated with dietary concentrations of ≥300 ppm HCBD. NOAEL and LOAEL values were not identified from the 2-week study because histopathology evaluation was not performed for rats receiving 30 and 100 ppm HCBD.

In the 13-week dietary study, concentrations of 0, 1, 3, 10, 30 or 100 ppm HCBD (98% pure) were made available mixed in feed to 10 mice/sex. Body weights and food consumption rates were measured weekly. As reported by the authors, the average daily doses of HCBD were estimated to be 0, 0.1, 0.4, 1.5, 4.9 or 16.8 mg/kg-day in males and 0, 0.2, 0.5, 1.8, 4.5 or 19.2 mg/kg/day in females, when food consumption and body weight data were taken into account. Mice were observed twice daily and necropsy and histopathological evaluation of the kidneys was performed for all animals. Complete histopathology evaluation of the full range of organs and tissues was conducted for control and high-dose mice (100 ppm), and for those animals dying before the end of the study. Organ weights were measured at necropsy and samples were taken for a sperm count and motility evaluation, and for an analysis of vaginal morphology and cytology.

Although no clinical signs were evident in any of the animals in the study, one male mouse (1 ppm) died before the end of the study. HCBD treatment caused a decrease in the mean body weight in the two highest-dose groups of male mice and in the highest dose group in female mice throughout most of the study. Terminal mean body weights were 10 and 16% lower than controls for male mice in the 30 and 100 ppm dose groups, respectively, and 15% lower than controls for female mice exposed to 100 ppm HCBD. No major differences in food consumption were noted among treatment groups, suggesting that growth retardation is a toxic effect of HCBD. Absolute kidney weights were reduced (up to 24%) compared with controls in the three highest-dose male groups and the highest-dose female group (23%). Relative kidney weight was also decreased in these treatment groups (up to 19%) compared with controls. A 12% reduction

in absolute heart weight was also evident in the 100 ppm males (relative organ weight not reported). The principal histopathological finding was a compound-related increase in regeneration in the renal tubular epithelium that was most evident in the outer stripe of the outer medulla and extended into the medullary rays (pars recta) (see Table 1). Basophilic staining of the tubular cell cytoplasm and occasional mitoses were seen in regenerative cells. The necrosis that was evident at 300 ppm and above in the 2-week study was not seen after 13 weeks of exposure to 100 ppm or lower concentrations. Sperm motility was reduced in all dose groups, but the magnitude of this effect was not dose-related. No significant changes were seen in sperm count, incidence of abnormal sperm, estrous cyclicity or average length of the estrous cycle. NOAEL and LOAEL values of 0.2 and 0.5 mg/kg-day (1 and 3 ppm) were derived from this study, based on kidney lesions (renal tubule regeneration) in female rats exposed to HCBD in the diet for 13 weeks.

Table 1. The Incidence of Renal Tubule Regeneration in B6C3F$_1$ Mice Exposed to HCBD in the Diet for 13 Weeks (NTP, 1991; Yang et al., 1989)

	Incidence					
	0 ppm	**1 ppm**	**3 ppm**	**10 ppm**	**30 ppm**	**100 ppm**
Males	0/10	0/10	0/10	0/9	10/10[a]	10/10[a]
Females	0/10	1/10	9/10[a]	10/10[a]	10/10[a]	10/10[a]

[a]$p<0.05$, Fisher's Exact test performed for this analysis

Field et al. (1990) — Field et al. (1990) fed pregnant female CD rats (8-9/group) diets containing HCBD (98% purity) at concentrations of 0, 100, 200, 400, 750, 1100 or 1500 ppm on gestation day (GD) 17 through postnatal day (PND) 10. Animals were observed twice daily for clinical signs and were weighed on GD 0, 6, 11, 16 and 17 through PND 10. The reproductive and developmental parameters evaluated included litter size, sex ratio, pup body weights and percentage survival. On PND 4, litters were culled to 10 with an equivalent sex ratio, if possible. Pups were counted and weighed on PND 4, 7 and 10. On PND 10, one pup of either sex from each litter was randomly selected for urine and blood collection. Urine and blood samples were tested for glucose, urea, creatinine or total protein and osmolality was measured in the urine collected immediately following removal from the dam. One additional rat of each sex from each of the five litters was selected on PND 10 to undergo a "hydropenic test" as an indicator of renal competence. In this test, urine samples collected 4 and 6 hours following isolation from the dams were tested for osmolality. Pups were euthanized on PND 10 and liver and kidneys were weighed and prepared for histopathology. In the dams, samples of milk were collected from three dams/group, and liver and kidney tissues were weighed and processed for histopathological examination.

All dams receiving chow containing 1500 ppm HCBD became moribund and had to be terminated prematurely. Similarly, all animals (and their pups) exposed to 1100 ppm HCBD had to be terminated between PND 1 and PND 3. Clinical signs of toxicity in the two highest dose groups included excessive urination, alopecia, nasal discharge, redness of paws, tremors, piloerection, urogenital discharge, hindlimb weakness, lethargy and rough coat. Maternal body weight was decreased in all treatment groups above 100 ppm. Dams given a dietary concentration of 100 ppm HDBD had body weights similar to controls. On PND 10, maternal

body weights were decreased by 11, 21 and 31% in the 200, 400 and 750 ppm treatment groups, respectively. These reductions were accompanied by decreased food consumption during the gestational exposure period, compared with controls (43% decrease at 200 and 400 ppm and 73% decrease at 750 ppm). The study authors calculated an estimate of the daily dose using the food consumption rates for GD 20. Dose estimates of 0, 12, 22.5, 35.3 or 52.2 mg/kg-day were associated with dietary concentrations of 0, 100, 200, 400 or 750 ppm HCBD. The intake of HCBD throughout the study was considered to be variable, due to the fluctuation in food consumption. The HCBD content of maternal milk was shown to increase with increasing dietary concentration, when measured on PND 10. Relative kidney weight in dams was increased 25, 25, 44 and 78% above controls in rats from the 100, 200, 400 and 750 ppm HCBD treatment groups, respectively. Absolute kidney weights were not reported. Histopathological findings in dams demonstrated tubular regeneration of the pars recta of the proximal tubules in all treatment groups, with severity of the lesions being dose-related. At the higher dose levels, tubules were occasionally distended, appearing either empty or full of cell debris.

Three out of nine dams receiving 750 ppm HCBD delivered only dead pups, and, as a percentage, fewer pups from this group survived to PND 10 compared with controls (73% survival). In general, pups displayed dose-dependent reductions in body weight compared with controls, with those at the highest dose (750 ppm) displaying marked emaciation. Pup body weights on PND 10 were 94, 90, 59 and 51% of control pups for the 100, 200, 400 and 750 ppm HCBD treatment groups, respectively (statistical analysis not reported). Clinical chemistry results for the treated pups were similar to control. Following fluid deprivation, urine osmolality was increased in all HCBD-treated groups of dams and pups. Relative kidney weight in pups was increased by 8, 6, 12 and 21% above the control value for the 100, 200, 400 and 750 ppm HCBD treatment groups, respectively (statistical analysis was not reported). Absolute kidney weight was not reported. Histopathology examination showed kidney lesions in pups from the high-dose group only. The primary morphological changes were reduced kidney size and retention of the subscapular metanephric blastemal zone, which was considered by the study authors to reflect a delay in the postnatal development of the kidneys and apparent dehydration. The daily intake of HCBD in pups on PND 10 was calculated to range from 3 to 7% of the dose received by dams in the same dose group. The lowest dose tested (12 mg/kg-day, 100 ppm) is a LOAEL for maternal effects on the kidney (increased relative kidney weight, tubule regeneration). A NOAEL was not identified for maternal effects in this study. Effects in the offspring occurred at higher doses, with NOAEL and LOAEL values of 22.5 and 35.3 mg/kg-day (200 and 400 ppm), based on reduced pup body weight and increased relative kidney weight.

Stott et al., 1981 — Male Sprague-Dawley rats (4-6/group) were given 0, 0.2 or 20 mg/kg-day HCBD by oral gavage in corn oil for 21 consecutive days. An osmotic pump loaded with ^{3}H-thymidine was implanted 7 days prior to the end of the experiment and the rate of in vivo DNA synthesis was measured. Body weight gain was determined (frequency of measurement not indicated) and kidney weight was recorded at necropsy. Tissue samples were obtained from the central portion of the animal's left kidney and evaluated for histopathology. Rats were also given a single dose of ^{3}H-HCBD (20 mg/kg-day only) and were sacrificed 4 hours later for determination of in vivo renal DNA repair and DNA alkylation. In vitro studies conducted using HCBD included reverse mutation in *Salmonella typhimurium* and unscheduled DNA synthesis in primary rat hepatocytes.

In rats given 20 mg/kg-day for 3 weeks, body weight was decreased by 44%, kidney to body weight ratio was increased 1.3-fold, and a 1.8-fold increase was observed in the rate of renal DNA synthesis in vivo (not statistically significant due to high variability between animals). Histopathological lesions were also observed in rats from this group, occurring in the tubular epithelial cells of the inner and middle cortex. Lesions were characterized as degenerative and regenerative changes and included loss of cytoplasm, nuclear pyknosis, increased basophilia, mitotic activity and increased cellular debris located within the tubular lumen. No changes were observed in rats given 0.2 mg/kg-day (NOAEL value). The LOAEL for this study was 20 mg/kg-day.

Renal DNA repair was increased 1.27-fold and 1.54-fold (two trials) in rats given in a single oral dose of 20 mg/kg-day HCBD, as compared to controls. DNA alkylation was also observed in these rats. HCBD did not cause mutagenicity in Salmonella or unscheduled DNA synthesis in isolated rat hepatocytes.

Harleman and Seinen (1979) — Harleman and Seinen (1979) conducted a 2-week dietary study, a dietary reproduction study and a 13-week oral gavage study to evaluate the potential toxicity of HCBD in Wistar rats. In the 2-week dietary study, rats (24/sex/group) were exposed to 0, 50, 150 or 450 ppm HCBD in the diet for 14 days. Using reference values for body weight and food consumption in weanling Wistar rats (male body weight 0.053 kg, female body weight 0.052 kg, food consumption of 0.008 kg/day for both males and females) (U.S. EPA, 1988), daily dose estimates were calculated to be 0, 8, 23 or 68 mg/kg-day for male rats and 0, 8, 23 or 69 mg/kg-day for female rats. Body weights were measured at the beginning and end of the study. Liver and kidney weights were recorded at necropsy and histopathology of these organs was evaluated. Body weight was decreased in all HCBD treatment groups of female rats (10-33% decrease) and in the two highest dose groups of male rats (21 and 31% decrease at 150 or 450 ppm, respectively). Relative kidney weights were significantly increased in the two highest dose groups of male and female rats exposed to HCBD (21-28% increase in males, 7-22% increase in females). Absolute kidney weights were not reported. Histopathology findings demonstrated dose-related kidney lesions occurring in all exposed animals. These lesions were described as degeneration of the tubule epithelial cells, especially in the straight limbs of the proximal tubules located in the outer zone of the medulla. The LOAEL for the 2-week dietary study was 8 mg/kg-day (50 ppm). A NOAEL value was not identified.

In the reproduction study, female Wistar rats (six females/group) were exposed to 0, 150 or 1500 ppm for 18 weeks (4 weeks prior to mating and a 3-week mating period with untreated males). The number of pups/litter and the pup body weights were measured at partuition and the pups were culled to eight per litter. Offspring body weights were measured at PND 10 and 20 and necropsy of the adult females was conducted at 18 weeks. Organ weights were recorded for the heart, liver, kidneys, spleen, brain, adrenals, thymus and thyroid. Histopathology was performed for these organs and the lungs, pancreas, digestive tract (six segments), urinary bladder, axillary and mesenteric lymph nodes, trachea, spinal cord, and femoral nerve. No conception occurred for female rats exposed to a dietary concentration of 1500 ppm HCBD. Progressive weight loss was seen in rats from this group and an unsteady gait, hind limb weakness and ataxia occurred by 6 weeks of exposure to HCBD. Necropsies were performed during week 10, due to the moribund condition of the animals. Gross examination revealed large

pale kidneys and extensive tubule degeneration was seen by histopathology. Proliferation of bile duct epithelial cells in the liver and fragmentation and demyelination of single fibers of the femoral nerve were also seen.

Five out of six rats in the 150 ppm dose group were fertile with a mean litter size similar to control rats. The birth weight of pups from this treatment group was lower than controls (16% decrease) and a decreased pup body weight was also observed at weaning (19% decrease). The resorption quotient was low for both control and treated rats and no gross malformations of offspring were observed. At 18 weeks, the body weight of treated dams was 15% lower than control dams (231 g for controls, 196 g for 150 ppm group). The average daily dose for the 150 ppm group was estimated to be 11 mg/kg-day, assuming a body weight of 0.196 g and a food consumption rate of 0.015 kg/day (calculated using equations in U.S. EPA, 1988). Relative kidney weight was increased by 22%, as compared with controls. Absolute kidney weights were not reported. HCBD treatment caused histopathological changes in the kidney of dams, including hypercellularity of tubule epithelial cells and hydropic necrosis of cells in the straight limbs of the proximal tubules. Treatment related effects were not observed in other organs or tissues. A LOAEL of 11 mg/kg-day (150 ppm) was derived for the reproduction study, based on maternal effects (decreased weight gain, increased kidney weights and altered kidney histopathology) and decreased fetal body weight.

In the 13-week subchronic study, 60 rats/sex/group received 0, 0.4, 1.0, 2.5, 6.3 or 15.6 mg/kg-day HCBD in arachid oil for 13 weeks. Blood samples were collected at 8 weeks (six rats/sex/group) and analyzed for hemoglobin, hematocrit, RBC count, and total and differential leukocytes. Blood samples were also obtained at study termination and tested for total protein, albumin, globulin, BUN, AST, AP and γ-glutamyl transferase activities. At 10 weeks, urine samples were collected from six rats/sex/group during the 2^{nd}-6^{th} and 7^{th}-21^{st} hour deprivation period of food and water. Urine samples were analyzed for glucose, protein, hemoglobin, ketones and pH. Urine volume and osmolarity were used as measures of the concentrating ability of the kidney. At termination, organs were weighed (heart, liver, kidney, spleen, brain, adrenals, thymus, thyroid and gonads) and a gross pathological examination was carried out on all animals. Key organs and tissues from the control and high-dose groups were processed for histopathological examination (heart, liver, kidneys, spleen, brain, adrenals, thymus, thyroid, lungs, pancreas, six sections of digestive tract, urinary bladder, axillary and mesenteric lymph nodes, trachea, spinal cord, femoral nerve, prostate, skeletal muscle, aorta, Harder's gland, skin, sternum and bone marrow). The HCBD content of kidney, liver and fat samples from high-dose female rats was measured by gas chromatography (GC) analysis.

Body weight gain and food consumption were significantly reduced at the two highest doses in male and female rats, as compared to controls (13-30% decrease in body weight at 6.3 mg/kg-day; >40% reduction in body weight at 15.6 mg/kg-day). No clinical chemistry changes were observed at any dose levels. Following a 21-hour deprivation period, a dose-related decrease in urine osmolarity was observed in female rats that were given HCBD at doses greater than 2.5 mg/kg-day. An increase in urine volume was also observed in the two highest dose groups of female rats (6.3 and 15.6 mg/kg-day), indicating an impairment in the urine concentrating ability of the kidney. No change in urine volume was observed in treated male rats, and urine osmolarity was increased only in high-dose males (15.6 mg/kg-day). Relative

kidney weight was significantly increased in all dose groups of male rats (7-31% increase) and in the two highest dose groups of female rats (19 and 32% increase for 6.3 and 15.6 mg/kg-day respectively). The relative liver weight was increased 8-24% in male rats at doses greater than 1 mg/kg-day, but was only increased in the high-dose group in female rats by 11%. In male rats, the relative weights of the brain and the spleen were increased in the 15.6 mg/kg-day dose group by 45 and 18%, respectively. Increases in the relative weight of the brain and spleen were seen at the two highest doses in female rats (21-29% increase for brain, 14-21% increase for spleen). The relative weight of the gonads was increased in male rats (12 and 40% increase at 6.3 and 15.6 mg/kg-day respectively). Absolute organ weights were not reported in the study.

Though no changes in organ appearance were seen on gross pathological examination, marked histopathological lesions were evident in the kidney, most notably in the proximal tubule, where increases in hypercellularity, necrosis and the incidence of hyperchromatic nuclei were evident. Epithelial cells in treated rats were described as small, basophilic and finely vacuolated, with large hyperchromatic nuclei. At the highest dose in female rats, changes were seen in both the straight and convoluted portions of the tubules with focal necrosis and a thin or absent epithelial brush border. The changes were similar, but less severe, in females given 6.3 mg/kg-day and were limited to the straight portion of the proximal tubule. The brush border was generally unchanged and few necrotic cells were present in the tubule lumen. Only minor effects were seen in female rats given 2.5 mg/kg-day, although tubule epithelial cells were observed to contain enlarged hyperchromatic nuclei. Kidney effects were less pronounced in male rats, as compared to females. Kidney lesions in male rats given 15.6 mg/kg-day were similar in severity to those seen in female rats given 6.3 mg/kg-day. Liver effects were seen in male rats only at doses greater than 6.3 mg/kg-day and consisted of a basophilic granulation of hepatocytes. The GC analysis of kidney, liver and adipose tissue from high-dose female rats revealed no HCBD accumulation in the liver or kidney and only slight accumulation in the fat. NOAEL and LOAEL values of 1.0 and 2.5 mg/kg-day, respectively, were derived from this study based on kidney toxicity in female rats.

Kociba et al. (1977) — Kociba et al. (1977) administered HCBD (99% purity) mixed in feed to 39-40 Sprague-Dawley rats/sex/group for 2 years. Ninety rats of each sex were used as controls. Rats were observed frequently (not quantified) for clinical signs of toxicity. Feed consumption and body weights were monitored in 15 rats/sex/group weekly for the first 3 months of the study, and then for 1 week out of each month until study termination. The average doses for either sex were calculated by the authors to be 0, 0.2, 2 or 20 mg/kg-day. Subsets of animals (5-6/sex/group) were sampled for blood and urine after approximately 12, 22 (males only) or 24 (females only) months. The hematological parameters evaluated included packed cell volume (PCV), RBC count, hemoglobin concentration, total WBC count and differential WBC count. The urinary parameters evaluated were specific gravity, pH and the presence or absence of glucose, protein, ketones, bilirubin and occult blood. Urinary creatinine, coproporphyrin and uroporphyrin were also determined from a urine sample collected over 24 hours. After 1 year, blood samples were collected from an additional subset of animals (five/sex from the high-dose and control groups only) for clinical chemistry determinations. Serum samples were also collected from all rats necropsied at the end of the study. Serum chemistry parameters included blood urea nitrogen (BUN), and AP and ALT activity. All rats (moribund and terminal sacrifice) were necropsied and pieces of all major organs and lesions were excised

and preserved. For the rats that were killed during the course of the study, histopathological evaluation was performed for the liver, kidney, stomach and all tumors or gross lesions. For those sacrificed at term, a fully comprehensive list of organs and tissues was examined microscopically for 10 females at each dose level, 10 males from the 0 and 2 mg/kg-day dose levels and 3 males at the 20 mg/kg-day dose level that survived to term. Histopathology evaluation for the remaining rats that were killed at study termination (including all male rats from the 0.2 mg/kg-day group) was limited to the kidneys, liver, stomach and any gross lesions observed during necropsy.

There was a reduction in body weight gain at the high dose level in both male and female Sprague-Dawley rats that appeared not to be associated with the sporadic changes in food consumption. This decrease in body weight was evident by 27 days in female rats and 69 days in male rats and body weight remained low throughout most of the study. A significant increase in mortality (approximately 20%, estimated from graph) occurred during the last 2 months of the study in male rats that ingested 20 mg/kg-day HCBD. Survival was not reduced in any other HCBD treatment group.

Compound-related changes in hematological parameters were limited to a 20% decrease in RBCs after 22 months in high dose male rats. Routine urinalysis parameters were not affected by HCBD treatment; however, the excretion of coproporphyrins was increased in high-dose male rats at 1 year, mid-dose female rats at 14 months and high-dose female rats at 2 years. No dose response or temporal trend was apparent from these data (see Table 2). A 57% decrease in the excretion of uroporphyrin was also seen in high-dose female rats after 2 years. Clinical chemistry parameters were generally not altered by HCBD treatment for 12 months or 2 years, with the exception of a decrease in ALT activity in high-dose (20 mg/kg-day) males at 12 months and low- and high-dose females (0.2 and 20 mg/kg-day, respectively) at 2 years. This finding in female rats was considered to result from an abnormally increased ALT activity in female control rats and was not considered to be treatment-related.

Table 2. Average Amounts of Coproporphyrins in Urine of Sprague-Dawley Rats in Response to HCBD in Feed (µg/24 hours) (Kociba et al., 1977)

HCBD in feed (mg/kg-day)	1 Year		14 Months		2 Years	
	Male	Female	Male	Female	Male	Female
0	10.2±8.5	5.0±1.3	13.1±3.0	5.6±2.4	6.8±1.8	4.5±2.4
0.2	14.2±2.6	4.7±2.1	13.0±3.8	6.2±3.3	7.1±2.3	5.4±0.8
2.0	18.8±2.4	8.9±5.2	18.3±4.0	10.6[a]±2.4	10.7±2.4	5.8±1.3
20.0	23.1[a]±11.8	9.4±3.5	17.7±12.5	8.4±2.5	14.0 ±9.5	12.3[a]±2.9

Values are means ±SD (n=5).
[a]$p<0.05$ as determined by ANOVA and Dunnett's test.

An increase in the absolute and relative weight of the kidneys was observed in male rats given 20 mg/kg-day HCBD for 22 months. An increase was also observed in relative, but not

absolute, testes weight; however, this may have been due to the observed decrease in body weight. A decrease in the absolute weight of the heart and liver and an increase in the relative weight of the brain and kidney were seen in high-dose female rats. Organ weights in the low- and mid-dose groups of male and female rats were similar to control. Histopathological examination revealed treatment-related kidney lesions in male and female rats consisting of tubular epithelial hyperplasia and proliferation, observed in the mid- and high-dose groups (2 and 20 mg/kg-day) (incidence data not provided) and tubular adenomas and adenocarcinomas in high-dose rats only. The histopathology findings in low-dose rats were similar to controls. The incidence of combined adenomas and carcinomas in kidney was 1/90, 0/40, 0/40 and 9/39 in males and 0/90, 0/40, 0/40 and 6/40 in females, for the control, low-, mid- and high-dose groups, respectively. Metastasis to the lung was noted in two cases. NOAEL and LOAEL values of 0.2 and 2 mg/kg-day, respectively, were derived from this study based on kidney lesions (tubular epithelial hyperplasia and proliferation) observed in male and female rats that ingested HCBD in the diet for 2 years.

Schwetz et al., 1977 — The same research group carried out a combined subchronic and reproductive study (Schwetz et al., 1977) in parallel to that of Kociba et al. (1977). Male and female Sprague-Dawley rats (10-12 males/treatment group, 17 male controls, 20-24 females/treatment group, 34 female controls) received 0, 0.2, 2.0 or 20 mg/kg-day HCBD (99% purity) in feed for 90 days prior to mating, throughout a 15-day mating period, and then through gestation and lactation. Blood and urine samples were collected from control and high-dose rats prior to the end of the study. At study termination, blood samples were taken from the dams prior to necropsy to measure levels of BUN, serum creatinine and ALT activity. The brain, heart, liver, kidneys and testes (males) were obtained from 10 adult rats/sex/group and organ weights were determined. For the controls and high-dose groups, many organs and tissues were excised, weighed and processed for histopathological examination (brain, heart, liver, kidneys, testes, eye, pituitary, thyroid gland, parathyroid gland, trachea, esophagus, lungs, aorta, stomach, pancreas, small intestine, colon, mesenteric lymph nodes, muscle, sciatic nerve, spinal cord, sternum, sternal bone marrow and adrenal gland). Histopathology was also carried out on kidney tissue excised from five animals from each exposure group. Standard indices of reproductive performance were evaluated, and weanling skeletons were examined after alcohol fixation and appropriate extraction and staining. Bone marrow was taken from four adults and four weanlings/sex/group for cytological examination.

No clinical signs were evident in any of the adults receiving HCBD. A decrease in food consumption was noted in high-dose male and female rats. Female rats from this group weighed significantly less than controls throughout the study (22% decrease in final body weight), while male body weights were sometimes, but not always, lower than controls (10% decrease in final body weight). There were no differences among the groups in any reproductive or survival parameters for the dams and neonates (percent pregnant, litter size, gestation survival index, sex ratio, duration of gestation); however, the mean weight of high-dose neonates was significantly reduced (13% decrease) in the 20 mg/kg-day group compared with controls at weaning (21 days of age). No gross abnormalities were observed in neonates at necropsy. Skeletal alterations were not evident in neonates at any dose level.

Among clinical chemistry parameters, BUN was decreased in male rats by 17 and 13% in the 0.2 and 2 mg/kg-day dose groups, respectively, but was similar to controls in the 20 mg/kg-day dose groups. Serum levels of creatinine and ALT did not differ from those of controls. Hematology and urinalysis results were not presented or discussed. A significant increase in the relative weights of the liver (male only, 26% increase) and kidney (27 and 19% increase in males and females, respectively) was observed at the highest dose of HCBD. Absolute liver and kidney weights were not different from control values in any treatment group. An increase in relative brain weight (31% increase) and a decrease in relative heart weight (24% decrease) were also observed in female rats from the 20 mg/kg-day dose group. No changes in absolute brain or heart weight were observed. Kidneys from male rats ingesting 2 or 20 mg/kg-day HCBD were described as roughened with a mottled cortex. No gross abnormalities were noted for female rat kidneys. Histopathological examination revealed renal tubular dilation and hypertrophy with foci of tubular epithelial degeneration and regeneration. The incidence of these kidney lesions in rats ingesting 0, 0.2, 2 or 20 mg/kg-day was 1/5, 0/5, 0/5 and 3/5 for male rats and 0/5, 0/5, 1/5 and 5/5 for female rats. No histopathological kidney lesions were evident in weanling rats. Although these findings are limited by the small number of animals examined for histopathological evaluation, NOAEL and LOAEL values of 0.2 and 2 mg/kg-day, respectively, were derived from this study, based on gross and microscopic kidney lesions in adults rats exposed to HCBD for 90 days prior to mating, 15 days during mating, and throughout gestation and lactation.

Kociba et al., 1971 - HCBD (99% pure) was administered to female Sprague-Dawley rats (4/group) in the diet for 30 days at doses of 0, 1, 3, 10, 30, 65, 100 mg/kg-day (Kociba et al., 1971). Rats were observed daily and feed consumption and body weight gain were recorded weekly throughout the study. Blood samples obtained during necropsy were analyzed for hematology parameters and ALT activity. Organ weights of heart, liver, kidney, spleen and brain were recorded and several organs and tissues were prepared for histopathology evaluation (heart, liver, kidney, spleen, brain, pituitary, thyroid, parathyroid, lung, adrenal, mesenteric lymph node, ovary uterus, stomach and intestinal tract). Clinical signs of toxicity were not observed during the study. The food consumption rate was significantly decreased in rats receiving HCBD doses greater than 30 mg/kg-day. The mean body weight values measured at 28 days were 4, 10, 22 and 28% lower than controls for the 10, 30, 65 and 100 mg/kg-day groups, respectively. A decrease in absolute organ weight was seen in the liver, heart and spleen of rats in the 65 and 100 mg/kg-day dose groups. Absolute kidney weight was increased at 3 mg/kg-day, but was similar to controls for all other treatment groups. An increase in relative organ weight (organ:body weight ratio) was seen in the brain, liver and kidneys of rats given 30, 65 or 100 mg/kg-day HCBD. Hematology results were considered to be within a normal range. No change is AST activity was observed. Gross findings revealed a depletion of abdominal fat deposits in rats given 65 or 100 mg/kg-day HCBD. Histopathology results showed hepatocellular swelling in rats given 100 mg/kg-day HCBD only (4/4 rats). Kidney lesions included tubular epithelial cell degeneration, single cell necrosis and regeneration in all rats (4/4) from the 30, 65 and 100 mg/kg-day dose groups. Liver and kidney lesions were not observed in control rats or in rats given 1 or 3 mg/kg-day (0/4 per group). NOAEL and LOAEL values of 10 and 30 mg/kg-day, respectively, were derived from this study based on renal lesions observed in female Sprague-Dawley rats.

Inhalation Exposure. Few studies were located regarding the toxicity of HCBD by inhalation exposure in animals. Saillenfait et al. (1989) conducted a developmental toxicity study in which groups of 24-25 pregnant Sprague-Dawley rats inhaled 0, 2, 5, 10 or 15 ppm of HCBD for 6 hours/day on days 6-20 of gestation. The pregnant rats were weighed prior to exposure on days 0 and 6 of gestation, and again prior to sacrifice on day 21 of gestation. After sacrifice, the uterus was removed from each female and examined for numbers of implantation and resorption sites and live and dead fetuses. Live fetuses were sexed, weighed and examined for external malformations and cleft palate. Half of the viable fetuses from each litter were examined for soft tissue alterations and the other half were examined for skeletal alterations. No deaths or changes in general behavior were noted for exposed females. There was a concentration-related reduction in maternal weight gain in animals exposed to HCBD. Weight gain was reduced by 8% at 2 ppm, 15% at 5 ppm, 12% at 10 ppm and 39% at 15 ppm. The difference from controls was statistically significant in the 5 and 15 ppm groups.

Mean numbers of implantations, total fetal loss, resorptions and live fetuses were similar in treated and control animals (Saillenfait et al., 1989). Incidence of pregnancy and fetal sex ratio were also unchanged by HCBD exposure. However, body weight of both male and female fetuses was significantly reduced in the 15 ppm group (decreased by 9.5 and 12.5% in males and females, respectively). External examination of fetuses did not find any abnormalities, and no major anomalies were found after skeletal and soft tissue examination. The only minor anomalies were a non-significant incidence of hydroureter at 15 ppm and a non-significant increase in the incidence of extra 14^{th} ribs at 10 ppm. Although there was a significant reduction in fetal weight at the greatest exposure to HCBD, there was no significant retardation of development (e.g., delayed ossification) and the change was accompanied by a reduction in maternal weight gain. This study identified a NOAEL of 2 ppm and a LOAEL of 5 ppm for maternal toxicity (decreased weight gain), and a NOAEL of 10 ppm and a LOAEL of 15 ppm for developmental effects (decreased fetal body weight).

Dow Chemical Company conducted a subchronic inhalation study of HCBD that was described by Torkelson and Rowe (1982), as follows: “small groups of rats, rabbits and guinea pigs exposed 7 hours/day, 100 times to 3 ppm in a 143 day period were adversely affected, but those exposed 129 times in 184 days to 1 ppm were not. The livers and kidneys of the animals exposed to 3 ppm were the organs most affected.” No further details of this study were located. Representatives from Dow have stated that a more detailed report of this study, which was conducted in the 1950s, is no longer available (Dow, 1992).

Respiratory irritation and renal effects were observed in short-term, repeated inhalation studies of HCBD in rats. Alderley Park SPF rats (four rats of each sex for each treatment) were exposed to concentrations of HCBD ranging from 5 to 250 ppm for durations up to 3 weeks (Gage, 1970). A day after exposure was terminated, animals were sacrificed and necropsied. The following organs were routinely examined microscopically for damage: lungs, liver, kidneys, spleen and adrenals. Blood and urine tests were normal for all treatments. At 250 ppm of HCBD (2 x 4 hours), irritation and breathing difficulties were observed (more pronounced in females). Necropsy showed degeneration of the middle renal proximal tubules and the adrenal cortex. At 100 ppm (6 hours/day, 5 days/week, 12 days) irritation and respiratory difficulties were observed; animals had poor condition and weight loss. Females had slight anemia and two

died. Necropsy showed enlarged adrenal glands and pale, enlarged kidneys with degeneration of the renal cortical tubules and epithelial regeneration. At 25 ppm (6 hours/day, 5 days/week, 3 weeks) respiratory difficulties and poor condition were observed. Females had diminished weight gain. At necropsy, kidneys were pale and enlarged with damage to the renal proximal tubules. Ten ppm (6 hours/day, 5 days/week, 3 weeks) produced diminished weight gain in females, but no organ damage. Exposure to 5 ppm (6 hours/day, 5 days/week, 3 weeks) caused no symptoms of toxicity or organ damage.

DeCeaurriz et al. (1988) assessed respiratory irritation and kidney damage after acute exposure of male Swiss OF_1 mice to HCBD. The respiratory rates of mice (six mice per treatment group) were measured during a 15-minute oronasal exposure to HCBD (83, 143, 155, 210 or 246 ppm) using individual body plethysmographs. The decreases in respiratory rate recorded for each concentration were used to calculate the concentration associated with a 50% decrease in respiratory rate (RD_{50}). The RD_{50} for HCBD was 211 ppm. In a previous study, DeCeaurriz et al. (1981) calculated the RD_{50} for a number of different chemicals. The RD_{50} for hexachlorobutadiene places it among the more potent irritants. For instance, the RD_{50} for phenol was 166 ppm and that of formaldehyde was 5.3 ppm, while the RD_{50} of toluene was 3373 ppm and that of xylene was 1467 ppm (DeCeaurriz et al., 1981).

Mice were also exposed to various concentrations of HCBD (2.75, 5, 10 and 25 ppm) or clean filtered air for 4 hours (DeCeaurriz et al., 1988). After a recovery period of 24 hours, the animals were sacrificed and their kidneys were examined microscopically for damaged tubules and alkaline phosphatase staining. There was a significant, concentration-related increase in nephrotoxicity associated with HCBD exposure. The percentage of altered renal tubular cross-sections increased from 4% in the 2.75 ppm group to 92% in the 25 ppm group (versus 0.2-1.5% in the corresponding control groups). The researchers estimated an EC_{50} of 7.2 ppm for kidney histopathology produced by HCBD. On the basis of these findings, the researchers concluded that the kidney is a more sensitive target for HCBD than the respiratory tract following acute inhalation exposure in the mouse. However, DeCeaurriz et al. (1988) did not perform a histopathological examination of the upper respiratory tract. A more recent evaluation of the applicability of sensory irritation tests (Bos et al., 1992) has described a number of compounds for which histopathological damage was observed at exposure levels more than 10 times lower than the RD_{50}.

Although respiratory tract effects of HCBD have not been studied following chronic exposure, it is reasonable to suspect that such effects may be important for this chemical. Nasal toxicity was a prominent finding in chronic bioassays of the structurally related chemical 2-chloro-1,3-butadiene (chloroprene) in rats and mice (NTP, 1998).

Other Studies

The mode of action for the kidney toxicity of HCBD has been described (reviewed in Green et al., 2003; NTP, 1991; Dekant et al., 1990). HCBD is metabolized in the liver to a glutathione conjugate, which is further transformed by γ-glutamyl transpeptidase and dipeptidase enzymes to yield a cysteine conjugate. The cysteine conjugate may be cleaved by the renal β-lyase enzymes to give toxic thiol intermediates that cause localized kidney damage. The

cysteine conjugate may also be metabolized by N-acetyl transferase to form a N-acetyl cysteine conjugate that can be excreted in the urine or converted back to the cysteine conjugate by acylase enzymes. The nephrotoxicity of HCBD is linked to the relative activity of the renal β-lyase enzyme and the amount of cysteine conjugate available to be metabolized to toxic intermediates.

Green et al. (2003) compared the key metabolic steps for HCBD in both rat and human tissues. Human liver and kidney samples were obtained as excess tissue during organ transplantation. In vitro studies were used to evaluate glutathione conjugation of HCBD (in liver microsomes), the metabolism of cysteine conjugates by renal β-lyase (in kidney cytosol and mitochondria) or N-acetyl transferase (kidney microsomes) and the metabolism of the N-acetyl cysteine conjugate by acylase enzymes (kidney cytosol). The metabolic rates (Vmax) for each of these steps were lower in humans as compared to rats (5-fold lower for glutathione conjugation, 3-fold lower for β-lyase activity and 3.5-fold lower for N-acetyl transferase activity). Acylase enzyme activity was not detected in human kidney cytosol. The metabolic rate constants obtained for rats and humans were used in a physiologically-based pharmacokinetic (PBPK) model to quantify metabolism through the β-lyase pathway to form reactive intermediates. The uptake and distribution of HCBD was estimated in the PBPK model using measured partition coefficients and standard values for physiological parameters. The PBPK model predicted that metabolism by the β-lyase pathway is approximately 20-fold lower in humans than in rats exposed to the same inhalation concentration. The predicted decrease in the formation of β-lyase metabolites was related to decreased uptake of HCBD, lower glutathione transferase and β-lyase activities and the absence of acylase activity in human kidney. Comparable model predictions for the oral exposure route were not provided in this study.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC RfDs FOR HCBD

No data were located regarding the oral toxicity of HCBD in humans. Kidney toxicity was the primary effect of oral HCBD exposure in laboratory animals. Short-term studies (2-4 weeks in duration) demonstrated necrosis and degeneration of kidney tubules at high doses (>10 mg/kg-day) (Jonker et al., 1993; NTP, 1991; Yang et al., 1989; Harleman and Seinan, 1979; Kociba et al., 1971). Necrosis was less severe at lower doses and regeneration of kidney tubules was observed. In subchronic and chronic studies, the primary histopathological change observed was renal tubule regeneration, also characterized as hyperplasia and proliferation, and necrosis was not generally seen (NTP, 1991; Yang et al., 1989; Harleman and Seinen, 1979; Kociba et al., 1977, Schwetz et al., 1977). Kidney effects were most prevalent in the straight limbs of the proximal tubule in the outer zone of the medulla; however, the convoluted portions of the proximal tubule were also involved at high doses (Harleman and Seinen, 1979). The regenerative hyperplasia observed in tubule epithelial cells (NTP, 1991; Yang et al., 1989; Harleman and Seinen, 1979; Kociba et al., 1971) may be a response to HCBD-induced cell injury and/or may be a precursor to the renal neoplasms that were observed following chronic exposure (Kociba et al., 1977). The chronic and subchronic oral toxicity studies for HCBD are summarized in Table 3.

Table 3. Chronic and Subchronic Oral Toxicity Studies for HCBD

Species	Dose/Duration	NOAEL (mg/kg-day)	LOAEL (mg/kg-day)	Effect	Reference
B6C3F$_1$ mice	13-week dietary study; 0, 0.1, 0.4, 1.5, 4.9 or 16.8 mg/kg-day in males; 0, 0.2, 0.5, 1.8, 4.5 or 19.2 mg/kg/day in females	0.2	0.5	Renal tubule regeneration	NTP (1991); Yang et al. (1989)
Wistar rats	13-week oral gavage study; 0, 0.4, 1.0, 2.5, 6.3 or 15.6 mg/kg-day HCBD in arachid oil	1.0	2.5	Tubule epithelial cell with enlarged hyperchromatic nuclei; focal necrosis at higher doses	Harleman and Seinen (1979)
Sprague-Dawley rats	2-year dietary study; 0, 0.2, 2 or 20 mg/kg-day	0.2	2	Renal tubule hyperplasia and proliferation	Kociba et al. (1977)
Sprague-Dawley rats	Dietary study, 13 weeks premating, 15 day mating period and throughout gestation and lactation; 0, 0.2, 2 or 20 mg/kg-day	0.2	2	Renal tubule degeneration and regeneration	Schwetz et al. (1977)

The quantal Benchmark Dose (BMD) models in the BMD software package (U.S. EPA, 2007; Version 1.3.2) were fit to the female mouse renal tubule regeneration data in Table 1 (NTP, 1991; Yang et al., 1989). The gamma, log-probit, Weibull and log-logistic give virtually the same fit with indistinguishable Akaike Information Criterion (AIC). The BMD and BMDL10 values were all the same at 0.2 and 0.1 mg/kg-day, respectively. The Weibull had the best fit in the region of the BMR (lowest absolute scaled residual at 0.2 mg/kg-day, although the differences among the models are minimal (see Appendix 1). The 1st-order multistage fit adequately ($p = 0.37$) but had a much higher AIC than the aforementioned model fits. Therefore, the point of departure (POD) is set equal to the common BMDL10 of 0.1 mg/kg-day.

The **subchronic p-RfD of 1E-3 mg/kg-day** is based on the $BMDL_{10}$ of 0.1 mg/kg-day for renal tubule regeneration observed in a 13-week dietary study in mice (NTP, 1991; Yang et al., 1989). Kidney toxicity was also seen in a 13-week gavage study in rats at higher doses (Harleman and Seinen, 1979).

The subchronic p-RFD is derived by dividing the $BMDL_{10}$ of 0.1 mg/kg-day by a composite UF of 100, as follows:

Subchronic p-RfD	=	NOAEL/ UF
	=	0.1 mg/kg-day / 100
	=	**0.001 or 1E-3 mg/kg-day**

The composite UF of 100 includes factors of 3 ($10^{0.5}$) each for animal-to-human extrapolation and database deficiencies, and a factor of 10 for interindividual variability.

The interspecies UF of 3 was used to account for pharmacodynamic differences across species. The role of metabolism in HCBD-induced kidney toxicity is well established. Pharmacokinetic differences between the rat and the human were investigated by Green et al. (2003). In vitro studies were used to evaluate key steps in the metabolism of HCBD (glutathione conjugation in the liver, β-lyase, N-acetyl transferase and acylase enzyme activity in the kidney). The metabolic rate for each of these steps was lower in humans as compared to rats, suggesting that humans may be less sensitive to the kidney toxicity of HCBD (no pharmacokinetic adjustment was necessary). Although comparable in vitro metabolism data are not available for mice, the dose response data suggest that rats and mice are similarly sensitive to the kidney toxicity caused by HCBD. Given the large difference (20-fold) in predicted toxic metabolite formation in the PBPK model (Green et al., 2003), there is marginal justification for reducing UF_A to unity, despite the lack of information on toxicodynamic differences between rats (or mice) and humans. However, a somewhat limiting assumption is already made about the similarity of mice and rats for the metabolism of HCBD and there is no information on the relative *in vivo* abundance of key enzymes across species, only on specific activities. These limitations preclude further reduction of UF_A. The interspecies UF of 3 was therefore considered appropriate for both rats and mice.

The interindividual variability UF of 10 is used to account for variation in sensitivity within human populations because there is limited information on the degree to which humans of varying gender, age, health status or genetic makeup might vary in the disposition of, or response to, HCBD. A partial UF of 3 for database deficiencies is selected due to the lack of a multigeneration reproductive toxicity study. Prenatal and postnatal developmental toxicity studies are available for HCBD using the oral and inhalation exposure route (Field et al., 1990; Harleman and Seinen, 1979; Saillenfait et al., 1989). There was little assessment of the immune and nervous systems in the literature. With respect to the latter, Harleman and Seinen (1979) demonstrated neuropathy in rats at 1500 ppm (150 mg/kg-day) after 18 weeks of exposure. As this LOAEL is more than 3 orders-of-magnitude greater than the BMDL of 0.1 mg/kg-day, it is probably not much of a concern, either for the subchronic p-RfD or for longer periods of exposure relative to the chronic p-RfD.

Confidence in the critical study is medium. NTP (1991)/Yang et al. (1989) was a well-conducted, 13-week dietary study with relatively small number of animals (10/group). The critical effect (kidney lesions) was well studied. Limitations include lack of hematology and clinical chemistry and lack of histopathology on organs other than the kidney. NOAEL and LOAEL values were derived from the study based on kidney toxicity. Confidence in the database is medium. An additional subchronic oral gavage study showed similar effects at doses that were approximately 5-fold higher (Harleman and Seinen, 1979). Limitations of the database

include the lack of multigeneration reproductive toxicity data. Prenatal and postnatal developmental toxicity studies have been performed (Field et al., 1990; Harleman and Seinen, 1979; Saillenfait et al., 1989). Overall, confidence in the subchronic p-RfD is medium.

The **chronic p-RfD of 1E-3 mg/kg-day** is also based on renal tubule regeneration in the 13-week dietary study in mice (NTP, 1991; Yang et al., 1989), as the BMDL of 0.1 mg/kg-day is lower than the NOAEL of 0.2 mg/kg-day for renal effects in the 2-year rat study (Kociba et al., 1977). The incidence of kidney lesions was not reported for each dose group in the 2-year study. Therefore, benchmark dose modeling could not be used to derive a point of departure. Therefore, the chronic p-RfD is derived by dividing the subchronic $BMDL_{10}$ of 0.1 mg/kg-day by a composite UF of 100, as follows:

Chronic p-RfD	=	NOAEL / UF
	=	0.1 mg/kg-day / 100
	=	**0.001 or 1E-3 mg/kg-day**

The composite UF of 100 includes factors of 3 ($10^{0.5}$) each for animal-to-human extrapolation and database deficiencies, and a factor of 10 for interindividual variability. A subchronic-to-chronic uncertainty factor is not required because the chronic 2-year rat study indicates that prolonged exposure does not result in toxicity at lower doses than for subchronic exposure. The interspecies UF of 3 was used to account for pharmacodynamic differences across species as described previously for the subchronic p-RfD. The interindividual variability UF of 10 is used to account for variation in sensitivity within human populations because there is limited information on the degree to which humans of varying gender, age, health status or genetic makeup might vary in the disposition of, or response to, HCBD. A partial UF of 3 for database deficiencies is selected due to the lack of a multigeneration reproductive toxicity study. Prenatal and postnatal developmental toxicity studies are available for HCBD using the oral and inhalation exposure route (Field et al., 1990; Harleman and Seinen, 1979; Saillenfait et al., 1989).

Overall confidence in the chronic p-RfD is medium for the same reasons as for the subchronic p-RfD.

FEASIBILITY OF DERIVING PROVISIONAL CHRONIC AND SUBCHRONIC RfCs FOR HCBD

The available data are inadequate to support derivation of a provisional inhalation RfC for HCBD. Reduced body weight gain was observed in dams following inhalation exposure in the Saillenfait et al. (1989) rat developmental toxicity study (NOAEL of 2 ppm). However, this study included limited evaluation of non-developmental endpoints, no examination of the respiratory tract and no assessment of kidney toxicity, the critical effort for oral exposure. The only other inhalation study of appropriate duration to consider for RfC derivation is the Dow Chemical study briefly described by Torkelson and Rowe (1982). However, the existing description of this study provides insufficient information to assess the study, and attempts to obtain more detailed information about the study were unsuccessful.

The database for oral toxicity of HCBD is more extensive than that for inhalation toxicity (ATSDR, 1994). The kidney appears to be the most sensitive target of HCBD by oral exposure. However, due to overt signs of respiratory irritation and uncertainty regarding the relative sensitivity of the respiratory tract as compared to the kidney with long-term inhalation exposure, an RfC is not derived.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR HEXACHLOROBUTADIENE

The carcinogenicity assessment, which includes an oral slope factor and inhalation unit risk, is on IRIS (U.S. EPA, 1991b).

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APPENDIX

BENCHMARK DOSE MODELING RESULTS (BMDS, VERSION 1.3.2): FEMALE MOUSE RENAL TUBULE REGENERATION DATA (NTP, 1991; Yang et al., 1989; see Table 1 in main document).

BMDS MODEL RUN: Weibull

~~~~~~

The form of the probability function is:

P[response] = background + (1-background)*[1-EXP(-slope*dose^power)]

Power parameter is restricted as power >=1

Total number of observations = 6
Total number of records with missing values = 0
Maximum number of iterations = 250
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008

Default Initial (and Specified) Parameter Values
Background = 0.0454545
Slope = 0.158569
Power = 1

Asymptotic Correlation Matrix of Parameter Estimates

(*** The model parameter(s) -Background
have been estimated at a boundary point, or have been specified by the user,
and do not appear in the correlation matrix)

	Slope	Power
Slope	1	0.93
Power	0.93	1

Parameter Estimates

Variable	Estimate	Std. Err.
Background	0	NA
Slope	23.743	24.862
Power	3.36618	1.18082
~~~~~~

NA - Indicates that this parameter has hit a bound
implied by some inequality constraint and thus
has no standard error.

Analysis of Deviance Table

Model	Log(likelihood)	Deviance	Test DF	P-value
Full model	-6.50166			
Fitted model	-6.50166	1.54667e-011	4	1
Reduced model	-38.1909	63.3784	5	<.0001

AIC: 17.0033

Goodness of Fit

Dose	Est._Prob.	Expected	Observed	Scaled Size	Residual
0.0000	0.0000	0.000	0	10	0
0.2000	0.1000	1.000	1	10	-3.148e-006
0.5000	0.9000	9.000	9	10	2.358e-006
1.8000	1.0000	10.000	10	10	0
4.5000	1.0000	10.000	10	10	0
19.2000	1.0000	10.000	10	10	0

Chi-square = 0.00 DF = 4 P-value = 1.0000

Benchmark Dose Computation

Specified effect = 0.1

Risk Type = Extra risk

Confidence level = 0.95

BMD = 0.2

BMDL = 0.0992532

BMDS MODEL RUN: gamma

~~~~~~

The form of the probability function is:

P[response]= background+(1-background)*CumGamma[slope*dose,power],
where CumGamma(.) is the cummulative Gamma distribution function

Power parameter is restricted as power >=1

Total number of observations = 6
Total number of records with missing values = 0
Maximum number of iterations = 250
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008

Default Initial (and Specified) Parameter Values
Background = 0.0454545
Slope = 2.65597
Power = 1.3

Asymptotic Correlation Matrix of Parameter Estimates

(*** The model parameter(s) -Background
have been estimated at a boundary point, or have been specified by the user,
and do not appear in the correlation matrix)

	Slope	Power
Slope	1	0.98
Power	0.98	1

Parameter Estimates

Variable	Estimate	Std. Err.
Background	0	NA
Slope	24.0026	14.4638
Power	8.1874	4.77621

NA - Indicates that this parameter has hit a bound
implied by some inequality constraint and thus
has no standard error.
~~~~~~

Analysis of Deviance Table

Model	Log(likelihood)	Deviance	Test DF	P-value
Full model	-6.50166			
Fitted model	-6.50166	1.40514e-009	4	1
Reduced model	-38.1909	63.3784	5	<.0001

AIC: 17.0033

Goodness of Fit

Dose	Est._Prob.	Expected	Observed	Scaled Size	Residual
0.0000	0.0000	0.000	0	10	0
0.2000	0.1000	1.000	1	10	3.123e-005
0.5000	0.9000	9.000	9	10	1.059e-005
1.8000	1.0000	10.000	10	10	1.26e-005
4.5000	1.0000	10.000	10	10	0
19.2000	1.0000	10.000	10	10	0

Chi-square = 0.00 DF = 4 P-value = 1.0000

Benchmark Dose Computation

Specified effect = 0.1

Risk Type = Extra risk

Confidence level = 0.95

BMD = 0.200001

BMDL = 0.110583

BMDS MODEL RUN: log-logistic

~~~~~~

The form of the probability function is:

P[response] = background+(1-background)/[1+EXP(-intercept-slope*Log(dose))]

Slope parameter is restricted as slope >= 1

Total number of observations = 6
Total number of records with missing values = 0
Maximum number of iterations = 250
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008

User has chosen the log transformed model

Default Initial Parameter Values
background = 0
intercept = 1.20641
slope = 1

Asymptotic Correlation Matrix of Parameter Estimates

(*** The model parameter(s) -background
have been estimated at a boundary point, or have been specified by the user,
and do not appear in the correlation matrix)

	intercept	slope
intercept	1	0.93
slope	0.93	1

Parameter Estimates

Variable	Estimate	Std. Err.
background	0	NA
intercept	5.53548	2.00046
slope	4.8069	1.61467

NA - Indicates that this parameter has hit a bound
implied by some inequality constraint and thus
has no standard error.
~~~~~~

Analysis of Deviance Table

Model	Log(likelihood)	Deviance	Test DF	P-value
Full model	-6.50166			
Fitted model	-6.50405	0.00478203	4	1
Reduced model	-38.1909	63.3784	5	<.0001

AIC: 17.0081

Goodness of Fit

Dose	Est._Prob.	Expected	Observed	Scaled Size	Residual
0.0000	0.0000	0.000	0	10	0
0.2000	0.0997	0.997	1	10	0.003517
0.5000	0.9006	9.006	9	10	-0.006035
1.8000	0.9998	9.998	10	10	0.04836
4.5000	1.0000	10.000	10	10	0.005346
19.2000	1.0000	10.000	10	10	0.0001635

Chi-square = 0.00 DF = 4 P-value = 1.0000

Benchmark Dose Computation

Specified effect = 0.1

Risk Type = Extra risk

Confidence level = 0.95

BMD = 0.200154

BMDL = 0.122758

BMDS MODEL RUN: log-probit

~~~~~~

The form of the probability function is:

P[response] = Background
+ (1-Background) * CumNorm(Intercept+Slope*Log(Dose)),

where CumNorm(.) is the cumulative normal distribution function

Slope parameter is restricted as slope >= 1

Total number of observations = 6
Total number of records with missing values = 0
Maximum number of iterations = 250
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008

User has chosen the log transformed model

Default Initial (and Specified) Parameter Values
background = 0
intercept = -0.328418
slope = 1

Asymptotic Correlation Matrix of Parameter Estimates

(*** The model parameter(s) -background
have been estimated at a boundary point, or have been specified by the user,
and do not appear in the correlation matrix)

	intercept	slope
intercept	1	0.93
slope	0.93	1

Parameter Estimates

Variable	Estimate	Std. Err.
background	0	NA
intercept	3.22052	1.03364
slope	2.7973	0.834194

NA - Indicates that this parameter has hit a bound
implied by some inequality constraint and thus
has no standard error.
~~~~~~

Analysis of Deviance Table

Model	Log(likelihood)	Deviance	Test DF	P-value
Full model	-6.50166			
Fitted model	-6.50167	1.14638e-005	4	1
Reduced model	-38.1909	63.3784	5	<.0001

AIC: 17.0033

Goodness of Fit

Dose	Est._Prob.	Expected	Observed	Scaled Size	Residual
0.0000	0.0000	0.000	0	10	0
0.2000	0.1000	1.000	1	10	2.746e-005
0.5000	0.9000	9.000	9	10	-4.763e-005
1.8000	1.0000	10.000	10	10	0.002394
4.5000	1.0000	10.000	10	10	7.437e-007
19.2000	1.0000	10.000	10	10	0

Chi-square = 0.00 DF = 4 P-value = 1.0000

Benchmark Dose Computation

Specified effect = 0.1

Risk Type = Extra risk

Confidence level = 0.95

BMD = 0.200001

BMDL = 0.125663

BMDS MODEL RUN: Multistage (1st-order)

~~~~~~

The form of the probability function is:

P[response] = background + (1-background)*[1-EXP(
-beta1*dose^1)]

The parameter betas are restricted to be positive

Total number of observations = 6
Total number of records with missing values = 0
Total number of parameters in model = 2
Total number of specified parameters = 0
Degree of polynomial = 1

Maximum number of iterations = 250
Relative Function Convergence has been set to: 1e-008
Parameter Convergence has been set to: 1e-008

Default Initial Parameter Values
Background = 1
Beta(1) = 4.46022e+018

Asymptotic Correlation Matrix of Parameter Estimates

(*** The model parameter(s) -Background
have been estimated at a boundary point, or have been specified by the user,
and do not appear in the correlation matrix)

Beta(1)

Beta(1) 1

Parameter Estimates

Variable	Estimate	Std. Err.
Background	0	NA
Beta(1)	2.51013	0.870953

NA - Indicates that this parameter has hit a bound
implied by some inequality constraint and thus
has no standard error.
~~~~~~

Analysis of Deviance Table

Model	Log(likelihood)	Deviance	Test DF	P-value
Full model	-6.50166			
Fitted model	-9.83272	6.66212	5	0.247
Reduced model	-38.1909	63.3784	5	<.0001

AIC: 21.6654

Goodness of Fit

Dose	Est._Prob.	Expected	Observed	Size	Chi^2 Res.
i: 1					
0.0000	0.0000	0.000	0	10	0.000
i: 2					
0.2000	0.3947	3.947	1	10	-1.234
i: 3					
0.5000	0.7149	7.149	9	10	0.908
i: 4					
1.8000	0.9891	9.891	10	10	1.011
i: 5					
4.5000	1.0000	10.000	10	10	1.000
i: 6					
19.2000	1.0000	10.000	10	10	0.000

Chi-square = 5.43 DF = 5 P-value = 0.3661

Benchmark Dose Computation

Specified effect = 0.1

Risk Type = Extra risk

Confidence level = 0.95

BMD = 0.0419741

BMDL = 0.0265053

6-16-05

Provisional Peer Reviewed Toxicity Values for

Iron and Compounds
(CASRN 7439-89-6)

Derivation of a Chronic Inhalation RfC

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

6-16-05

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR IRON (CASRN 7439-89-6) AND COMPOUNDS
Derivation of an Inhalation RfC

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions (or the EPA HQ Superfund Program) sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

An RfC for iron is not listed on IRIS (U.S. EPA, 2001) and was not considered by the RfD/RfC Work Group (U.S. EPA, 1995). The HEAST (U.S. EPA, 1997) reported that data regarding iron were inadequate for quantitative risk assessment. The CARA list (1991, 1994a) includes a Health Effects Assessment for Iron and Compounds (U.S. EPA, 1984) that reported negative epidemiological studies (no association between excess mortality or respiratory diseases and occupational exposure to iron oxide dusts) and no available subchronic or chronic inhalation studies in animals. In March, 2004, a literature search was also conducted using TOXLINE, MEDLINE, Chemical Abstracts and Biological Abstracts data bases.

Occupational exposure limits have been established for soluble iron salts and iron oxide, as well as for organic iron compounds not covered in this issue paper. The ACGIH (1991a,

2001) has adopted a TLV-TWA, NIOSH (2001a) has established a REL-TWA, and OSHA (2001a, 2001b) has adopted a construction industry PEL-TWA of 1 mg/m^3, as Fe, to reduce the likelihood of irritation to eyes, skin, and respiratory tract from exposure to aerosols or mists of soluble iron salts (ferrous and ferric sulfates and chlorides, and ferric nitrate). The ACGIH (1991b, 2001) has adopted a TLV-TWA and NIOSH (2001b) has established a REL-TWA of 5 mg/m^3, as Fe, for dust and fume of ferric oxide (Fe_2O_3) to protect against siderosis, a benign pneumoconiosis. OSHA (2001c) has adopted a PEL-TWA of 10 mg/m^3 for ferric oxide fume, to protect against accumulation of iron dust in the lungs.

Iron has not been the subject of a toxicological profile by ATSDR (2001) or the WHO (2001). Monographs by IARC (1972, 1984, 1987), a toxicity review on iron (Grimsley, 2001), and the NTP (2001a, 2001b) management status report and chemical repository summary were consulted for information relevant to inhalation toxicity of iron and inorganic iron compounds. The following computer searches, performed in April, 1993, were screened to identify additional pertinent studies not discussed in review documents: TOXLINE (1983-April, 1993), CANCERLIT (1990 - April, 1993), MEDLINE (1991 - April, 1993), TSCATS, RTECS, and HSDB. Update literature searches were conducted in September, 2001 in TOXLINE (1992-September, 2001), CANCERLIT (1992- September, 2001), MEDLINE (1992-September, 2001), TSCATS, RTECS, DART/ETICBACK, EMIC/EMICBACK, HSDB, GENETOX, and CCRIS.

REVIEW OF PERTINENT LITERATURE

Human Studies

A number of studies have examined the relationship between respiratory disease and inhalation exposure to iron compounds for workers employed in hematite mining or other iron-related occupations, such as welding or steel-making (U.S. EPA, 1984; IARC, 1972, 1984; Grimsley, 2001). However, since these studies involved concurrent exposure to silica and other metals, they are not suitable for the health risk assessment of iron or iron compounds. The literature search did not discover any studies that examined subchronic or chronic inhalation exposures of humans to quantified levels of iron or iron compounds alone.

In a case-control study of cancer incidence, a Swedish male worker population (1958-1971) was reported to have had a high exposure to iron oxides from the production of sulfuric acid from pyrite (FeS_2) (Axelson and Sjöberg, 1979). The workers were exposed to iron oxide (Fe_2O_3) along with 1-2% copper, 0.01-0.1% arsenic, nickel and cobalt as impurities. Exposure in the workroom was estimated as approximately 50-100 mg/m^3, and the particle size as 25% below 10 μm and 5-10% below 5 μm. However, there were no measurements of exposure levels or particle size, and exposure durations were not reported. No cases of siderosis were known from the plant.

Animal Studies

Inhalation studies for iron compounds in animals include a chronic study of hamsters exposed to ferric oxide (Fe_2O_3) dust (Nettesheim et al., 1975) and a 2-month study in rabbits exposed to aerosols of ferric chloride (Johansson et al., 1992).

In a cancer study, groups of male Syrian hamsters (132 per group) were exposed to filtered air or Fe_2O_3 (analytic grade) dust at a concentration of 40 mg/m^3, 6 hours/day, 5 days/week for life (Nettesheim et al., 1975). The particle size had a geometric mean diameter of 0.11 μm. In addition, two satellite groups (15 hamsters per treatment) were sacrificed, three animals at a time, at 2, 4, 8, 12, and 104 weeks, so that the accumulation of iron in the lung from inhaled Fe_2O_3 could be compared to background iron concentrations in heme. The animals were examined daily, before and after each exposure, for clinical signs, and body weights were recorded monthly. All animals except those cannibalized (<2%) were necropsied. Histological analyses were performed on the major organs, including heart, trachea, lungs, and nasal cavities. Examination of the satellite groups demonstrated the gradual increase in iron accumulation in the lung, reaching a total of 10 mg per lung at 104 weeks. Histological examination revealed iron deposits in the lungs and tracheal and bronchial lymph nodes of all exposed animals. Diffuse and focal alveolar fibrosis was also frequently observed in the lungs of treated animals. Results for the histological endpoints were not reported quantitatively. In this study, 40 mg/m^3 is a LOAEL for respiratory effects (alveolar fibrosis) in hamsters exposed to Fe_2O_3 dust.

Groups of 8 male rabbits (strain not reported) were exposed to aerosols of 0, 1.4, or 3.1 mg/m^3 of iron as $FeCl_3$ 6 hours/day, 5 days/week for 2 months (Johansson et al., 1992). At termination, the upper left lung lobe was examined by light microscopy, pieces of the lower left lung were analyzed by electron microscopy or used for phospholipid analysis, and the right lung was lavaged to obtain macrophages for morphological and functional analyses. The mass median aerodynamic diameter of the aerosols was ~1 μm as measured with an impactor. Treatment had no effect on survival. Lungs were spotted with black in 7/8 high-iron rabbits, in 2/8 low-iron rabbits, and in 0/8 controls. The absolute weight of the left lower lobe of the lung was significantly elevated compared to controls in the high-iron group. Exposure-related histopathology was observed in the lungs. In the high-exposure group, the lungs contained naked granulomas [large nodules (≥ 1 mm) of densely packed granular macrophages], accumulations of granular macrophages in terminal bronchioles, and foci of interstitial lymphocytic inflammatory reaction. Small granulomas were observed in one low-iron and one control rabbit. Accumulations of normal and granular macrophages were observed in the alveoli of exposed rabbits. In the control group, normal lung tissue contained some small accumulations of macrophages with occasional small inflammatory reaction. The high exposure group had a significantly higher density of alveolar type II cells than the controls. Ultrastructural analysis of macrophages showed a significantly higher number of abnormal cells, cells with enlarged lysosomes, and black inclusions in cells in both exposed groups; the high-iron group had higher

percentages of cells with laminar inclusions or with smooth cell surfaces. In functional tests, macrophages from the high-exposure group showed significantly elevated phagocytic activity, but no significant increase in oxidative metabolic activity (superoxide generation). Total phospholipids were elevated in the high-exposure group, but, as indicated by the lack of increase in phosphatidyl cholines or the percentage of 1,2-dipalmitoylphosphatidylcholine, the amount of surfactant was unchanged. In this study, the low concentration of 1.4 mg/m^3 is a NOAEL and the high concentration of 3.1 mg/m^3 is a LOAEL for adverse lung effects (nodular granulomas ≥ 1 mm in diameter, abnormal macrophages) in rabbits exposed to ferric chloride aerosols. Because of its focus on alveolar macrophage effects, this study provided no information regarding clinical signs of toxicity, body weight changes, clinical biochemistry, nasopharyngeal effects or histology of any other tissue besides the lung.

Other Studies

In a cancer study, groups of Syrian golden hamsters (24 per sex per group) received intratracheal instillations of 0 or "a maximum dose"[1] of 3 mg of Fe_2O_3 dust in 0.2 ml of saline once a week for 15 weeks, and then were observed up to week 120 (Stenbäck et al., 1976). Analysis by the sedimentation method demonstrated that 98% of the particles were less than 10 µm in diameter. Animals were weighed weekly and autopsied. Organs with gross lesions and the larynx, trachea, bronchi, and lungs were examined histologically. Treatment with ferric oxide had no effect on survival and no effect on body weight except during the final weeks of survival (data not shown). Deposited iron oxide was grossly visible as dark patches on the lung surface. Histologically, dust accumulations surrounded by cellular infiltrates were observed in the peribronchial region. Interstitial fibrosis was observed occasionally, but distinct inflammatory changes were rare. Results for the nonneoplastic endpoints were not reported quantitatively.

FEASIBILITY OF DERIVING A PROVISIONAL RfC FOR IRON

No adequate human or animal inhalation data are available for exposure to iron or inorganic iron compounds. The epidemiological study of Axelson and Sjöberg (1979) did not provide quantitative measures of exposure and did not characterize noncancer endpoints. Although Nettesheim et al. (1975) reported diffuse and focal alveolar fibrosis in the lungs of hamsters chronically exposed to iron oxide by inhalation at a concentration of 40 mg/m^3, the lack of incidence data prevents an evaluation of the significance of these findings. The subchronic study of Johansson et al. (1992), in which rabbits were exposed to aerosols of ferric chloride for

[1]The authors provided no further information regarding dosage. It is not clear whether animals were given amounts lower than 3 mg on some occasions.

2 months, demonstrated a NOAEL of 1.4 mg/m^3 and a LOAEL of 3.1 mg/m^3 for respiratory effects (granuloma nodules greater than 1 mm diameter in the lungs). However, this study does not meet the minimum standards for an inhalation bioassay as stipulated by the U.S. EPA (1994b) guidelines for derivation of an inhalation reference concentration. Inadequacies of the study include relatively small group sizes, relatively short study duration, and the failure to examine a sufficient array of endpoints. Thus this study is inadequate for the purposes of deriving a p-RfC for iron. Consequently, the available data are insufficient for derivation of a p-RfC.

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7-29-05

Provisional Peer Reviewed Toxicity Values for

Iron and Compounds
(CASRN 7439-89-6)

Derivation of a Carcinogenicity Assessment

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

7-29-05

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR IRON (CASRN 7439-89-6) AND COMPOUNDS
Derivation of a Carcinogenicity Assessment

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions (or the EPA HQ Superfund Program) sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

A cancer assessment for iron is not listed on IRIS (U.S. EPA, 2005a), the HEAST (U.S. EPA, 1997), or the Drinking Water Standards and Health Advisories list (U.S. EPA, 2000), and was not considered by the CRAVE Work Group (U.S. EPA, 1995). The CARA list (1991, 1994) includes a Health Effects Assessment for Iron and Compounds (U.S. EPA, 1984) that assigned iron and its compounds to weight-of-evidence Group C, possible human carcinogen. This assessment was based on conflicting evidence of lung tumors following occupational inhalation exposure to ferric oxide (mixed exposure), and injection-site tumors in one patient and in mice treated with iron-dextran. IARC (1972, 1987) assigned ferric oxide to Group 3, not classifiable as to its carcinogenicity to humans based on inadequate data in humans (increased incidence of lung cancer following occupational exposure to iron dusts in mixtures) and apparently negative

evidence for carcinogenicity in mice, hamsters and guinea pigs exposed by inhalation or intratracheal instillation. For ferric oxide dust and fume, the ACGIH (1991, 2001) lists an A4 notation, not classifiable as a human carcinogen; this is based on mixed exposure studies in humans and primarily negative studies in animals. In March, 2004, a literature search was also conducted using TOXLINE, MEDLINE, Chemical Abstracts and Biological Abstracts data bases.

Iron has not been the subject of a toxicological review by ATSDR (2001) or the WHO (2001). Monographs by IARC (1972, 1984, 1987), a toxicity review on iron (Grimsley, 2001), and the NTP (2001a, 2001b) management status report and chemical repository summary were consulted for information relevant to the carcinogenicity of iron and inorganic iron compounds. The following computer searches, performed in April, 1993, were screened to identify additional pertinent studies not discussed in review documents: TOXLINE (1983-April, 1993), CANCERLIT (1990 - April, 1993), MEDLINE (1991 - April, 1993), TSCATS, RTECS, and HSDB. Update literature searches were conducted in September, 2001 in TOXLINE (1992-September, 2001), CANCERLIT (1992- September, 2001), MEDLINE (1992-September, 2001), TSCATS, RTECS, DART/ETICBACK, EMIC/EMICBACK, HSDB, GENETOX, and CCRIS.

REVIEW OF PERTINENT LITERATURE

Human Studies

Oral Exposure

Because iron is an essential element, the NAS (2001) has established guidelines for daily dietary intakes, based on gender, age, and physiological status, that are designed to avoid adverse effects of deficiency and excess. Individuals of northern European descent who are affected by hereditary hemochromatosis, an autosomal, recessive disorder, are not protected by these guidelines. These individuals exhibit excessive absorption of dietary iron, which results in abnormally high accumulations of iron in liver and brain tissues. When the liver consequently develops cirrhosis, the risk of developing primary hepatocellular carcinoma increases significantly. It is not clear whether these findings are relevant to excess iron intake by the general population.

Bird et al. (1996) investigated the association between plasma ferritin and iron intake and the development of adenomatous polyps, which are intermediate markers for colorectal cancer. The study population consisted of men and women between the ages of 50 and 75 years old who underwent routine screening by flexible sigmoidoscopy at one of two medical centers during 1991-1993. Individuals with cancer, inflammatory bowel disease, or familial polyposis were excluded. Cases (300 men and 167 women) were subjects diagnosed for the first time with one

or more histologically confirmed adenomatous polyps. Controls (331 men and 167 women) had no history of polyps and none discovered at sigmoidoscopy. Cases and controls were matched by sex, age (± 5 years), date of sigmoidoscopy (± 3 months), and medical center. Plasma ferritin levels, hematocrit, and certain nutritional indicators (carotenoids, ascobate, folate) were measured in blood samples drawn 6 months after examination. Iron intakes for the year preceding sigmoidoscopy were estimated by means of a semiquantitative food frequency questionnaire. After controlling for possible confounding factors, subjects with high plasma ferritin levels (>289 μg/L) had a multivariate-adjusted odds ratio for colorectal polyps of 1.5 (95% confidence interval (C.I. = 1.0-2.3) compared to subjects with low/normal levels (73-141 μg/L). The pattern for iron intake was U-shaped. Compared with subjects consuming an adequate amount of iron (11.6-13.6 mg/day), multivariate-adjusted odds ratios for colorectal polyps in men were 1.6 (95% C.I. = 1.1-2.4) for intakes below 11.6 mg/day and 1.4 (95% C.I.= 0.9-2.0) for intakes above 27.3 mg/day. The highest odds ratio of 2.1 (95% C.I. = 1.3-3.5) was found after further adjustment for smoking for men at the lowest level of iron intake. The association between iron intake and colorectal polyps disappeared when exposure group class of reaction was based on dietary intake alone (i.e., high iron supplementation ignored). The authors concluded that there was a weak positive association between iron exposure and colorectal polyps that may increase the risk of colorectal cancer but note that some factor in supplementation may have been responsible for the effect.

Inhalation Exposure

Most studies of cancer incidence following occupational exposure to iron dust are excluded from consideration because of confounding exposures to silica, radon daughters, soot, asbestos, or other types of metals in the study populations (U.S. EPA, 1984; IARC, 1972, 1984, 1987).

A case-control study examined cancer incidence in a Swedish male worker population (1958-1971) with a high exposure to iron oxides from the production of sulfuric acid from pyrite (FeS_2) (Axelson and Sjöberg, 1979). The workers were exposed to iron oxide (Fe_2O_3) along with 1-2% copper, 0.01-0.1% arsenic, nickel and cobalt as impurities. Exposure in the workroom was estimated as approximately 50-100 mg/m^3, and the particle size as 25% below 10 μm and 5-10% below 5 μm. No cases of siderosis were known from the plant. The Swedish National Cancer Register was consulted for locating cases of cancer that could have been caused by environmental exposure; the study examined cancers of the stomach, liver, lung, kidney, and bladder, and hematological malignancies. Each cancer case was matched with two controls from the local population register by matching for sex, age, and residency in the same or adjacent neighborhood block. Company files were searched to determine the length of exposure; those with less than 5 months of exposure were considered to be nonexposed. The study found no association between exposure to iron oxides and any of the selected types of cancer.

Animal Studies

Oral Exposure

Groups of F344 rats (50 per sex per group) were given ferric chloride ($FeCl_3 \cdot 6H_2O$) in drinking water at concentrations of 0, 0.25, or 0.5% (weight/volume) for 104 weeks, and then given distilled water for an 8 week recovery period (Sato et al., 1992). The intake of ferric chloride was reported to be 0, 169.7, or 319.7 mg/kg-day for males and 0, 187.9, or 336.0 mg/kg-day for females. The iron intakes were 0, 58.4, or 110 mg/kg-day in males and 0, 64.6, or 115.6 mg/kg-day in females. Rats were observed daily for clinical signs and mortality. Body weights were measured once a week for 13 weeks and every fourth week thereafter. All rats dying prematurely and survivors at week 112 were examined for gross and microscopic neoplastic and non-neoplastic lesions. There were dose-related decreases in drinking water intake and terminal body weight in both sexes. These may have been related to reduced palatability. Survival in both sexes was not significantly affected by exposure to ferric chloride. No increases in tumor incidence were observed in rats exposed to ferric chloride for two years.

Inhalation Exposure

Groups of male Syrian hamsters (132 per group) were exposed to filtered air or Fe_2O_3 (analytic grade) dust at a concentration of 40 mg/m^3, 6 hours/day, 5 days/week for life (Nettesheim et al., 1975). The particle size had a geometric mean diameter of 0.11 μm. In addition, two satellite groups (15 hamsters per treatment) were sacrificed, three animals at a time, at 2, 4, 8, 12, and 104 weeks, so that the accumulation of iron in the lung from inhaled Fe_2O_3 could be compared to background iron concentrations in heme. The animals were examined daily, before and after each exposure, for clinical signs; body weights were recorded monthly. All animals except those cannibalized (<2%) were necropsied. Histological analyses were performed for the major organs, including heart, trachea, lungs, and nasal cavities. Examination of the satellite groups demonstrated a gradual increase in iron accumulation in the lung, reaching a total of 10 mg per lung at 104 weeks. Exposure to Fe_2O_3 had no effect on survival or body weight gain and did not increase the incidence of tumors. The authors concluded that inhalation of Fe_2O_3 was not carcinogenic to hamsters.

Groups of Syrian golden hamsters (24 per sex per group) received intratracheal instillations of 0 or 3 mg[1] of Fe_2O_3 dust in 0.2 ml of saline once a week for 15 weeks, and then were observed up to week 120 (Stenbäck et al., 1976). Analysis by the sedimentation method demonstrated that 98% of the particles were less than 10 μm in diameter. Animals were weighed

[1]The authors characterized the treatment as a 'maximum dose of 3 mg'. It is not clear whether the hamsters received lower doses on some occasions.

weekly and autopsied. Organs with gross lesions and the larynx, trachea, bronchi, and lungs were examined histologically. Treatment with ferric oxide had no effect on survival and did not affect body weight except during the final weeks of survival (data not shown). Treatment did not induce tumors of the respiratory tract and the incidence of forestomach papillomas in the treatment group was less than in the control group.

Other Studies

Genotoxicity

Genotoxicity assays of inorganic iron salts were primarily negative in bacteria, but were more often positive in mammalian systems. Iron did not induce reverse mutations in *Salmonella typhimurium* strains TA98, TA102, TA1535, or TA1537, with or without activation (Wong, 1988). Ferric chloride and ferrous sulfate tested negative in strains TA98, TA100, TA1535, TA1537, and TA1538 with or without metabolic activation (Shimizu et al., 1985; Dunkel et al., 1999). Ferrous sulfate also tested negative in strains TA97 and TA102, with or without activation (Fujita et al., 1994), but positive in TA1537 and TA1538 (U.S. EPA, 1984). Ferrous and ferric chloride did not induce DNA repair in *Bacillus subtilis* (rec assay) (Leifer et al., 1981). Ferrous sulfate increased the frequency of mutations at the TK locus of mouse L5178Y lymphoma cells, with or without metabolic activation, but only at high concentrations that were likely to be cytotoxic; ferric chloride only increased the frequency of TK mutations when tested with metabolic activation (Dunkel et al., 1999). Ferrous sulfate did not induce sister chromatid exchanges *in vitro* (Ohno et al., 1982). DNA-protein cross-links were generated in mammalian cells cultured in the presence of ferrous iron (Altman et al., 1995). Single- and double-strand DNA breaks were produced in supercoiled plasmid DNA (Toyokuni and Sagripanti, 1992) and in isolated rat liver nuclei (U.S. EPA, 1984) treated with ferrous or ferric chloride. No breakage was detected electrophoretically in Chinese hamster ovary cell DNA treated with ferrous chloride (U.S. EPA, 1984). In a model of oxidative damage within cells, ferrous sulfate, in the presence of hydrogen peroxide, was demonstrated to induce double-strand breaks and intra-strand cross-links in DNA *in vitro* (Lloyd and Phillips, 1999).

Cell transformation

Iron compounds have yielded variable results in studies of cell transformation *in vitro*. Particles of magnetite (Fe_3O_4) induced transformation of cultured a Chinese hamster lung cell line (V_{79}), but only at cytotoxic concentrations (Elias et al., 1995). Ferrous chloride and ferrous sulfate induced cell transformation in viral-enhanced Syrian hamster embryo (SA7/SHE) cells (U.S. EPA, 1984).

Mechanistic Studies

Adverse effects of iron are thought to be related to the formation of reactive oxygen species via the Fenton reaction (Henle and Linn, 1997). Hydrogen peroxide can react with ferrous ion, resulting in the conversion to ferric ion and the production of hydroxyl radicals. Ferric ion can also react with hydrogen peroxide, producing superoxide radical. Reactive oxygen species may react with DNA. However, because of the complex homeostatic mechanisms involved in iron transport and metabolism, unbound ferrous iron is not likely to be present except in conditions of excessive iron intake.

PROVISIONAL WEIGHT-OF-EVIDENCE CLASSIFICATION

U.S. EPA (1984) classified iron and its compounds, including ferric dextran, as possible human carcinogens (Group C). This assessment was based on reports associating an increased incidence of lung cancer with exposure to hematite dust (confounded by coincident exposures to tobacco, alcohol, silica, soot, and fumes of other metals), inconsistent reports of lung tumors in animals exposed by inhalation or tracheal instillation to ferric oxide, and reports of injection site tumors in one patient injected with iron dextran and in mice injected with iron dextran or saccharated iron oxide. The current PPRTV assessment excludes organic forms of iron and studies in which the levels of impurities are significant.

Results of the case-control study by Bird et al. (1996) provide evidence of a weak association between elevated iron intake or high plasma ferritin (a measure of body stores) and the prevalence of adenomatous colorectal polyps, a possible precursor to colorectal cancer. Weaknesses of this study include the 6-month period between examination and ferritin measurements, and the possible recall errors affecting the dietary questionnaire for the previous year. In addition, the association between iron intake and colorectal polyps was stronger at low iron intake and not related to dietary (i.e., environmental) intake. Although the association between cirrhotic hereditary hemochromatosis and hepatocellular carcinoma is well established, the evidence for dietary iron intake and hepatic cancer in the general population was characterized by the NAS (2001) as inconclusive. In a chronic rat assay, Sato et al. (1992) found no evidence of carcinogenicity of ferric chloride ingested in drinking water at concentrations up to 0.5%. In summary, the evidence for carcinogenicity of ingested inorganic iron compounds in humans and animals is inadequate.

Evidence from the case-control study of Axelson and Sjöberg (1979) suggests that inhaled iron oxide may not be carcinogenic to humans. However, uncertainty remains because levels of exposure were not measured, the durations of exposure were not reported, and individuals exposed for up to 5 months were categorized as 'nonexposed.' In addition, the lack of reported cases of siderosis in the workplace suggests that the exposure levels may have been

lower than estimated. Thus, the evidence for carcinogenicity of inhaled iron oxide in humans is considered inadequate. Results of the study of Nettesheim et al. (1975) indicate that chronic inhalation exposure to iron oxide at a concentration of 40 mg/m^3 is not carcinogenic to hamsters. This finding is supported by the negative results for carcinogenicity of iron oxide administered by intratracheal instillation to hamsters for 15 weeks (Stenbäck et al., 1976). However, as both hamster studies used single exposure concentrations, the possibility of carcinogenicity at higher exposure levels cannot be disregarded.

Following the U.S. EPA (2005b) guidelines for carcinogen risk assessment, the available data are inadequate for an assessment of the human carcinogenic potential of inhaled iron oxide or ingested iron chloride.

QUANTITATIVE ESTIMATES OF CARCINOGENIC RISK

Derivation of quantitative estimates of cancer risk for ingested or inhaled iron or iron oxide is precluded by the absence of adequate data demonstrating carcinogenicity.

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Provisional Peer Reviewed Toxicity Values for

Iron and Compounds
(CASRN 7439-89-6)

Derivation of Subchronic and Chronic Oral RfDs

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISONAL PEER REVIEWED TOXICITY INFORMATION FOR IRON (CASRN 7439-89-6) AND COMPOUNDS
Derivation of Subchronic and Chronic Oral RfDs

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions or the EPA Headquarters Superfund Program sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI

INTRODUCTION

A reference dose (RfD) for iron is not available on the Integrated Risk Information System (IRIS) (U.S. EPA, 2006) or the Drinking Water Standards and Health Advisories list (U.S. EPA, 2005). The Health Effects Assessment Summary Tables (HEAST) (U.S. EPA, 1997) reported that data regarding iron were inadequate for quantitative risk assessment. The Chemical Assessment and Related Activities (CARA) list (1991, 1994) includes a Health Effects Assessment (HEA) for Iron and Compounds (U.S. EPA, 1984) that found no reliable quantitative oral toxicity data. Iron has not been the subject of a toxicological review by the Agency for Toxic Substances Disease Registry (ATSDR) (2005) or the World Health Organization (WHO) (2005). Monographs by the International Agency for Research on Cancer (IARC) (1972, 1987), toxicity reviews by Jacobs (1977), Bothwell et al. (1979), Lauffer (1991) and Grimsley (2001), a review on dietary iron by the National Academy of Sciences (NAS) (2001), and the National Toxicology Program (NTP) (2001, 2005) management status report and chemical repository summary were consulted for relevant information. The NAS (2001) derived a Tolerable Upper Intake (TUI) level of 45 mg iron/day. The TUI is based on a minimal LOAEL of 70 mg/day (60 mg iron as ferrous fumerate plus 11 mg/day of dietary iron) identified by Frykman et al. (1994) for gastrointestinal effects and an uncertainty factor of 1.5 for use of a minimal LOAEL; a higher

uncertainty factor was not used since the nature of the observed gastrointestinal effects was considered to be self-limiting. The U.S. Food and Drug Administration (FDA) promulgated a Rule in 1997 for labeling of iron-containing dietary supplements for the prevention of accidental poisoning in children (U.S. FDA, 1997). The Rule, as modified in 2003, does not contain specific exposure limits (U.S. FDA, 2003). In general, the FDA follows the NAS guidance on exposure limits for toxicity of essential elements, such as iron. Previous literature searches were conducted through September, 2001 as follows: TOXLINE (oral and inhalation toxicity and cancer from 1983 - September, 2001); CANCERLIT (1990 - September, 2001); MEDLINE (1991 - September, 2001); TSCATS, RTECS, DART/ETICBACK, EMIC/EMICBACK, HSDB, GENETOX, and CCRIS. Update literature searches were performed in October, 2005 in MEDLINE, TOXLINE (NTIS subfile), TOXCENTER, TSCATS, CCRIS, DART/ETIC, GENETOX, HSDB, RTECS and Current Contents.

REVIEW OF PERTINENT LITERATURE

Iron is an essential element and deriving a risk assessment value for such chemicals poses a special problem in that the dose-adversity curve is "U-shaped". Thus, the risk value must be protective against deficiency as well as toxicity. The NAS (2001) has established guidelines for iron intake that take into account physiological differences during different life stages. For non-breast-fed infants aged 0-6 months, the NAS (2001) established a daily adequate intake (AI) for iron of 0.27 mg/day (0.04 mg/kg-day for infants 2-6 months old) based on the daily amount of iron secreted in human milk; breast-fed infants typically receive only 0.15 to 0.3 mg Fe/day. The NAS (2001) Dietary Reference Intakes (DRIs) for children are as follows: 11 mg/day (1.2 mg/kg-day) for infants between the ages of 7 and 12 months, 7 mg/day (0.54 mg/kg-day) for children aged 1-3 years, 10 mg/day (0.45 mg/kg-day) for ages 4-8 years, 8 mg/day (0.2 mg/kg-day) for ages 9-13 years and 11 mg/day (0.17 mg/kg-day) for boys and 15 mg/day (0.26 mg/kg-day) for girls aged 14-18 years. The DRI for men aged 19 years and above is 8 mg/day (0.11 mg/kg-day). The DRI for non-pregnant women is 18 mg/day (0.29 mg/kg-day) for ages between 19 and 50 years and 8 mg/day (0.13 mg/kg-day) for ages 51 years and older. The DRI for pregnant women is 27 mg/day (0.37 mg/kg-day for those aged 14-18 years and 0.35 mg/kg-day for those aged 19-50 years). The DRI during lactation is 10 mg/day (0.18 mg/kg-day) for women aged 14-18 years and 9 mg/day (0.15 mg/kg-day) for women aged 19-50 years.

According to the Centers for Disease Control and Prevention (CDC, 1998; CDC, 2005), iron deficiency is one of the most common known forms of nutritional deficiency. Its prevalence is highest among young children and women of childbearing age, particularly pregnant women. In children, iron deficiency causes developmental delays and behavioral disturbances, and in pregnant women, it increases the risk for a preterm delivery and delivering a low-birthweight baby. Young children are at great risk of iron deficiency because of rapid growth and increased iron requirements. Iron deficiency can occur due to lack of iron in the diet. If this continues, anemia results. Anemia is a manifestation of iron deficiency when it is relatively severe. Iron deficiency anemia significantly impairs mental and psychomotor development in infants and children. Although iron deficiency can be reversed with treatment, the reversibility of the mental and psychomotor impairment is not yet clearly understood. Thus, prevention and treatment need to be emphasized more than detection. In addition, iron deficiency increases a child's

susceptibility to lead toxicity. Lead replaces iron in the absorptive pathway when iron is unavailable.

In humans and other animals, levels in the body are regulated primarily through changes in the amount of iron absorbed by the gastrointestinal mucosa. The absorption of dietary iron is influenced by body stores, by the amount and chemical nature of iron in ingested food and by a variety of dietary factors that increase or decrease the availability of iron for absorption (Hillman, 2001; Santi and Masters, 2001). Iron contained in meat protein (hemoglobin and myoglobin) is absorbed intact without first being broken down to elemental iron. Non-heme iron must first be reduced to ferrous iron (Fe^{2+}) before it can be absorbed. Ferrous iron is transported across intestinal mucosal cells by active transport with the rate of transport inversely related to body iron stores. Depending upon the iron status of the body, iron is stored bound to ferritin within mucosal cells and macrophages in the liver, spleen and bone, or is transported in the plasma bound to transferrin. Serum levels of ferritin and transferrin, along with several red blood cell parameters, can be used clinically to evaluate iron balance. Although iron absorption is regulated, excessive accumulation of iron in the body resulting from chronic ingestion of high levels of iron cannot be prevented by intestinal regulation and humans do not have a mechanism to increase excretion of absorbed iron in response to elevated body levels (NAS, 1989, 2001).

Human Studies

Acute Exposure

Information on acute oral toxic doses of iron in humans is available from numerous case reports of ingestion by children, but values vary because it is difficult to obtain accurate estimates of the amount taken in most overdose situations. Reviews of these case reports indicate that doses in the range of 200-300 mg iron/kg are generally considered lethal (Arena, 1970; Krenzelok and Hoff, 1979; NRC, 1979; Engle et al., 1987; Mann et al., 1989; Klein-Schwartz et al., 1990).

Therapeutic Studies

Ferrous salts are administered orally for the therapeutic treatment of iron deficiency. The oral absorption of ferrous iron supplements is considered to be essentially the same for all ferrous salts (e.g., sulfate, fumarate, succinate and gluconate) and is approximately three times greater than that of ferric (Fe^{3+}) salts (Hillman, 2001); thus, ferric iron is not used therapeutically. Constipation and other gastrointestinal effects, including nausea, vomiting, diarrhea and gastrointestinal pain are commonly associated with administration of oral ferrous salt supplements (Hillman, 2001; Santi and Masters, 2001). Severity of effects is variable, ranging from mild to severe, and depends upon dose and individual susceptibility. The onset of symptoms typically occurs at the initiation of treatment and continues throughout the duration of treatment. Although there is no indication that the severity of gastrointestinal effects varies over the course of treatment, severity is decreased in some patients when iron supplements are administered with food (Hillman, 2001; Santi and Masters, 2001). For most patients, iron deficiency is reversed within six months of treatment, thus limiting the duration of exposure.

The mechanism of iron-induced gastrointestinal toxicity is not established, although it is postulated that adverse effects are due to irritant effects of the free iron ion on the gastric muscosa (Liguori, 1993). The role of absorbed iron in the development of gastrointestinal adverse effects is unknown. The adverse effects of exposure to oral iron supplements has been investigated in several studies (Blot et al., 1981; Brock et al., 1985; Coplin et al., 1991; Fryklman et al., 1994; Hallberg et al., 1966; Liguori, 1993).

Frykman et al. (1994) evaluated the adverse effects of daily oral therapy with iron fumarate in a double-blind, crossover, placebo-controlled study in Swedish male [n=25; mean age 45 years (range 40-52)] and female [n=23; mean age 41 years (range 34-45)] adult blood donors. Study subjects were administered 60 mg elemental iron as a daily dose of iron fumarate for one month, with each study subject serving as their own placebo control. Compared to the placebo treatment period, the percentage of subjects reporting constipation (placebo 20%, ferrous fumarate 35%, $p<0.05$) and total gastrointestinal symptoms (nausea, obstipation, gastric pain and diarrhea (placebo 14%, ferrous fumarate 25%, $p<0.01$) was significantly increased during ferrous fumarate treatment. Although the severity of gastrointestinal effects was graded as minor in most study subjects, four subjects withdrew from the study due to severe gastrointestinal symptoms associated with iron fumarate. In a matched group of 49 adults taking a daily combination supplement of porcine-derived heme-iron and iron fumarate containing a total daily supplement of 18 mg iron/per day, the frequency of gastrointestinal symptoms was not increased compared to placebo. No differences in therapeutic efficacy, as measured by serum ferritin and hemoglobin levels, were observed between the non-heme iron and heme-iron treatment groups.

Adverse effects of four oral iron preparations were evaluated in 1496 male and female adult blood donors in a series of double-blind, placebo controlled trials (Hallberg et al., 1966). The following treatment groups were compared: (1) placebo (195 subjects) and ferrous sulfate (198 subjects; 222 mg elemental iron/day); (2) placebo (199 subjects), ferrous sulfate (120 subjects; 222 mg elemental iron/day), ferrous fumarate (118 subjects, 222 mg elemental iron/day), and ferrous gluconate (120 subjects; 222 mg elemental iron/day); and (3) placebo (200 subjects), ferrous sulfate (195 subjects; 180 mg elemental iron/day), ferrous glycine sulfate (200 subjects; 180 mg elemental iron/day), and ferrous gluconate (196 subjects; 180 mg elemental iron/day). Treatments were administered for two weeks. For all iron treatments, the frequency of adverse gastrointestinal effects was significantly increased compared to the matched placebo group ($p<0.05$). Adverse effects reported include constipation, diarrhea, heartburn, nausea and epigastric pain. No statistically significant differences in the frequency of adverse effects were observed between iron treatments for subjects receiving 222 mg elemental iron/day or between iron treatments for subjects receiving 180 mg elemental iron/day. In the seven iron treatment groups, the percentage of subjects reporting gastrointestinal effects ranged from 22.9% in the 222 mg ferrous sulfate group to 31.5% in the 222 mg ferrous gluconate group. In the three placebo treatment groups, the percentage of subjects reporting gastrointestinal effects ranged from 12.4 to 13.6%. Although statistical comparisons were not made between the 180 and 222 mg iron/day treatments, the frequency of adverse effects was similar for all iron treatment groups.

Gastrointestinal symptoms were reported in pregnant women treated daily with oral iron supplements containing 105 mg elemental iron and 500 mg ascorbic acid (55 women) or 105 mg

elemental iron, 500 mg ascorbic acid and 350 mg folic acid (54 women) during the third trimester of pregnancy (Blot et al., 1981). The form of iron was not reported. No placebo control group was included. Gastrointestinal adverse effects reported include nausea, diarrhea, constipation and epigastric pain. Approximately 16% of all patients reported minor gastrointestinal symptoms, 14% reported severe effects and 6% stopped treatment due to adverse effects. Adverse effects occurred with approximately the same frequency in the two treatment group, although data were not reported.

The tolerability of iron protein succinylate and ferrous sulfate were compared in a double-blind clinical trial in 1095 patients with iron deficiency (Liguori, 1993). Patients received daily treatment with a controlled-release formulation of ferrous sulfate containing 105 mg elemental iron (64 males and 485 females) or iron protein succinylate containing 120 mg elemental iron (55 males and 491 females) for 60 days. No placebo control group was included. In the ferrous sulfate group, 26.3% of patients reported adverse gastrointestinal effects (heartburn, epigastric pain, constipation and abdominal pain), compared to 11.5% of patients treated with iron protein succinylate ($p<0.05$).

The adverse effects of oral treatment with a conventional ferrous sulfate tablet were compared to a ferrous sulfate wax-matrix tablet in a single-blind, parallel group study in 543 subjects (Brock et al., 1985). No placebo control group was included. Subjects were administered a conventional ferrous sulfate table containing 50 mg elemental iron/day (272 subjects) or a sulfate wax-matrix tablet containing 50 mg elemental iron/day (271 subjects) for 56 days. Approximately 45% of subjects treated with conventional ferrous sulfate reported moderate-to-severe gastrointestinal effects, including abdominal discomfort, nausea, vomiting, constipation and diarrhea, compared to approximately 17% of subjects treated with the ferrous sulfate wax-matrix preparation, a statistically significant difference ($p<0.001$).

The tolerability of ferrous sulfate (50 mg elemental iron/day) and bis-glycino iron II (50 mg elemental iron/day) was compared in a double-blind, crossover trial in 42 women (Coplin et al., 1991). The treatment period for each iron supplement was two weeks. No placebo treatment period was included. The frequency of adverse gastrointestinal effects (abdominal pain, bloating, constipation, diarrhea and nausea) was similar for the two treatments, with 54% and 59% of subjects reporting gastrointestinal symptoms during treatment with bis-glycino iron II and ferrous sulfate, respectively. The difference between treatments was not statistically significant.

Effects of iron therapy on the upper gastrointestinal tract were evaluated in 14 healthy volunteers [13 women, 1 man; mean age 29 years (range: 24-48 years)] who were instructed to ingest 325 mg tablets of ferrous sulfate (119.5 mg elemental iron) three times/day before meals (358.5 mg elemental iron/day) for 2 weeks (Laine et al., 1988). Evaluation consisted of a gastrointestinal symptom survey, qualitative (Hemoccult) and quantitative (HemoQuant; mg mercury/g stool) testing for fecal blood loss, endoscopy of the upper gastrointestinal tract and histological examination of pinch biopsies of the gastric body, antrum and duodenum. Based on actual average ingestion of 2.5 tablets/day (2-week study) and 2.6 tablets/day (1-week study) and a reference human body weight of 70 kg (U.S. EPA, 1987), the estimated doses consumed by the subjects were 4.3 and 4.4 mg iron/kg-day, respectively, in addition to dietary iron. Compared to

baseline measurements in the two weeks prior to treatment, all subjects had significantly increased ($p<0.05$) dark brown-black stools and symptoms of nausea and vomiting during the treatment period, but not abdominal pain. Hemoglobin levels in stool did not change significantly after iron treatment. Endoscopic examination showed a significant ($p=0.003$) increase in abnormalities in the stomach, but not duodenum, after therapy. These changes consisted of erythema, small areas of subepithelial hemorrhage and solitary antral erosions in nine, six and two subjects, respectively, and were considered only minimally abnormal. No treatment-related histological changes were observed. Although it was speculated that the changes in the stomach could represent a mild form of iron poisoning, the investigators concluded that the treatment caused mild endoscopic abnormalities of uncertain clinical significance in the stomach. Evidence for iron overload (tissue biopsies or hematologic iron status indices) was not examined. Considering additional dietary exposure, an exposure level of about 4.3 mg/kg-day represents, at worst, a minimal LOAEL.

Adverse developmental effects in humans have not been associated with the ingestion of supplemental iron during pregnancy. As indicated above, NAS (2001) recommended that pregnant women supplement their diets with 27 mg iron/day (0.35 mg/kg-day). McElhatton et al. (1991) reported on 49 women who took an overdose of a simple iron preparation (53%) or iron with folate preparation (47%). In 48 of the women, the amount of iron ingested was known; 28 took > 1.2 g and the remainder took $\leq$ 1.2 g. There were 25 women who received chelation treatment with desferrioxamine (DFO) and 12 who received an emetic. Maternal toxicity, consisting of nausea, vomiting, hematoemesis, abdominal pain and diarrhea, was observed in 35 of the women. Two spontaneous abortions occurred and there were three premature deliveries. One of the spontaneous abortions and the premature deliveries were not related to the iron overdose. It is not known if the other spontaneous abortion occurring at 22 weeks (3 weeks after the overdose) was caused by the iron overdose. No conclusions on the developmental toxicity of iron can be made.

Chronic Exposure

While chronic iron toxicity occurs in people with genetic metabolic disorders resulting in excessive iron absorption or abnormal hemoglobin synthesis, or who receive frequent blood transfusions (Jacobs, 1977; Bothwell et al., 1979), there is a long-standing controversy as to whether a chronic overload due to oral intake is possible in individuals with a normal ability to control iron absorption (Hillman and Finch, 1985). Nevertheless, "the cumulative experience in human subjects suffering from iron overload of various etiologies strongly suggests that iron is noxious to tissues [when]...present in parenchymal cells...for a sufficiently long period of time" (Bothwell et al., 1979).

Looker et al. (1988) made comparisons of dietary iron intake and biochemical indices of iron status based on values taken from the second National Health and Nutrition Examination Survey (NHANES II) data base[1]. NHANES II was a probability sample of the noninstitutionalized U.S. population aged 6 months to 74 years, conducted between 1976 and

[1] The latest version of this data base, NHANES III (1984-1988) evaluated 30,000 subjects aged 2 months and above (NAS, 2001). Despite minor differences in the data sets, the conclusions drawn by Looker et al. (1988) based on NHANES II appear to be valid for the NHANES III data.

1980 by the National Center for Health Statistics. These data suggest that normal intake of iron by men 16-74 years old exceeds the DRI, and that iron intake is somewhat lower than the DRI for women younger than 51 years. Concomitant with the study of dietary intake, the NHANES II measured the iron status of these populations. The percent serum transferrin saturation, a measure of the residual capacity of the iron transport system to process potential variations in iron from dietary intake or catabolized body stores, ranged from 24% saturation for pre- and post-menopausal women not using iron supplements to 29% saturation for adult male supplement users. These values are within the normal range (20-40%). The Looker et al. (1988) evaluation of the NHANES II iron status data concerned iron deficiencies, only, and did not address iron overload directly. However, iron overload conditions would likely be evidenced by increased saturation of serum transferrin and increased serum ferritin concentrations, which were also within the normal range. Therefore, the corresponding dietary intakes are presumed to represent chronic NOAELs. Looker et al. (1988) estimated daily iron intakes ranging from 10.0 for elderly women to 18.7 mg/day for young adult men in the study population. These daily intakes correspond to a range of about 0.15 to 0.27 mg/kg-day, depending on assumptions of average body weight. Taking the highest intake level of 18.7 mg/day and a body weight of 70 kg, a NOAEL of 0.27 is established for chronic iron toxicity.

Hemosiderosis (or siderosis) and iron overload are increases in tissue iron or a general increase in iron stores without associated tissue damage (Bothwell et al., 1979; Jacobs, 1977). Hemochromatosis describes massive iron overload (15 g of body iron stores or greater) together with cirrhosis and/or other tissue damage attributable to iron. Although focal deposits of iron may occur in any part of the body where red cells are extravasated, the clinical syndrome of hemochromatosis typically involves damage to the hepatic parenchyma (particularly fibrosis), heart (cardiac dysfunction including failure) and endocrine glands (particularly hypogonadism). Pancreatic iron deposition is common and massive deposits may be associated with fibrosis and diabetes. A number of studies involving chronic oral administration of iron to animals have been designed in an attempt to identify an animal model for hemochromatosis. Most of these studies have been negative (Bothwell et al., 1979; NRC, 1979). Animal studies involving parenteral administration of iron have been generally negative as well, even though parenteral routes bypass the mechanisms that regulate absorption of iron from the gastrointestinal tract.

Chronic iron toxicity has been observed in people with idiopathic hemochromatosis (a genetic metabolic disorder resulting in excessive iron absorption), abnormalities of hemoglobin synthesis (e.g., thalassemia) or various anemic states (e.g., sideroblastic anemia), frequent blood transfusions or a combination of these conditions (Jacobs, 1977; Bothwell et al., 1979). Chronic hemochromatosis has also occurred among the South African Bantu population from an excessive intake of absorbable iron in an alcoholic beverage.

Habitual excessive intake of iron by the Bantus is attributed to consumption of home-brewed Kaffir beer, which was contaminated by iron vessels during brewing (Bothwell and Bradlow, 1960; Bothwell et al., 1964). The beer's high acidity (pH 3-3.5) enhanced iron leaching from the vessels. The iron in the beer is readily assimilable (i.e., ionizable) due to the acidity and presence of iron-complexing ligands such as fructose, and is absorbed to approximately the same degree as ferric chloride. The alcohol content of the beer is also believed to contribute to the bioavailability of the iron (Jacobs, 1977; Finch and Monsen, 1972). Based

primarily on drinking habits and analyses of beer samples, the estimated average dietary iron intake of the Bantu men ranged from 50-100 mg/day from beer alone (Bothwell et al., 1964). Using a reference body weight of 70 kg (U.S. EPA, 1987), this range corresponds to 0.7-1.4 mg/kg-day. Histological examinations of the liver of 147 Bantus (129 male, 18 female) ranging in age from 11-70 years (most were between 20 and 50 years old) that died from acute traumatic causes were performed (Bothwell and Bradlow, 1960). Varying degrees of hepatic siderosis were observed in 89% of the cases; the degree tended to increase with age 40-50 years or less. The siderosis was mild in 59% and severe in 19% of the cases, respectively. There was a close correlation between hepatic iron concentration and portal fibrosis and cirrhosis. Although the overall prevalence was low (15.6% fibrosis and 1.4% cirrhosis), all 11 subjects with the highest iron concentrations (>2.0% dry weight of liver) showed either fibrosis or cirrhosis. Histological examination of the spleen (50 subjects) also showed siderosis and unspecified histological changes. Malnutrition and alcoholism could have played a role in the etiology of the hepatic and splenic siderosis in the Bantus. A NOAEL in the range of 0.7 - 1.4 mg/kg-day is indicated but may be low given the likely higher bioavailability of iron in the beer than for normal dietary exposure. Given the generally poor nutritional health status of this population, the relevance of this study for application to the U.S. population is questionable.

Ethiopia reportedly has the highest per capita iron intake in the world, with an average daily intake of 471 mg iron/day (range 98-1418 mg/day; 1.4-20.3 mg iron/kg-day assuming 70 kg body weight) (Roe, 1966; Hofvander, 1968). Increased stored iron in the liver and adverse health effects have not been observed due to low bioavailability of the iron in Ethiopian food.

A few studies have suggested that high iron intake may be a risk factor for myocardial infarction (Salonen et al., 1992; Lauffer, 1991; Sullivan, 1992). Five other large studies found no association between serum ferritin levels and coronary heart disease (NAS, 2001). Various other measures of iron status (serum transferrin saturation, serum iron concentration and total iron-binding capacity) have been examined for a possible link to cardiovascular disease in prospective cohort studies, but results overall have been characterized as contradictory (Meyers, 1996; NAS, 2001). The NAS (2001) concluded that the available evidence "does not provide convincing support for a causal relationship" between the level of dietary iron intake and the risk for coronary heart disease, although iron cannot be definitively excluded as a risk factor.

Animal Studies

Repeated-dose oral studies in experimental animals found no significant effect of treatment with inorganic iron compounds. No treatment-related adverse changes in clinical signs, body or organ weights, food consumption or histopathology were observed in male Sprague-Dawley rats that had daily dietary intakes of 35, 70 or 140 mg of iron (as $FeSO_4$ or FeEDTA) per kg for up to 61 days (Appel et al., 2001). In male and female F344 rats that were exposed to drinking water containing 0.25 or 0.5% ferric chloride ($FeCl_3 \cdot 6H_2O$) for 104 weeks, there were no dose-related effects other than reduced water intake (possibly affected by palatability) and body weight gain (Sato et al., 1992). In the latter study, the iron intakes were 58 or 110 mg/kg-day in males and 65 or 116 mg/kg-day in females.

No treatment-related teratogenic or embryotoxic effects were observed in rats given 2.7 mg iron/kg-day as ferric chloride on gestational days 6-15 (Nolen et al., 1972), or in rats and mice given 24-76 mg iron/kg-day as ferrous sulfate for 6 days during gestation (days unspecified) (Tadokoro et al., 1979). Some embryonic mortality (numbers and species not reported) occurred in the latter study at 240 mg iron/kg-day.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC RfDs FOR IRON

Iron is an essential element, as such, the RfD must be protective against both toxicity and deficiency. Using the values for dietary intake and iron status indices taken from the second National Health and Nutrition Examination Survey (NHANES II) data base, it is possible to establish a NOAEL for chronic toxicity. Looker et al. (1988) made comparisons of dietary iron intake and biochemical indices of iron status using data from NHANES II. The average intakes of iron ranged from 0.15 to 0.27 mg/kg-day. The serum ferritin levels and percent serum transferrin saturation were within the normal range. Thus, intake levels of 0.15-0.27 mg/kg-day are sufficient to protect against iron deficiency. However, the NHANES II data do not provide information to identify daily dietary iron intakes associated with toxicity. Therefore, daily dietary iron intakes were not considered as the basis for the p-RfD.

Most of the quantitative chronic oral toxicity data for iron have been obtained from studies of the Bantu population of South Africa. These data indicate that intakes in the range of 0.7-1.4 mg iron/kg-day in home-brewed beer are associated with hemosiderosis and liver cirrhosis (Bothwell and Bradlow, 1960; Bothwell et al., 1964). However, confounding factors such as malnutrition and unusually high iron bioavailability due to the high acidity and ethanol in the beer preclude use of these data for risk assessment. Much higher dietary intakes (average 6.7 mg/kg-day) of less soluble forms of iron are tolerated in non-western diets as indicated by studies of populations in Ethiopia. Thus, although toxicity associated with iron overload due to chronic oral intake can be demonstrated qualitatively or even semiquantitatively, assignment of a precise LOAEL for normal individuals consuming western diets is compromised by studies containing confounding factors.

Gastrointestinal toxicity, which is commonly associated with the therapeutic use of iron supplements, was identified as the critical effect for the basis of the provisional subchronic and chronic RfDs. The most frequently reported symptoms include epigastric pain, nausea, vomiting, constipation and diarrhea. Several prospective clinical trials in healthy subjects and iron-deficient patients identify a LOAEL for gastrointestinal toxicity of 50 to 180 mg elemental iron/day; NOAELs were not established (Blot et al., 1981; Brock et al., 1985; Coplin et al., 1991; Frykman et al., 1994; Hallberg et al., 1966; Liguori, 1993). The treatment durations in these studies range from 2 weeks to approximately 3 months. Although no chronic exposure studies reporting gastrointestinal toxicity were identified, clinical experience with iron supplements indicates that gastrointestinal effects are associated with oral iron therapy, regardless of the duration of treatment and that symptom intensity does not change over the course of treatment (Hillman, 2001; Santi and Masters, 2001). This observation suggests that the response is related to the concentration of iron in the intestinal tract and not to the time-integrated dose. Therefore,

gastrointestinal toxicity is considered as the critical effect for both the subchronic and chronic p-RfDs.

The lowest LOAEL of 50 mg elemental iron/day for gastrointestinal toxicity associated with iron supplements was reported in two studies that did not use a placebo-controlled design (Brock et al., 1985; Coplin et al., 1991); therefore, data were not considered suitable for derivation of the p-RfD. The placebo-controlled, cross-over design study by Frykman et al. (1994) reporting a LOAEL of 60 mg/day in Swedish men and women was identified as the critical study. Results of this study show that daily treatment with ferrous fumarate (60 mg elemental iron/day) for one month produced a statistically significant increase in gastrointestinal effects compared to placebo. To determine the LOAEL for total daily iron intake, the LOAEL for daily supplementation with ferrous fumarate of 60 mg elemental iron/day was added to the estimated mean dietary intake for six European countries of 11 mg elemental iron/day (NAS, 2001) for a total daily iron intake of 71 mg elemental iron/day. Based on a reference body weight of 70 kg (U.S. EPA, 1987), the LOAEL for gastrointestinal effects for total daily iron intake is 1 mg elemental iron/kg-day. This LOAEL is considered to be a minimal LOAEL because gastrointestinal effects were characterized by most study participants as minor in severity.

The provisional subchronic and chronic RfD for iron was derived from the LOAEL of 1 mg/kg-day for total daily iron intake for adverse gastrointestinal effects as follows:

$$\begin{aligned} \textbf{p-RfD (subchronic and chronic)} &= \textbf{LOAEL} \div \textbf{UF} \\ &= \textbf{1 mg/kg-day} \div \textbf{1.5} \\ &= \textbf{0.7 mg/kg-day} \end{aligned}$$

Dividing the LOAEL of 1 mg/kg-day by an uncertainty factor of 1.5 yields a subchronic and chronic p-RfD of 0.7 mg/mg-day. The uncertainty factor of 1.5 includes the individual uncertainty factors of 1.5 for use of a minimal LOAEL, 1 for sensitive individuals, 1 for less than lifetime exposure, and 1 for an adequate data base. An uncertainty factor of 1.5 was applied to account for extrapolation from a minimal LOAEL to a NOAEL for a non-serious effect. A higher uncertainty factor for use of a minimal LOAEL was not used since the observed gastrointestinal effects are not considered serious and are reversible when exposure is discontinued. Furthermore, gastrointestinal symptoms are not associated with dietary intake of similar levels of iron (NAS, 2001). Because individuals sensitive to gastrointestinal symptoms are considered to be included in the studies investigating effects of therapeutic iron; an uncertainty factor of 1 for sensitive individuals results. An uncertainty factor of 1 was used to account for less than lifetime exposure. Although exposure duration in the Frykman et al. (1994) study was only one month, there is no evidence to suggest that symptoms increase with longer exposure periods. An uncertainty factor of 1 was used to reflect an adequate database in humans, due to the extensive use of therapeutic iron.

Except for individuals with disorders of iron metabolism, little information is available on the long-term systemic toxicity of orally ingested iron. This assessment, therefore, focuses more on what is known to be a safe oral intake of iron for the general human population (i.e., apparently healthy normal individuals). The provisional reference dose is estimated to be an

intake for the general population that is adequately protective from adverse health effects. Further, it is also important to note that individual requirements for, as well as adverse reactions to, iron may be highly variable. Some individuals may, in fact, consume a diet that contributes more than the provisional reference dose, without any cause for concern. In addition, specific population subgroups may have higher nutritional requirements than the provisional RfD would provide. The p-RfD may not be protective of individuals with inherited disorders of iron metabolism or other conditions which affect iron homeostasis.

This assessment is essentially the same as that proposed by Stifelman et al. (2005).

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May 29, 2008

Michael Sivak
U.S. EPA, Region 2

ASSISTANCE REQUESTED: PPRTVs for p-Isopropyltoluene, Pyrene and sec-Butylbenzene (*Onondaga Lake*)

ENCLOSED INFORMATION:

Attachment 1: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR *p*-ISOPROPYLTOLUENE (CASRN 99-87-6) Derivation of a Chronic Oral RfD**

Attachment 2: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR *p*-ISOPROPYLTOLUENE (CASRN 99-87-6) Derivation of a Chronic Inhalation RfC**

Attachment 3: **PROVISIONAL PEER REVIEWED TOXICITY VALUE FOR *p*-ISOPROPYLTOLUENE (CASRN 99-87-6) Derivation of a Carcinogenicity Assessment**

Attachment 4: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR PYRENE (CASRN 129-00-0)**

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U.S. Environmental Protection Agency Contract No. EP-C-06-088.

Attachment 5: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR n-BUTYLBENZENE (CASRN 104-51-8), sec-BUTYLBENZENE (CASRN 135-98-8) AND tert-BUTYLBENZENE (CASRN 98-06-6) Derivation of Sucbchronic and Chronic Oral RfDs**

Attachment 6: **PROVISIONAL PEER REVIWED TOXICITY VALUES FOR n-BUTYLBENZENE (CASRN 104-51-8), sec-BUTYLBENZENE (CASRN 135-98-8) AND tert-BUTYLBENZENE (CASRN 98-06-6) Derivation of Subchronic and Chronic Inhalation RfCs**

Attachment 7: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR n-BUTYLBENZENE (CASRN 104-51-8), sec-BUTYLBENZENE (CASRN 135-98-8) AND tert-BUTYLBENZENE (CASRN 98-06-6) Derivation of a Carcinogenicity Assessment**

BE ADVISED: *Unless specifically indicated to have been peer reviewed, it is to be noted that the attached Provisional Toxicity Value Paper(s) have not been through the U.S. EPA's formal review process; therefore, they do not represent a U.S. EPA verified assessment.*

If you have any questions regarding this transmission, please contact the STSC at (513) 569-7300.

Attachments (7)

cc: STSC Files

Supported by ECFlex, Incorporated, under
U.S. Environmental Protection Agency Contract No. EP-C-06-088.

11-23-2004

Provisional Peer Reviewed Toxicity Values for

p-Isopropyltoluene
(CASRN 99-87-6)

Derivation of a Chronic Oral RfD

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

11-23-2004

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR *p*-ISOPROPYLTOLUENE (CASRN 99-87-6) Derivation of a Chronic Oral RfD

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions (or the EPA HQ Superfund Program) sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

A subchronic or chronic RfD for *p*-isopropyltoluene (also known as *p*-cymene or *p*-methyl isopropyl benzene) is not available on IRIS (U.S. EPA, 2003), the HEAST (U.S. EPA, 1997), or the Drinking Water Standards and Health Advisories list (U.S. EPA, 2002). One relevant document, the Drinking Water Health Advisory for *p*-Cymene (U.S. EPA, 1987), was located in the CARA list (U.S. EPA, 1991, 1994), but no RfD was derived due to insufficient data. ATSDR (2003), NTP (2003), IARC (2003), and WHO (2003) have not produced documents for this chemical. Literature searches of the following databases were conducted for the period between 1965 through June 2003 to locate relevant studies on *p*-isopropyltoluene: TOXLINE (supplemented with BIOSIS and NTIS updates), CANCERLIT, MEDLINE, CCRIS, GENETOX, HSDB, DART/ETICBACK, EMIC/EMICBACK, RTECS and TSCATS.

Additional literature searches from June 2003 through January 2004 were conducted by NCEA-Cincinnati using MEDLINE, TOXLINE, Chemical and Biological Abstracts databases.

p-Isopropyltoluene is used as an intermediate in the manufacture of *p*-cresol and thymol (HSDB, 2003). It also serves as a component in commercial terpene solvent mixtures and as a component of paint thinners, lacquers, and varnishes. It is found to occur naturally in many arboreous plants and as a constituent of many essential oils, including oils of eucalyptus, lemon, sage, thyme, coriander, star anise, and cinnamon (Browning, 1965; Opdyke, 1974; HSDB, 2003). The FDA (2003) has approved the use of *p*-isopropyltoluene as a synthetic flavoring substance and food additive.

REVIEW OF PERTINENT DATA

Human Studies

No data regarding the toxicity of *p*-isopropyltoluene to humans following chronic or subchronic oral exposure were located. Limited information is available on the acute oral toxicity of *p*-isopropyltoluene in humans. Reports from the early literature indicate that headache, nausea and vomiting occurred in humans following ingestion of *p*-isopropyltoluene, but information on ingested dose levels was not available (Browning, 1965).

p-Isopropyltoluene appears to be a primary skin irritant. Cases of irritation of the skin and mucous membranes have been reported in workers exposed to *p*-isopropyltoluene (Browning, 1965; Carlson, 1946). Contact with the undiluted liquid has been reported to produce dermal erythema, dryness and defatting in humans (Gerarde, 1960). However, 4% *p*-isopropyltoluene in (petroleum jelly) produced no dermal irritation or sensitization in a 48-hour closed-patch maximization test with 25 human volunteers (Kligman, 1972) and no dermal irritation following daily occluded application in diethylphthalate (petroleum jelly) on the backs of 10 human subjects for 10 days (Kligman and Wooding, 1967; Kligman, 1973).

Animal Studies

No data regarding the toxicity of *p*-isopropyltoluene to animals following chronic or subchronic oral exposure were located. However, several brief reports of the effects following acute exposures to *p*-isopropyltoluene were located.

An oral LD_{50} value of 4.75 g/kg (3.72-6.06 g/kg, 95% C.I.) was reported for Osborne-Mendel rats administered single doses of undiluted chemical via intubation and observed for 14 days (Jenner et al., 1964). Clinical signs observed included CNS depression soon after dosing, coma, bloody lacrimation, and diarrhea. The exposed animals appeared irritable and scrawny

through the observation period; the time to death ranged from 4 hours to 12 days. Additional study details were not provided. An oral LD_{50} value of 3 g/kg was reported for white rats administered single doses of *p*-isopropyltoluene via gavage (Du Pont & Co., 1949). Post mortem findings revealed gross and microscopic evidence of gastritis and liver damage. Smyth et al. (1951) reported an oral LD_{50} value of 2.46 g/kg in rats administered single doses of *p*-isopropyltoluene (additional details were not reported). No gross or micropathological findings were reported for six rats given oral doses of 510 mg/kg-day of *p*-isopropyltoluene, 5 days a week, for a total of 10 treatments (Du Pont & Co., 1949). All six rats survived treatment and were sacrificed 11 days after the last treatment. No other effects or study details were provided. A study from the very early literature reported that dogs tolerated daily oral doses of 2 g of *p*-isopropyltoluene, with diarrhea as the only adverse effect (Ziegler, 1873). No other study details were provided.

Intraperitoneal administration of 2.162 g/kg of *p*-isopropyltoluene reportedly induced lethality in the guinea pig (Chassevant and Garnier, 1903). Subcutaneous injection of *p*-isopropyltoluene in rabbits produced hematological changes similar to those produced by xylene that resulted in an increase in immature white cells similar in appearance to human myeloid leukemic cells (Miyamato, 1938; Woronow, 1929). An acute dermal LD_{50} of >5 g/kg was reported for *p*-isopropyltoluene in rabbits (Moreno, 1973). Application of undiluted *p*-isopropyltoluene to intact or abraded skin of rabbits for 24 hours under occlusion was moderately irritating (Moreno, 1973).

No developmental or reproductive toxicity studies of *p*-isopropyltoluene by any route of exposure were located.

Other Studies

p-Isopropyltoluene appears to be well absorbed by the oral route. Eighty and 71% of a single 100 mg/kg gavage dose of *p*-isopropyltoluene in propylene glycol was recovered as urinary metabolites within 48 hours in 3 rats and 3 guinea pigs, respectively (Walde et al., 1983). The remainder reportedly consisted of metabolites excreted in the feces and unextracted urinary material, indicating that at least 70-80% of the administered dose was absorbed.

Studies that have examined the metabolism of *p*-isopropylbenzene in rats and guinea pigs have presented a unified picture of a compound that is subject to considerable metabolic rearrangement. Thus, Walde et al. (1983) identified 18 total urinary metabolites in the oral- and inhalation-exposed rats and guinea pigs, and found that their excretion was nearly complete within 48 hours which amounted to 60-80% of the administered dose. The principal metabolites resulting from oxidation of the isopropyl and/or methyl group in the Walde et al. (1983) study included *p*-isopropyl benzoic acid (cumic acid, 19% of administered dose), 2-*p*-carboxyphenylpropan-1-ol (11%) and 2-*p*-carboxyphenylpropionic acid (16%) in oral-exposed

rats; *p*-isopropylbenzoyl glycine (31%) and 2-*p*-tolylpropan-2-ol (14%) in oral-exposed guinea pigs; 2-*p*-carboxyphenylpropionic acid (15%) in inhalation-exposed rats; and *p*-isopropylbenzoyl glycine (31%) and 2-*p*-tolylpropionic acid (15%) in inhalation-exposed guinea pigs. The remaining metabolites identified by Walde et al. (1983) ranged from trace amounts to 6-9% of the administered dose. In general, both the methyl and isopropyl side groups have been shown to be extensively oxidized in all species tested (Bakke and Scheline, 1970; Ishida et al., 1981; Walde et al., 1983; Matsumoto et al., 1992). The numerous monohydric alcohols, diols, mono- and dicarboxylic acids and hydroxyacids identified in the urine established that oxidation to alcohol with and without further oxidation to the corresponding acid occurred at all possible aliphatic sites (i.e., the three isopropyl carbons and the methyl carbon).

Comparative studies of the *in vivo* metabolism of *p*-isopropyltoluene in Eucalyptus - eating marsupials (the brushtail possum and the koala) and the rat (Boyle et al., 1999, 2000; Southwell et al., 1980) identified a species-specific pattern with a higher level of oxidation of *p*-isopropyltoluene in the marsupials compared with the rat, and a higher level of conjugation of metabolites in the rats compared to the marsupials. *In vitro* studies of *p*-isopropyltoluene metabolism by liver microsomes of the possum, koala, and rat showed that the major metabolite in each species was cuminyl alcohol and that the possum and koala microsomes oxidized cuminyl alcohol to cumic acid (Pass et al., 2002). The rank order of the liver microsomes to metabolize *p*-isopropyltoluene, measured by intrinsic clearance (V_{max}/K_m), was terpene-pretreated possum> possum with standard diet> koala with standard diet> rat with standard diet.

FEASIBILITY OF DERIVING PROVISIONAL SUBCHRONIC AND CHRONIC ORAL RfDs FOR *p*-ISOPROPYLTOLUENE

The available oral toxicity data for *p*-isopropyltoluene indicate that the compound has a low order of acute lethality (rat LD_{50} >2000-4000 mg/kg), with symptoms of CNS depression and gastrointestinal tract irritation at lower dose levels. These findings are supported by limited acute dermal exposure data that show local irritative effects of *p*-isopropyltoluene, and are consistent with the known acute effects of alkyl benzenes in general. No adequate information is available on the subchronic or chronic toxicity of *p*-isopropyltoluene, thereby precluding derivation of a subchronic or chronic p-RfD from the oral data or from inhalation data by route-to-route extrapolation.

There are no data indicating that *p*-isopropyltoluene is metabolized to any compounds that have toxicity data sufficient for risk assessment or into the same metabolites as other alkyl benzenes that have adequate toxicity data. Therefore, in summary, derivation of a p-RfD for *p*-isopropyltoluene is precluded by insufficient toxicity data on either the subject compound or on any of its projected primary metabolites.

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11-23-2004

Provisional Peer Reviewed Toxicity Values for

p-Isopropyltoluene
(CASRN 99-87-6)

Derivation of a Chronic Inhalation RfC

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

11-23-2004

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR *p*-ISOPROPYLTOLUENE (CASRN 99-87-6) Derivation of a Chronic Inhalation RfC

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

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Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

A subchronic or chronic RfC for *p*-isopropyltoluene (also known as *p*-cymene or *p*-methyl isopropyl benzene) is not available on IRIS (U.S. EPA, 2003) or in the HEAST (U.S. EPA, 1997). One relevant document, the Drinking Water Health Advisory for *p*-Cymene (U.S. EPA, 1987), was located in the CARA list (U.S. EPA, 1991, 1994). ATSDR (2003), NTP (2003), IARC (2003), and WHO (2003) have not produced documents for this chemical. ACGIH (2003), NIOSH (2003), and OSHA (2003) have not recommended occupational exposure limits for *p*-isopropyltoluene. Literature searches of the following databases were conducted from 1965 through June 2003 to locate relevant studies on *p*-isopropyltoluene: TOXLINE (supplemented with BIOSIS and NTIS updates), CANCERLIT, MEDLINE, CCRIS, GENETOX, HSDB, DART/ETICBACK, EMIC/EMICBACK, RTECS and TSCATS. Additional literature searches

from June 2003 through January 2004 were conducted by NCEA-Cincinnati using MEDLINE, TOXLINE, Chemical and Biological Abstracts databases.

p-Isopropyltoluene is used as an intermediate in the manufacture of *p*-cresol and thymol (HSDB, 2003). It also serves as a component in commercial terpene solvent mixtures and as a component of paint thinners, lacquers, and varnishes. It is found to occur naturally in many arboreous plants and as a constituent of many essential oils, including oils of eucalyptus, lemon, sage, thyme, coriander, star anise, and cinnamon (Browning, 1965; Opdyke, 1974; HSDB, 2003). The FDA (2003) has approved the use of *p*-isopropyltoluene as a synthetic flavoring substance and food additive.

REVIEW OF THE PERTINENT DATA

Human Studies

Few data are available on the inhalation toxicity of *p*-isopropyltoluene in humans. The primary effects of *p*-isopropyltoluene in industrial environments were skin and mucous membrane irritation; however, information on exposure levels was unavailable (Browning, 1965). Systemic effects, including ecchymosis, severe anemia, leucopenia, thrombocytopenia and histopathologic alterations in bone marrow, were reported in a man occupationally exposed to *p*-isopropyltoluene in the paper pulp industry (Carlson, 1946). These changes were possibly indicative of aplastic anemia, but the evidence for a direct association with exposure to *p*-isopropyltoluene was inconclusive (Browning, 1965). No other cases of a "benzene-like" action on the bone marrow following exposure to *p*-isopropyltoluene were reported by Browning (1965) or located in the available literature.

Animal Studies

No toxicity studies of animals chronically exposed by inhalation to *p*-isopropyltoluene were located. Available inhalation toxicity studies are restricted to a study of dogs repeatedly exposed by inhalation and two acute inhalation studies of rats in which neurological endpoints were examined.

In repeated-exposure studies, four dogs (of unspecified breed) were exposed to vapors of *p*-isopropyltoluene at a reported concentration range of 50 to 110 ppm (average 75 ppm) for 6 hours/day, 5 days/week, for one month (Du Pont & Co., 1949). One of the dogs was withdrawn from the experiment after the 12th exposure period due to illness not related to compound exposure. After one month of exposure, the surviving 3 dogs were exposed to concentrations ranging from 75 to 155 ppm (average 100 ppm) for 6 weeks, after which the animals were sacrificed for pathological examination. Another group of four dogs was subsequently exposed

by the same protocol for a total period of 18 weeks to average concentrations of *p*-isopropyltoluene of 50 ppm for the first 40 exposures, 75 ppm for the next 24 exposures, and 160 ppm for the last 28 exposures, after which dogs were sacrificed for pathological examination. The report of the study only referred to the pathological examinations as "gross" and "micropathology," and did not further specify tissues examined or techniques employed. Blood pressure, respiration rate, and body weight were measured at unspecified intervals during exposure. Blood and urine samples were collected at unspecified intervals during exposure; hematologic and chemical parameters that were measured were not specified in the available report, other than red blood cell counts and hemoglobin concentrations. Results were reported only in a summary fashion (the magnitude of exposure-related changes was not reported). Body weights were reportedly unaffected by exposure. Blood pressure depression (compared with pre-exposure patterns) was observed in both groups of dogs during exposure, with some inter-dog variance in whether the reduction was in systolic, diastolic, or pulse pressure. Respiration rates were increased (compared with pre-exposure values) during exposure in the dogs exposed during the first experiment, but not in those exposed in the second experiment. Red blood cell counts during the exposure period were reported as normal in both groups of dogs, but hemoglobin concentrations were reported as "decreased somewhat" in the first dog experiment, but not in the second dog experiment. "No gross or micropathology" attributable to exposure was found in the three dogs that survived the first experiment or in 3 of the 4 dogs that were exposed in the second experiment. The fourth dog in the second experiment had a "filarial infestation" associated with fibrosis and slight congestion of the lungs and zones of fibrosis in the kidney.

Lam et al. (1996) exposed groups of 7, 11, or 12 male Long-Evans rats to *p*-isopropyltoluene vapor at 0, 50, or 250 ppm (0, 275 or 1370 mg/m^3), respectively, 6 hours/day, 5 days/week for 4 weeks, followed by an 8-week recovery period prior to sacrifice. However, the authors largely restricted their observations to the neurochemistry of synaptosomes isolated from whole brain (minus cerebellum), measuring specific amounts of neurotransmitters, such as noradrenaline, dopamine, and 5-hydroxytryptomine, and specific activities of enzymes, such as acetylcholinesterase, butyrylcholinesterase, and lactate dehydrogenase, as a model for *in situ* conditions at the level of the presynaptic nerve terminal. There were no overt clinical signs of toxicity in any of the animals involved in the experiment and no differences in mean body weight between the groups. Similarly, there were no treatment-induced effects on brain weight or protein concentration in whole brain minus cerebellum, cerebellum alone, or whole brain. Though the concentrations of neurotransmitters/g wet weight were the same for each brain fraction irrespective of treatment, the relative yield of synaptosomal protein/unit wet weight of brain was reduced dose-dependently and statistically significant as the concentration of *p*-isopropyltoluene increased. Similarly, potential dose-dependent fluctuations in synaptosomal enzyme activities were observed, though a constant ratio relative to the activity of LDH was maintained across all dose groups. The relative amounts of synaptosomal neurotransmitters compared to enzyme units of LDH in synaptosomal preparations appeared to be unaffected by treatment, although increases in noradrenaline and dopamine were observed relative to

synaptosomal protein. Fluctuations in the relative and absolute amounts of 5-hydroxytryptamine were also observed in relation to treatment, although, as with all these results, their relationship to the neurotoxicity of the compound is unclear. The authors interpreted their results in terms of *p*-isopropyltoluene having the capacity to reduce the density and total number of synapses *in situ*, with functional compensation by concurrent increases in the release of noradrenaline and dopamine from noradrenergic and dopaminergic neurons. However, the authors were unable to link their observed changes to manifest neurotoxicity in the whole animal, beyond the speculation that the changes in synaptosomal neurochemistry might be a reflection of "first stage affective syndrome," a condition of uncertain pathophysiology, but with possible clinical consequences marked by depression, irritability, and a general loss of interest in daily activities.

An earlier neurotoxicity evaluation was performed on male Long-Evans rats that were exposed acutely to high concentrations of *p*-isopropyltoluene vapor (Furnas and Hine, 1958). In an initial experiment, a pair of rats were exposed to 10,000 ppm for 45 minutes, i.e., until they became apneic. Clinical signs preceding the apnea were reported to be similar to those of benzene (e.g., dyspnea, ataxia, twitching and profuse salivation), but more rapid. Another experiment involved 8 rats that were successively exposed as a group to 5000-10,000 ppm of *p*-isopropyltoluene (concentrations not otherwise specified) for 50, 45, 20 and 30 minutes. The rats were removed from the exposure chamber when they showed convulsions or respiratory arrest and returned for another exposure as soon as they recovered (duration between exposures not reported). Exposure was terminated after several deaths occurred (i.e., after 4 exposures), and survivors were sacrificed 24 hours later for gross pathologic observations and histological examination of brain, spinal cord and sciatic nerve. The exposed rats showed clinical signs of respiratory irritation, CNS depression and quivering or twitching, but no convulsions, and 4 of the 8 died. No gross lesions or CNS histopathologic changes were found other than gross changes to the respiratory tract attributable to local irritation.

Subcutaneous injection of *p*-isopropyltoluene in rabbits produced hematological changes similar to those produced by xylene that resulted in an increase in immature white cells similar in appearance to human myeloid leukemic cells (Miyamato, 1938; Woronow, 1929). The lethal dose via intraperitoneal administration is 2.162 g/kg in the guinea pig (Chassevant and Garnier, 1903).

No developmental or reproductive studies by any route of exposure to *p*-isopropyltoluene were located.

Other Studies

p-Isopropyltoluene appears to be readily absorbed following inhalation. For example, at least 70% and 60% of the dose inhaled in 24 hours (reportedly 100 mg/kg) was recovered as

urinary metabolites within 48 hours in two rats and two guinea pigs, respectively (Walde et al., 1983).

Studies that have examined the metabolism of *p*-isopropylbenzene in rats and guinea pigs have presented a unified picture of a compound that is subject to considerable metabolic rearrangement. Thus, Walde et al. (1983) identified 18 total urinary metabolites in the oral- and inhalation-exposed rats and guinea pigs, and found that their excretion was nearly complete within 48 hours and amounted to 60-80% of the administered dose. The principal metabolites resulting from oxidation of the isopropyl and/or methyl group in the Walde et al. (1983) study included *p*-isopropyl benzoic acid (cumic acid, 19% of administered dose), 2-*p*-carboxyphenylpropan-1-ol (11%) and 2-*p*-carboxyphenylpropionic acid (16%) in oral-exposed rats; *p*-isopropylbenzoyl glycine (31%) and 2-*p*-tolylpropan-2-ol (14%) in oral-exposed guinea pigs; 2-*p*-carboxyphenylpropionic acid (15%) in inhalation-exposed rats; and *p*-isopropylbenzoyl glycine (31%) and 2-*p*-tolylpropionic acid (15%) in inhalation-exposed guinea pigs. The remaining metabolites identified by Walde et al. (1983) ranged from trace amounts to 6-9% of the administered dose. In general, both the methyl and isopropyl side groups have been shown to be extensively oxidized in all species tested (Walde et al., 1983; Bakke and Scheline, 1970; Ishida et al., 1981; Matsumoto et al., 1992). The numerous monohydric alcohols, diols, mono- and dicarboxylic acids and hydroxyacids identified in the urine established that oxidation to alcohol with and without further oxidation to the corresponding acid occurred at all possible aliphatic sites (i.e., the three isopropyl carbons and the methyl carbon).

FEASIBILITY OF DERIVING PROVISIONAL SUBCHRONIC AND CHRONIC INHALATION RfCs FOR *p*-ISOPROPYLTOLUENE

The available inhalation toxicity data for *p*-isopropyltoluene indicate that acute exposure causes CNS depression and mucous membrane irritation. These findings are consistent with known acute effects of alkyl benzenes in general. However, there are no studies of the chronic-duration toxicity of *p*-isopropyltoluene in humans or animals, and there are only a few studies examining toxic endpoints in animals following repeated inhalation exposure. For example, the study by Lam et al. (1996) exposed Long-Evans rats to *p*-isopropyltoluene for a longer period of time than that of a typical acute dosing regimen (4 weeks with an 8-week recovery period). However, this remained less than a typical subchronic dosing regimen ($\geq$ 10% of the average life span of the animals being tested). Furthermore, it remains unclear whether the *ex situ* observations in synaptosomes reported by these workers represent the onset of neurotoxicological consequences of exposure to the compound (Lam et al., 1996). This points to the difficulty of assigning a NOAEL or LOAEL for neurotoxicity to either of the dose levels employed in the subject study, irrespective of its duration. A report of toxicity studies of dogs exposed for up to 18 weeks (6 hours/day, 5 days/week) in 1948 to varying concentrations of p-isopropyltoluene between 50 and160 ppm specified that exposure was associated with small

decreases in hemoglobin levels, but not with any other marked pathological changes (Du Pont & Co., 1949). However, reporting of methodological details and results was not sufficient to allow an independent evaluation of the study. Because of this deficiency, as well as the small number of animals studied and the lack of a control group, the study does not provide a suitable basis for deriving a p-RfC. In summary, no adequate information is available on the subchronic or chronic toxicity of *p*-isopropyltoluene associated with any route of exposure. This precludes the derivation of a p-RfC for the compound from inhalation data or from oral data by route-to-route extrapolation.

There are no data indicating that *p*-isopropyltoluene is metabolized to any compounds that have toxicity data sufficient for risk assessment or to the same metabolites as other alkyl benzenes that have adequate toxicity data. For example, metabolism that removes the methyl group or part or all of the isopropyl group from *p*-isopropyltoluene does not appear to occur under realistic exposure conditions (e.g., in species not adapted to diets high in *p*-isopropyltoluene), thereby preventing the use of adequately studied mono- or bifunctional alkyl benzene compounds, such as cumene (isopropylbenzene), *p*-xylene and toluene, which already have toxicity values, as surrogates. Other bifunctional alkyl benzenes, particularly compounds such as *p*-ethyltoluene and *p-tert*-butyltoluene, appear to have very limited toxicity data and have not been assessed by U.S. EPA (1997, 2003). In summary, derivation of a p-RfC for *p*-isopropyltoluene is precluded by insufficient toxicity data, as well as metabolism data that provide no basis for using a surrogate alkyl benzene for derivation of an toxicity value for the subject compound.

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11-23-2004

Provisional Peer Reviewed Toxicity Values for

p-Isopropyltoluene
(CASRN 99-87-6)

Derivation of a Carcinogenicity Assessment

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
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OSF	oral slope factor
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p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
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s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
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VOC	volatile organic compound

11-23-2004

PROVISIONAL PEER REVIEWED TOXICITY VALUE FOR *p*-ISOPROPYLTOLUENE (CASRN 99-87-6) Derivation of a Carcinogenicity Assessment

Background

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Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

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INTRODUCTION

A carcinogenicity assessment for *p*-isopropyltoluene (also known as *p*-cymene or *p*-methyl isopropyl benzene) is not available on IRIS (U.S. EPA, 2003), the HEAST (U.S. EPA, 1997), or the Drinking Water Standards and Health Advisories list (U.S. EPA, 2002). One relevant document, the Drinking Water Health Advisory for *p*-Cymene (U.S. EPA, 1987), was located in the CARA list (U.S. EPA, 1991, 1994). ATSDR (2003), NTP (2003), IARC (2003), and WHO (2003) have not produced documents for this chemical. Literature searches of the following databases were conducted from 1965 through June 2003 in order to locate relevant studies: TOXLINE (supplemented with BIOSIS and NTIS updates), CANCERLIT, MEDLINE, CCRIS, GENETOX, HSDB, DART/ETICBACK, EMIC/EMICBACK, RTECS and TSCATS. Additional literature searches from June 2003 through January 2004 were conducted by NCEA-Cincinnati using MEDLINE, TOXLINE, Chemical and Biological Abstracts databases.

p-Isopropyltoluene is used as an intermediate in the manufacture of *p*-cresol and thymol (HSDB, 2003). It also serves as a component in commercial terpene solvent mixtures and as a component of paint thinners, lacquers, and varnishes. It is found to occur naturally in many arboreous plants and as a constituent of many essential oils, including oils of eucalyptus, lemon, sage, thyme, coriander, star anise, and cinnamon (Browning, 1965; Opdyke, 1974; HSDB, 2003). The FDA (2003) has approved the use of *p*-isopropyltoluene as a synthetic flavoring substance and food additive.

REVIEW OF THE PERTINENT DATA

Human Studies

No data regarding the possible carcinogenicity of *p*-isopropyltoluene in humans were located.

Animal Studies

No reports of animal studies examining the carcinogenicity of *p*-isopropyltoluene by any route of exposure were located.

Other Studies

p-Isopropyltoluene was not mutagenic in *Salmonella typhimurium* strains TA98 or TA100 with metabolic activation in assays of the chemical or fractions of urine collected from rats following administration of *p*-isopropyltoluene via gavage (Rockwell and Raw, 1979). No increased frequencies of streptomycin-independent mutant colonies were found in Sd-4-73 *Escherichia coli* exposed to *p*-isopropyltoluene using the paper disk method (Iyer and Syzbalski, 1958; Syzbalski, 1958).

The metabolism of *p*-isopropyltoluene has been investigated in several studies, including oral studies in rats (Walde et al., 1983; Bakke and Scheline, 1970), guinea pigs (Walde et al., 1983) and rabbits (Ishida et al., 1981; Matsumoto et al., 1992), and inhalation studies in rats and guinea pigs (Walde et al., 1983). In general, the results suggest that the compound is readily absorbed and rapidly metabolized to a range of intermediates. For example, the compound's methyl and isopropyl side groups appeared to be extensively oxidized in all species tested. The numerous monohydric alcohols, diols, mono- and dicarboxylic acids and hydroxyacids identified in the urine established that oxidation to alcohol with and without further oxidation to the corresponding acid occurred at all possible aliphatic sites (i.e., the three isopropyl carbons and the methyl carbon).

PROVISIONAL WEIGHT-OF-EVIDENCE CLASSIFICATION

No studies examining the carcinogenic potential of *p*-isopropyltoluene in humans or animals were located. Genotoxicity data are limited to two negative mutagenicity assays in bacteria. The available data are insufficient to assess carcinogenic potential in animals or humans as specified by the proposed U.S. EPA (1999) Guidelines for Carcinogen Risk Assessment.

QUANTITATIVE ESTIMATES OF CARCINOGENIC RISK

Derivation of quantitative estimates of cancer risk for *p*-isopropyltoluene is precluded by the lack of data to assess carcinogenicity associated with *p*-isopropyltoluene exposure.

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9-5-2007

Provisional Peer Reviewed Toxicity Values for

Pyrene
(CASRN 129-00-0)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose

PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR PYRENE (CASRN 129-00-0)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).
2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.
3. Other (peer-reviewed) toxicity values, including:
   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

IRIS (U.S. EPA, 1997a) provides a chronic RfD of 3E-2 mg/kg-day developed from a NOAEL of 75 mg/kg-day with a combined uncertainty factor of 3000 (10 each for intra- and interspecies variability, 10 for the use of a subchronic study for chronic RfD derivation, and an additional 3 to account for the lack of both toxicity studies in a second species and developmental/reproductive studies) using a 13 week gavage study in mice, conducted by Toxicity Research Laboratories, Muskegon, MI (U.S. EPA, 1989) for the Office of Solid Waste, Washington, DC. The critical effects were renal tubular pathology and decreased kidney weights. IRIS (U.S. EPA, 2007) did not develop an RfC. IRIS (U.S. EPA, 2007) provided a classification of D, not classifiable as to human carcinogenicity based on no human data and inadequate data from animal experiments. A subchronic RfD is currently listed on HEAST of 3E-1 mg/kg-day which will be removed when this PPRTV is activated (U.S. EPA, 1997b). It was based on the same study as this PPRTV.

A cancer classification for pyrene of Group D is listed in the Drinking water Standard and Health Advisory lists (U.S. EPA, 2000) based on an assessment of pyrene from the Drinking Water Criteria Document for polycyclic aromatic hydrocarbons (U.S. EPA, 1990). The CARA lists (U.S. EPA, 1991, 1994) report a Health Effects Assessment (U.S. EPA 1984) and a Health and Environmental Effects Profile (HEEP) U.S. EPA 1987) for pyrene. ATSDR (2001) has not published a toxicological profile for pyrene, but it is included in the profile for polycyclic aromatic hydrocarbons (ATSDR, 1995). IARC has assigned pyrene to Group 3, not classifiable as to its carcinogenicity to humans, based on no human data and limited animal data (IARC, 1983, 1987). A multimedia document for polycyclic aromatic hydrocarbons (U.S. EPA, 1992) and the NTP status reports (NTP, 2001) were also searched to identify relevant data. Literature searches for all exposure routes and effects were conducted from 1989 to December 2000 and updated to 2007. The databases searched were: TOXLINE, TSCATS, CANCERLIT,

MEDLINE, GENETOX, HSDB, EMIC/EMIC/EMICBACK, DART/ETICBACK, CCRIS AND RTECS.

This document has passed the STSC quality review and peer review evaluation indicating that the quality is consistent with the SOPs and standards of the STSC and is suitable for use by registered users of the PPRTV system.

REVIEW OF THE PERTINENT LITERATURE

Human Studies

No human studies were located regarding exposure of humans to pyrene.

Animal Studies

A U.S. EPA (1989) study conducted by Toxicity Research Laboratories, Muskegon MI for the Office of Solid Waste, Washington DC was the basis of IRIS's chronic RfD or 3E-2 mg/kg-day. Male and female CD-1 mice (20/sex/group) were gavaged with 0, 75, 125, or 250 mg/kg/day pyrene in corn oil for 13 weeks. The toxicological parameters examined in this study included body weight changes, food consumption, mortality, clinical pathological evaluations of major organs and tissues, and hematology and serum chemistry. Nephropathy, characterized by the presence of multiple foci of renal tubular regeneration, often accompanied by interstitial lymphocytic infiltrates and/or foci of interstitial fibrosis, was present in 4, 1, 1, and 9 male mice in the control, low-, medium-, and high-dose groups, respectively. Similar lesions were seen in 2, 3, 7, and 10 female mice in the 0, 75, 125, and 250 mg/kg treatment groups. The kidney lesions were described as minimal or mild in all dose groups. Relative and absolute kidney weights were reduced in the two higher dosage groups. Based on the results of this study, the low dose (75 mg/kg/day) was considered the NOAEL and 125 mg/kg/day the LOAEL for nephropathy and decreased kidney weights. The IRIS RfD of 3E-2 mg/kg-day was calculated using a composite uncertainty factor of 3000, including 10 each for intra- and interspecies variability, and an additional 3 to account for the lack of both toxicity studies in a second species and developmental/reproductive studies and 10 for extrapolation from subchronic to chronic.

White and White (1939) fed six male rats (unspecified strain) a diet containing 2000 mg pyrene/kg for 40 days. The average reported food intake for two animals was 6.1 g/day, and the average body weight for these two animals was 94.3 g. A decrease in body weight gain was observed in two animals. The authors stated that this body weight gain was representative of the whole group; although there was no change in food intake. White and White (1939) also observed enlarged livers and increased hepatic lipid content in animals treated with pyrene, benzpyrene or methylcholanthrene in the diet; however, incidence data were not reported and it is unclear whether this effect occurred in the pyrene treated rats. Interpretation of this study is further complicated by the lack of experimental controls and statistical analysis, small sample size, and incomplete reporting of histopathology results.

No other useful studies are available that examine only pyrene exposure

Other studies

Pyrene has been assayed for genotoxicity in a number of tests with both positive and negative results. These have been extensively reviewed by EPA (U.S. EPA, 1984, 1987, 2000, 2001) and only those studies published since the most recent EPA review was performed are included in the following text.

In vitro genotoxicity tests of pyrene in prokaryotic systems have produced mixed results. The consensus conclusion on the WHO international collaborative study (which involved 20 bacterial test sets) was that protocol or evaluation criteria were critical factors in individual test verdicts (WHO, 1990). Pyrene has been shown to bind to DNA (Chen, 1983) and to form DNA adducts (Segerback and Vodicka, 1993), but was not mutagenic in DNA damage assays in *Escherichia coli* and *Bacillus subtilis* (Hellmer and Bolcsfold, 1992; Kranendonk et al., 1994, 1996; Mersch-Sundermann et al., 1992, 1993; Rossman et al., 1991). Both positive (Johnson, 1992) and negative (Rexroat et al., 1995; Rusina et al., 1992; Van der Lelie et al., 1997) results have been reported in bacterial gene mutation tests. Pyrene induced increased incidence of mitotic gene conversion but not other genetic endpoints in yeast (deSerres et al., 1981).

Most *in vitro* tests in mammalian cells have given negative results. Pyrene gave mixed results in tests of unscheduled DNA synthesis (Heil and Reifferscheid, 1992; Selden et al., 1994) and was mostly negative in tests for sister chromatid exchange and negative for chromosome aberrations (Darroudi and Natarajan, 1993; Natarajan and Darroudi, 1991). Pyrene was mutagenic in the L5178Y mouse lymphoma gene mutation assay when metabolically activated (Oberly et al., 1993), but was not mutagenic in metabolically competent human lymphoblastoid cells (Busby et al., 1994; Durant et al., 1996) and did not induce micronucleus formation in a variety of mammalian cell types (Crofton-Sleigh et al., 1993; Fritzenschaf et al., 1993; Muller-Tegethoff et al., 1995; Natarajan and Darroudi, 1991; Neslany and Marzin, 1999). Results of mammalian cell transformation assays have also been negative (U.S. EPA, 2000).

In vivo genotoxicity tests of pyrene have also produced mostly negative results. Pyrene produced no increase or only a slight increase in sex-linked recessive lethals in *Drosophila* and was negative in the *Drosophila* eye mosaic assay (Fujikawa et al., 1993; Vogel and Nivard, 1993). Application of pyrene to the skin of hairless mice produced no increase in micronucleus induction in keratinocytes (He and Baker, 1991). Pyrene was positive in the newt micronucleus test (Fernandez et al., 1989).

DERIVATION OF A PROVISIONAL SUBCHRONIC OR CHRONIC RfD FOR PYRENE

A U.S. EPA (1989) study conducted by Toxicity Research Laboratories, Muskegon MI for the Office of Solid Waste, Washington DC was utilized by IRIS for development of a chronic RfD. This study was selected for development of a provisional subchronic RfD. Based on the results of this study, the low dose (75 mg/kg/day) was considered the NOAEL and 125 mg/kg/day the LOAEL for nephropathy and decreased kidney weights.

A composite uncertainty factor of 300 was applied to the NOAEL of 75 mg/kg-day; 10 each for intra- and interspecies variability, and an additional 3 to account for the lack of both toxicity studies in a second species and developmental/reproductive studies providing a **subchronic RfD of 0.25 mg/kg-day or 3E-1 mg/kg-day**.

NOAEL/ Uncertainty Factors = 75/300 = 0.25 or 3E-1 mg/kg-day

Confidence in the principal study is medium, as it was a well-designed experiment that examined a variety of toxicological endpoints and identified both a NOAEL and LOAEL for the critical effect. Confidence in the database is low, due to the lack of supporting subchronic, chronic, and developmental/reproductive studies. Accordingly, confidence in the provisional subchronic RfD is low.

DERIVATION OF A PROVISIONAL SUBCHRONIC OR CHRONIC RfC FOR PYRENE

No provisional RfC is developed due to lack of usable information.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR PYRENE

IRIS (U.S. EPA, 2007) provides no quantitative assessments (OSF or IUR) for pyrene and classifies it as classification of D, not classifiable as to human carcinogenicity based on no human data and inadequate data from animal experiments. Based on the U.S. EPA (2005) Cancer Guidelines, pyrene can be classified as “not likely to be a human carcinogen”.

No data is currently available and suitable for developing cancer values.

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11-30-04

Provisional Peer Reviewed Toxicity Values for

n-Butylbenzene (CASRN 104-51-8), sec-Butylbenzene (CASRN 135-98-8) and tert-Butylbenzene (CASRN 98-06-6)

Derivation of Subchronic and Chronic Oral RfDs

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR n-BUTYLBENZENE (CASRN 104-51-8), sec-BUTYLBENZENE (CASRN 135-98-8) AND tert-BUTYLBENZENE (CASRN 98-06-6) Derivation of Sucbchronic and Chronic Oral RfDs

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions (or the EPA HQ Superfund Program) sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

Subchronic or chronic RfDs for the isomeric butylbenzenes ($C_{10}H_{14}$) n-butylbenzene, sec-butylbenzene or tert-butylbenzene are not listed on IRIS (U.S. EPA, 2002a), the Drinking Water Standards and Health Advisories table (U.S. EPA, 2002b), or the HEAST (U.S. EPA, 1997). The only documents listed in the CARA database (U.S. EPA, 1991, 1994) for these chemicals are Health Advisories (U.S. EPA 1987a,b,c,d), wherein the data were considered inadequate for risk assessment for these chemicals. ATSDR (2002) has not published toxicological profiles for butylbenzenes and these chemicals were not listed in the NTP (2002) Management Status Reports. IARC (2002) and WHO (2002) have not published reviews for butylbenzenes. A review by Henderson (2001) was consulted for relevant information. Literature searches of the following databases were conducted from 1965 to July 2002 for relevant studies: TOXLINE, MEDLINE, TSCATS, GENETOX, HSDB, CANCERLIT, CCRIS, RTECS, EMIC/EMICBACK,

DART/ETICBACK and BIOSIS. An updated literature search was conducted through May 2004 and no relevant information was found.

REVIEW OF PERTINENT LITERATURE

Human Studies

No information was located regarding the adverse effects of n-butylbenzene, sec-butylbenzene, or tert-butylbenzene in humans.

Animal Studies

No studies on the chronic or subchronic toxicity of n-butylbenzene, sec-butylbenzene or tert-butylbenzene were located in the literature search. Limited acute data suggest that the branch-chained butylbenzenes are more lethal than the straight-chained butylbenzene. Gerarde (1959) observed mortality in 8/10 rats orally dosed with 4.3 g/kg of sec-butylbenzene and 7/10 at this dose of tert-butylbenzene, but only 2/10 rats treated with this dose of n-butylbenzene. Rat LD_{50} values were lower for sec-butylbenzene (2.24 g/kg) and tert-butylbenzene (2.5-5.0 g/kg) (Henderson, 2001; Dupont, 1978; Rhone-Poulenc, Inc., 1981; NIOSH, 2002; Shell Oil Company, 1979). A rat LD_{50} was not located for n-butylbenzene, but a mouse i.p. LD_{50} for this chemical of 1.995 g/kg was obtained by Tanii et al., 1995. The leading cause of death in rats in the acute oral studies conducted by Gerarde (1959) was chemical induced pneumonitis with pulmonary edema and hemorrhage, the latter often associated with hemorrhage in other tissues such as thymus, adrenal, and bladder. Hyperemia and vasodilation of the blood vessels of the gastrointestinal tract were also reported.

FEASIBILITY OF DERIVING PROVISIONAL SUBCHRONIC OR CHRONIC RfDs FOR n-BUTYLBENZENE, sec-BUTYLBENZENE AND tert-BUTYLBENZENE

Data on the oral toxicity of the three butylbenzene isomers under investigation are limited to acute lethality studies that are considered inadequate for derivation of provisional RfDs for butylbenzenes.

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11-30-04

Provisional Peer Reviewed Toxicity Values for

n-Butylbenzene (CASRN 104-51-8), sec-Butylbenzene (CASRN 135-98-8) and tert-Butylbenzene (CASRN 98-06-6)

Derivation of Subchronic and Chronic Inhalation RfCs

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
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MCL	maximum contaminant level
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mg	milligram
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MRL	minimal risk level

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NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

11-30-04

PROVISIONAL PEER REVIWED TOXICITY VALUES FOR n-BUTYLBENZENE (CASRN 104-51-8), sec-BUTYLBENZENE (CASRN 135-98-8) AND tert-BUTYLBENZENE (CASRN 98-06-6) Derivation of Subchronic and Chronic Inhalation RfCs

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

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Questions Regarding PPRTVs

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INTRODUCTION

Subchronic or chronic RfCs the isomeric butylbenzenes ($C_{10}H_{14}$) n-butylbenzene, sec-butylbenzene or tert-butylbenzene are not listed on IRIS (U.S. EPA, 2002) or the HEAST (U.S. EPA, 1997). The only documents listed in the CARA database (U.S. EPA, 1991, 1994) for these chemicals are Health Advisories (U.S. EPA 1987a,b,c), wherein the data were considered inadequate for risk assessment for these chemicals. ATSDR (2002) has not published toxicological profiles for butylbenzenes and these chemicals were not listed in the NTP (2002) Management Status Reports. ACGIH (2001), NIOSH (2002) and OSHA (2002a,b) have not established occupational exposure limits for these chemicals. IARC (2002) and WHO (2002) have not published reviews for butylbenzenes. A review by Henderson (2001) was consulted for relevant information. Literature searches of the following databases were conducted from 1965 to July 2002 for relevant studies: TOXLINE, MEDLINE, TSCATS, GENETOX, HSDB,

CANCERLIT, CCRIS, RTECS, EMIC/EMICBACK, DART/ETICBACK and BIOSIS. An updated literature search was conducted through May 2004 and no relevant information was found.

REVIEW OF PERTINENT LITERATURE

Human Studies

No information was located regarding the adverse effects of n-butylbenzene, sec-butylbenzene, or tert-butylbenzene in humans.

Animal Studies

No studies on the subchronic or chronic inhalation toxicity of n-butylbenzene, sec-butylbenzene, or tert-butylbenzene were located in the literature search.

Available data on the toxicity of these alkylbenzenes are limited to acute duration exposures. In a review, Gerarde (1959) stated that direct contact (intratracheal instillation) of the liquid alkylbenzenes with pulmonary tissue causes chemical induced pneumonitis characterized by pulmonary edema, hemorrhage, and tissue necrosis.

n–Butylbenzene. The RD_{50} (concentration necessary to depress the respiratory rate by 50% during acute exposure in response to sensory irritation) for sensory irritation by n-butylbenzene was 710 ppm in a 30 minute exposure; the chemical did not produce pulmonary irritation (defined as a decrease in respiratory rate during exposure via tracheal cannula) at the RD_{50} (Nielsen and Alarie, 1982).

sec-Butylbenzene. Dow Chemical (1954) reported that no deaths occurred among 3 rats exposed to a saturated atmosphere (about 3400 ppm) of sec-butylbenzene for 7 hours. Slight eye irritation, drowsiness, and unsteadiness were observed, and moderate (unspecified) gross pathology of the liver and kidneys was seen at necropsy.

tert-Butylbenzene. A 4-hour LC_{50} of 4.6 mg/L (840 ppm) was reported for tert-butylbenzene in rats (Shell Oil Company, 1979). Clinical signs observed during exposure included lacrimation, salivation, tremors, and convulsions; necropsy of animals that survived the 14-day observation period revealed no gross pathological changes. The RD_{50} for tert-butylbenzene was 760 ppm in a 30 minute exposure; the chemical did not produce pulmonary irritation at the RD_{50} (Nielsen and Alarie, 1982).

FEASIBILITY OF DERIVING PROVISIONAL SUBCHRONIC OR CHRONIC RfCs FOR n-BUTYLBENZENE, sec-BUTYLBENZENE, tert-BUTYLBENZENE, and n-PROPYLBENZENE

Data on the inhalation toxicity of the butylbenzenes are limited to acute studies that are considered inadequate for derivation of provisional RfCs.

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U.S. EPA. 1987c. Drinking Water Health Advisory for tert-Butylbenzene. Prepared by the Office of Health and Environmental Assessment, Environmental Criteria and Assessment Office, Cincinnati, OH for the Office of Drinking Water, Washington, DC. December.

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11-30-04

Provisional Peer Reviewed Toxicity Values for

n-Butylbenzene (CASRN 104-51-8), sec-Butylbenzene (CASRN 135-98-8) and tert-Butylbenzene (CASRN 98-06-6)

Derivation of a Carcinogenicity Assessment

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
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DWEL	Drinking Water Equivalent Level
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FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
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MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
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mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

11-30-04

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR n-BUTYLBENZENE (CASRN 104-51-8), sec-BUTYLBENZENE (CASRN 135-98-8) AND tert-BUTYLBENZENE (CASRN 98-06-6) Derivation of a Carcinogenicity Assessment

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions (or the EPA HQ Superfund Program) sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for the Office of Superfund Remediation and Technology Innovation (OSRTI). Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or to EPA's Office of Superfund Remediation and Technology Information (OSRTI).

INTRODUCTION

Carcinogenicity assessments for the isomeric butylbenzenes ($C_{10}H_{14}$) n-butylbenzene, sec-butylbenzene or tert-butylbenzene are not listed on IRIS (U.S. EPA, 2002a), the Drinking Water Standards and Health Advisories table (U.S. EPA, 2002b), or the HEAST (U.S. EPA, 1997). The only documents listed in the CARA database (U.S. EPA, 1991, 1994) for these chemicals are Health Advisories (U.S. EPA 1987a,b,c), wherein the data were considered inadequate for risk assessment for these chemicals. ATSDR (2002) has not published toxicological profiles for butylbenzenes and these chemicals were not listed in the NTP (2002) Management Status Reports. IARC (2002) and WHO (2002) have not published reviews for butylbenzenes. A review by Henderson (2001) was consulted for relevant information. Literature searches of the following databases were conducted from 1965 to July 2002 for relevant studies: TOXLINE,

MEDLINE, TSCATS, GENETOX, HSDB, CANCERLIT, CCRIS, RTECS, EMIC/EMICBACK, DART/ETICBACK and BIOSIS. An updated literature search was conducted through May 2004 and no relevant information was found.

REVIEW OF PERTINENT LITERATURE

Human Studies

No data regarding the potential carcinogenicity of n-butylbenzene, sec-butylbenzene, or tert-butylbenzene in humans were located.

Animal Studies

No studies regarding the carcinogenicity of n-butylbenzene, sec-butylbenzene, or tert-butylbenzene in animals were located.

Other Studies

The only relevant information comes from a small number of genotoxicity studies for tert-butylbenzene.

tert-Butylbenzene. tert-Butylbenzene was not mutagenic in *Salmonella typhimurium* strains TA98, TA100, TA1535, TA1537 and TA1538 or in *Escherichia coli* strains WP2 and WP2uvrA with or without metabolic activation when tested at concentrations of 0.2-2000 µg/plate (Dean et al., 1985). tert-Butylbenzene did not affect mitotic gene conversion (inactive alleles to wild-type alleles) in *Saccharomyces cerevisiae* at concentrations between 0.01 and 5.0 mg/ml in the presence or absence of metabolic activation by induced rat liver S9 fraction (Dean et al., 1985). *In vitro* exposure of rat liver cells (RL1) to 10, 20, or 40 µg/ml of tert-butylbenzene had no significant effect on the frequency of chromatid gaps, chromatid breaks or total chromosome aberrations (Dean et al., 1985). tert-Butylbenzene did not induce morphological transformation, or potentiate the morphological transformation frequency induced by positive control benzo(a)pyrene in Syrian hamster embryo (SHE) cells in culture (Rivedal et al., 1992).

PROVISIONAL WEIGHT-OF-EVIDENCE CLASSIFICATION

No studies of the potential carcinogenicity of n-butylbenzene, sec-butylbenzene, or tert-butylbenzene in humans or animals were located. Limited genotoxicity testing of tert-butylbenzene found no genotoxic activity. Therefore, n-butylbenzene, sec-butylbenzene, and

tert-butylbenzene data, under the proposed U.S. EPA (1999) guidelines, are inadequate for an assessment of human carcinogenic potential.

QUANTITATIVE ESTIMATES OF CARCINOGENIC RISK

Derivation of quantitative estimates of cancer risk for n-butylbenzene, sec-butylbenzene, or tert-butylbenzene is precluded by the lack of data regarding carcinogenicity of these chemicals.

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Superfund Technical Support Center

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July 11, 2007

Michael Sivak
U.S. EPA, Region 2

ASSISTANCE REQUESTED: PPRTVs for Iron, 2,4,6-Trichlorophenol, p-Chloro-m-cresol, Aluminum and Benzyl alcohol (*Onondaga Lake*)

ENCLOSED INFORMATION:

Attachment 1: **PROVISONAL PEER REVIEWED TOXICITY INFORMATION FOR IRON (CASRN 7439-89-6) AND COMPOUNDS Derivation of Subchronic and Chronic Oral RfDs**

Attachment 2: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR IRON (CASRN 7439-89-6) AND COMPOUNDS Derivation of an Inhalation RfC**

Attachment 3: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR IRON (CASRN 7439-89-6) AND COMPOUNDS Derivation of a Carcinogenicity Assessment**

Attachment 4: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2,4,6-TRICHLOROPHENOL (CASRN 88-06-2)**

Supported by ECFlex, Incorporated, under
U.S. Environmental Protection Agency Contract No. 68-C-01-147.

Attachment 5: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR *p*-CHLORO-*m*-CRESOL (CASRN 59-50-7) Derivation of a Subchronic Oral RfD**

Attachment 6: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ALUMINUM (CASRN 7429-90-5)**

Attachment 7: **PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR BENZYL ALCOHOL (CASRN 100-51-6)**

BE ADVISED: *Unless specifically indicated to have been peer reviewed, it is to be noted that the attached Provisional Toxicity Value Paper(s) have not been through the U.S. EPA's formal review process; therefore, they do not represent a U.S. EPA verified assessment.*

If you have any questions regarding this transmission, please contact the STSC at (513) 569-7300.

Attachments (7)

cc: STSC Files

Supported by ECFlex, Incorporated, under
U.S. Environmental Protection Agency Contract No. 68-C-01-147.

9-11-2006

Provisional Peer Reviewed Toxicity Values for

Iron and Compounds
(CASRN 7439-89-6)

Derivation of Subchronic and Chronic Oral RfDs

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISONAL PEER REVIEWED TOXICITY INFORMATION FOR IRON (CASRN 7439-89-6) AND COMPOUNDS
Derivation of Subchronic and Chronic Oral RfDs

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

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3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions or the EPA Headquarters Superfund Program sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

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It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI

INTRODUCTION

A reference dose (RfD) for iron is not available on the Integrated Risk Information System (IRIS) (U.S. EPA, 2006) or the Drinking Water Standards and Health Advisories list (U.S. EPA, 2005). The Health Effects Assessment Summary Tables (HEAST) (U.S. EPA, 1997) reported that data regarding iron were inadequate for quantitative risk assessment. The Chemical Assessment and Related Activities (CARA) list (1991, 1994) includes a Health Effects Assessment (HEA) for Iron and Compounds (U.S. EPA, 1984) that found no reliable quantitative oral toxicity data. Iron has not been the subject of a toxicological review by the Agency for Toxic Substances Disease Registry (ATSDR) (2005) or the World Health Organization (WHO) (2005). Monographs by the International Agency for Research on Cancer (IARC) (1972, 1987), toxicity reviews by Jacobs (1977), Bothwell et al. (1979), Lauffer (1991) and Grimsley (2001), a review on dietary iron by the National Academy of Sciences (NAS) (2001), and the National Toxicology Program (NTP) (2001, 2005) management status report and chemical repository summary were consulted for relevant information. The NAS (2001) derived a Tolerable Upper Intake (TUI) level of 45 mg iron/day. The TUI is based on a minimal LOAEL of 70 mg/day (60 mg iron as ferrous fumerate plus 11 mg/day of dietary iron) identified by Frykman et al. (1994) for gastrointestinal effects and an uncertainty factor of 1.5 for use of a minimal LOAEL; a higher

uncertainty factor was not used since the nature of the observed gastrointestinal effects was considered to be self-limiting. The U.S. Food and Drug Administration (FDA) promulgated a Rule in 1997 for labeling of iron-containing dietary supplements for the prevention of accidental poisoning in children (U.S. FDA, 1997). The Rule, as modified in 2003, does not contain specific exposure limits (U.S. FDA, 2003). In general, the FDA follows the NAS guidance on exposure limits for toxicity of essential elements, such as iron. Previous literature searches were conducted through September, 2001 as follows: TOXLINE (oral and inhalation toxicity and cancer from 1983 - September, 2001); CANCERLIT (1990 - September, 2001); MEDLINE (1991 - September, 2001); TSCATS, RTECS, DART/ETICBACK, EMIC/EMICBACK, HSDB, GENETOX, and CCRIS. Update literature searches were performed in October, 2005 in MEDLINE, TOXLINE (NTIS subfile), TOXCENTER, TSCATS, CCRIS, DART/ETIC, GENETOX, HSDB, RTECS and Current Contents.

REVIEW OF PERTINENT LITERATURE

Iron is an essential element and deriving a risk assessment value for such chemicals poses a special problem in that the dose-adversity curve is "U-shaped". Thus, the risk value must be protective against deficiency as well as toxicity. The NAS (2001) has established guidelines for iron intake that take into account physiological differences during different life stages. For non-breast-fed infants aged 0-6 months, the NAS (2001) established a daily adequate intake (AI) for iron of 0.27 mg/day (0.04 mg/kg-day for infants 2-6 months old) based on the daily amount of iron secreted in human milk; breast-fed infants typically receive only 0.15 to 0.3 mg Fe/day. The NAS (2001) Dietary Reference Intakes (DRIs) for children are as follows: 11 mg/day (1.2 mg/kg-day) for infants between the ages of 7 and 12 months, 7 mg/day (0.54 mg/kg-day) for children aged 1-3 years, 10 mg/day (0.45 mg/kg-day) for ages 4-8 years, 8 mg/day (0.2 mg/kg-day) for ages 9-13 years and 11 mg/day (0.17 mg/kg-day) for boys and 15 mg/day (0.26 mg/kg-day) for girls aged 14-18 years. The DRI for men aged 19 years and above is 8 mg/day (0.11 mg/kg-day). The DRI for non-pregnant women is 18 mg/day (0.29 mg/kg-day) for ages between 19 and 50 years and 8 mg/day (0.13 mg/kg-day) for ages 51 years and older. The DRI for pregnant women is 27 mg/day (0.37 mg/kg-day for those aged 14-18 years and 0.35 mg/kg-day for those aged 19-50 years). The DRI during lactation is 10 mg/day (0.18 mg/kg-day) for women aged 14-18 years and 9 mg/day (0.15 mg/kg-day) for women aged 19-50 years.

According to the Centers for Disease Control and Prevention (CDC, 1998; CDC, 2005), iron deficiency is one of the most common known forms of nutritional deficiency. Its prevalence is highest among young children and women of childbearing age, particularly pregnant women. In children, iron deficiency causes developmental delays and behavioral disturbances, and in pregnant women, it increases the risk for a preterm delivery and delivering a low-birthweight baby. Young children are at great risk of iron deficiency because of rapid growth and increased iron requirements. Iron deficiency can occur due to lack of iron in the diet. If this continues, anemia results. Anemia is a manifestation of iron deficiency when it is relatively severe. Iron deficiency anemia significantly impairs mental and psychomotor development in infants and children. Although iron deficiency can be reversed with treatment, the reversibility of the mental and psychomotor impairment is not yet clearly understood. Thus, prevention and treatment need to be emphasized more than detection. In addition, iron deficiency increases a child's

susceptibility to lead toxicity. Lead replaces iron in the absorptive pathway when iron is unavailable.

In humans and other animals, levels in the body are regulated primarily through changes in the amount of iron absorbed by the gastrointestinal mucosa. The absorption of dietary iron is influenced by body stores, by the amount and chemical nature of iron in ingested food and by a variety of dietary factors that increase or decrease the availability of iron for absorption (Hillman, 2001; Santi and Masters, 2001). Iron contained in meat protein (hemoglobin and myoglobin) is absorbed intact without first being broken down to elemental iron. Non-heme iron must first be reduced to ferrous iron (Fe^{2+}) before it can be absorbed. Ferrous iron is transported across intestinal mucosal cells by active transport with the rate of transport inversely related to body iron stores. Depending upon the iron status of the body, iron is stored bound to ferritin within mucosal cells and macrophages in the liver, spleen and bone, or is transported in the plasma bound to transferrin. Serum levels of ferritin and transferrin, along with several red blood cell parameters, can be used clinically to evaluate iron balance. Although iron absorption is regulated, excessive accumulation of iron in the body resulting from chronic ingestion of high levels of iron cannot be prevented by intestinal regulation and humans do not have a mechanism to increase excretion of absorbed iron in response to elevated body levels (NAS, 1989, 2001).

Human Studies

Acute Exposure

Information on acute oral toxic doses of iron in humans is available from numerous case reports of ingestion by children, but values vary because it is difficult to obtain accurate estimates of the amount taken in most overdose situations. Reviews of these case reports indicate that doses in the range of 200-300 mg iron/kg are generally considered lethal (Arena, 1970; Krenzelok and Hoff, 1979; NRC, 1979; Engle et al., 1987; Mann et al., 1989; Klein-Schwartz et al., 1990).

Therapeutic Studies

Ferrous salts are administered orally for the therapeutic treatment of iron deficiency. The oral absorption of ferrous iron supplements is considered to be essentially the same for all ferrous salts (e.g., sulfate, fumarate, succinate and gluconate) and is approximately three times greater than that of ferric (Fe^{3+}) salts (Hillman, 2001); thus, ferric iron is not used therapeutically. Constipation and other gastrointestinal effects, including nausea, vomiting, diarrhea and gastrointestinal pain are commonly associated with administration of oral ferrous salt supplements (Hillman, 2001; Santi and Masters, 2001). Severity of effects is variable, ranging from mild to severe, and depends upon dose and individual susceptibility. The onset of symptoms typically occurs at the initiation of treatment and continues throughout the duration of treatment. Although there is no indication that the severity of gastrointestinal effects varies over the course of treatment, severity is decreased in some patients when iron supplements are administered with food (Hillman, 2001; Santi and Masters, 2001). For most patients, iron deficiency is reversed within six months of treatment, thus limiting the duration of exposure.

The mechanism of iron-induced gastrointestinal toxicity is not established, although it is postulated that adverse effects are due to irritant effects of the free iron ion on the gastric muscosa (Liguori, 1993). The role of absorbed iron in the development of gastrointestinal adverse effects is unknown. The adverse effects of exposure to oral iron supplements has been investigated in several studies (Blot et al., 1981; Brock et al., 1985; Coplin et al., 1991; Fryklman et al., 1994; Hallberg et al., 1966; Liguori, 1993).

Frykman et al. (1994) evaluated the adverse effects of daily oral therapy with iron fumarate in a double-blind, crossover, placebo-controlled study in Swedish male [n=25; mean age 45 years (range 40-52)] and female [n=23; mean age 41 years (range 34-45)] adult blood donors. Study subjects were administered 60 mg elemental iron as a daily dose of iron fumarate for one month, with each study subject serving as their own placebo control. Compared to the placebo treatment period, the percentage of subjects reporting constipation (placebo 20%, ferrous fumarate 35%, $p<0.05$) and total gastrointestinal symptoms (nausea, obstipation, gastric pain and diarrhea (placebo 14%, ferrous fumarate 25%, $p<0.01$) was significantly increased during ferrous fumarate treatment. Although the severity of gastrointestinal effects was graded as minor in most study subjects, four subjects withdrew from the study due to severe gastrointestinal symptoms associated with iron fumarate. In a matched group of 49 adults taking a daily combination supplement of porcine-derived heme-iron and iron fumarate containing a total daily supplement of 18 mg iron/per day, the frequency of gastrointestinal symptoms was not increased compared to placebo. No differences in therapeutic efficacy, as measured by serum ferritin and hemoglobin levels, were observed between the non-heme iron and heme-iron treatment groups.

Adverse effects of four oral iron preparations were evaluated in 1496 male and female adult blood donors in a series of double-blind, placebo controlled trials (Hallberg et al., 1966). The following treatment groups were compared: (1) placebo (195 subjects) and ferrous sulfate (198 subjects; 222 mg elemental iron/day); (2) placebo (199 subjects), ferrous sulfate (120 subjects; 222 mg elemental iron/day), ferrous fumarate (118 subjects, 222 mg elemental iron/day), and ferrous gluconate (120 subjects; 222 mg elemental iron/day); and (3) placebo (200 subjects), ferrous sulfate (195 subjects; 180 mg elemental iron/day), ferrous glycine sulfate (200 subjects; 180 mg elemental iron/day), and ferrous gluconate (196 subjects; 180 mg elemental iron/day). Treatments were administered for two weeks. For all iron treatments, the frequency of adverse gastrointestinal effects was significantly increased compared to the matched placebo group ($p<0.05$). Adverse effects reported include constipation, diarrhea, heartburn, nausea and epigastric pain. No statistically significant differences in the frequency of adverse effects were observed between iron treatments for subjects receiving 222 mg elemental iron/day or between iron treatments for subjects receiving 180 mg elemental iron/day. In the seven iron treatment groups, the percentage of subjects reporting gastrointestinal effects ranged from 22.9% in the 222 mg ferrous sulfate group to 31.5% in the 222 mg ferrous gluconate group. In the three placebo treatment groups, the percentage of subjects reporting gastrointestinal effects ranged from 12.4 to 13.6%. Although statistical comparisons were not made between the 180 and 222 mg iron/day treatments, the frequency of adverse effects was similar for all iron treatment groups.

Gastrointestinal symptoms were reported in pregnant women treated daily with oral iron supplements containing 105 mg elemental iron and 500 mg ascorbic acid (55 women) or 105 mg

elemental iron, 500 mg ascorbic acid and 350 mg folic acid (54 women) during the third trimester of pregnancy (Blot et al., 1981). The form of iron was not reported. No placebo control group was included. Gastrointestinal adverse effects reported include nausea, diarrhea, constipation and epigastric pain. Approximately 16% of all patients reported minor gastrointestinal symptoms, 14% reported severe effects and 6% stopped treatment due to adverse effects. Adverse effects occurred with approximately the same frequency in the two treatment group, although data were not reported.

The tolerability of iron protein succinylate and ferrous sulfate were compared in a double-blind clinical trial in 1095 patients with iron deficiency (Liguori, 1993). Patients received daily treatment with a controlled-release formulation of ferrous sulfate containing 105 mg elemental iron (64 males and 485 females) or iron protein succinylate containing 120 mg elemental iron (55 males and 491 females) for 60 days. No placebo control group was included. In the ferrous sulfate group, 26.3% of patients reported adverse gastrointestinal effects (heartburn, epigastric pain, constipation and abdominal pain), compared to 11.5% of patients treated with iron protein succinylate ($p<0.05$).

The adverse effects of oral treatment with a conventional ferrous sulfate tablet were compared to a ferrous sulfate wax-matrix tablet in a single-blind, parallel group study in 543 subjects (Brock et al., 1985). No placebo control group was included. Subjects were administered a conventional ferrous sulfate table containing 50 mg elemental iron/day (272 subjects) or a sulfate wax-matrix tablet containing 50 mg elemental iron/day (271 subjects) for 56 days. Approximately 45% of subjects treated with conventional ferrous sulfate reported moderate-to-severe gastrointestinal effects, including abdominal discomfort, nausea, vomiting, constipation and diarrhea, compared to approximately 17% of subjects treated with the ferrous sulfate wax-matrix preparation, a statistically significant difference ($p<0.001$).

The tolerability of ferrous sulfate (50 mg elemental iron/day) and bis-glycino iron II (50 mg elemental iron/day) was compared in a double-blind, crossover trial in 42 women (Coplin et al., 1991). The treatment period for each iron supplement was two weeks. No placebo treatment period was included. The frequency of adverse gastrointestinal effects (abdominal pain, bloating, constipation, diarrhea and nausea) was similar for the two treatments, with 54% and 59% of subjects reporting gastrointestinal symptoms during treatment with bis-glycino iron II and ferrous sulfate, respectively. The difference between treatments was not statistically significant.

Effects of iron therapy on the upper gastrointestinal tract were evaluated in 14 healthy volunteers [13 women, 1 man; mean age 29 years (range: 24-48 years)] who were instructed to ingest 325 mg tablets of ferrous sulfate (119.5 mg elemental iron) three times/day before meals (358.5 mg elemental iron/day) for 2 weeks (Laine et al., 1988). Evaluation consisted of a gastrointestinal symptom survey, qualitative (Hemoccult) and quantitative (HemoQuant; mg mercury/g stool) testing for fecal blood loss, endoscopy of the upper gastrointestinal tract and histological examination of pinch biopsies of the gastric body, antrum and duodenum. Based on actual average ingestion of 2.5 tablets/day (2-week study) and 2.6 tablets/day (1-week study) and a reference human body weight of 70 kg (U.S. EPA, 1987), the estimated doses consumed by the subjects were 4.3 and 4.4 mg iron/kg-day, respectively, in addition to dietary iron. Compared to

baseline measurements in the two weeks prior to treatment, all subjects had significantly increased ($p<0.05$) dark brown-black stools and symptoms of nausea and vomiting during the treatment period, but not abdominal pain. Hemoglobin levels in stool did not change significantly after iron treatment. Endoscopic examination showed a significant ($p=0.003$) increase in abnormalities in the stomach, but not duodenum, after therapy. These changes consisted of erythema, small areas of subepithelial hemorrhage and solitary antral erosions in nine, six and two subjects, respectively, and were considered only minimally abnormal. No treatment-related histological changes were observed. Although it was speculated that the changes in the stomach could represent a mild form of iron poisoning, the investigators concluded that the treatment caused mild endoscopic abnormalities of uncertain clinical significance in the stomach. Evidence for iron overload (tissue biopsies or hematologic iron status indices) was not examined. Considering additional dietary exposure, an exposure level of about 4.3 mg/kg-day represents, at worst, a minimal LOAEL.

Adverse developmental effects in humans have not been associated with the ingestion of supplemental iron during pregnancy. As indicated above, NAS (2001) recommended that pregnant women supplement their diets with 27 mg iron/day (0.35 mg/kg-day). McElhatton et al. (1991) reported on 49 women who took an overdose of a simple iron preparation (53%) or iron with folate preparation (47%). In 48 of the women, the amount of iron ingested was known; 28 took > 1.2 g and the remainder took $\leq$ 1.2 g. There were 25 women who received chelation treatment with desferrioxamine (DFO) and 12 who received an emetic. Maternal toxicity, consisting of nausea, vomiting, hematoemesis, abdominal pain and diarrhea, was observed in 35 of the women. Two spontaneous abortions occurred and there were three premature deliveries. One of the spontaneous abortions and the premature deliveries were not related to the iron overdose. It is not known if the other spontaneous abortion occurring at 22 weeks (3 weeks after the overdose) was caused by the iron overdose. No conclusions on the developmental toxicity of iron can be made.

Chronic Exposure

While chronic iron toxicity occurs in people with genetic metabolic disorders resulting in excessive iron absorption or abnormal hemoglobin synthesis, or who receive frequent blood transfusions (Jacobs, 1977; Bothwell et al., 1979), there is a long-standing controversy as to whether a chronic overload due to oral intake is possible in individuals with a normal ability to control iron absorption (Hillman and Finch, 1985). Nevertheless, "the cumulative experience in human subjects suffering from iron overload of various etiologies strongly suggests that iron is noxious to tissues [when]...present in parenchymal cells...for a sufficiently long period of time" (Bothwell et al., 1979).

Looker et al. (1988) made comparisons of dietary iron intake and biochemical indices of iron status based on values taken from the second National Health and Nutrition Examination Survey (NHANES II) data base[1]. NHANES II was a probability sample of the noninstitutionalized U.S. population aged 6 months to 74 years, conducted between 1976 and

[1] The latest version of this data base, NHANES III (1984-1988) evaluated 30,000 subjects aged 2 months and above (NAS, 2001). Despite minor differences in the data sets, the conclusions drawn by Looker et al. (1988) based on NHANES II appear to be valid for the NHANES III data.

1980 by the National Center for Health Statistics. These data suggest that normal intake of iron by men 16-74 years old exceeds the DRI, and that iron intake is somewhat lower than the DRI for women younger than 51 years. Concomitant with the study of dietary intake, the NHANES II measured the iron status of these populations. The percent serum transferrin saturation, a measure of the residual capacity of the iron transport system to process potential variations in iron from dietary intake or catabolized body stores, ranged from 24% saturation for pre- and post-menopausal women not using iron supplements to 29% saturation for adult male supplement users. These values are within the normal range (20-40%). The Looker et al. (1988) evaluation of the NHANES II iron status data concerned iron deficiencies, only, and did not address iron overload directly. However, iron overload conditions would likely be evidenced by increased saturation of serum transferrin and increased serum ferritin concentrations, which were also within the normal range. Therefore, the corresponding dietary intakes are presumed to represent chronic NOAELs. Looker et al. (1988) estimated daily iron intakes ranging from 10.0 for elderly women to 18.7 mg/day for young adult men in the study population. These daily intakes correspond to a range of about 0.15 to 0.27 mg/kg-day, depending on assumptions of average body weight. Taking the highest intake level of 18.7 mg/day and a body weight of 70 kg, a NOAEL of 0.27 is established for chronic iron toxicity.

Hemosiderosis (or siderosis) and iron overload are increases in tissue iron or a general increase in iron stores without associated tissue damage (Bothwell et al., 1979; Jacobs, 1977). Hemochromatosis describes massive iron overload (15 g of body iron stores or greater) together with cirrhosis and/or other tissue damage attributable to iron. Although focal deposits of iron may occur in any part of the body where red cells are extravasated, the clinical syndrome of hemochromatosis typically involves damage to the hepatic parenchyma (particularly fibrosis), heart (cardiac dysfunction including failure) and endocrine glands (particularly hypogonadism). Pancreatic iron deposition is common and massive deposits may be associated with fibrosis and diabetes. A number of studies involving chronic oral administration of iron to animals have been designed in an attempt to identify an animal model for hemochromatosis. Most of these studies have been negative (Bothwell et al., 1979; NRC, 1979). Animal studies involving parenteral administration of iron have been generally negative as well, even though parenteral routes bypass the mechanisms that regulate absorption of iron from the gastrointestinal tract.

Chronic iron toxicity has been observed in people with idiopathic hemochromatosis (a genetic metabolic disorder resulting in excessive iron absorption), abnormalities of hemoglobin synthesis (e.g., thalassemia) or various anemic states (e.g., sideroblastic anemia), frequent blood transfusions or a combination of these conditions (Jacobs, 1977; Bothwell et al., 1979). Chronic hemochromatosis has also occurred among the South African Bantu population from an excessive intake of absorbable iron in an alcoholic beverage.

Habitual excessive intake of iron by the Bantus is attributed to consumption of home-brewed Kaffir beer, which was contaminated by iron vessels during brewing (Bothwell and Bradlow, 1960; Bothwell et al., 1964). The beer's high acidity (pH 3-3.5) enhanced iron leaching from the vessels. The iron in the beer is readily assimilable (i.e., ionizable) due to the acidity and presence of iron-complexing ligands such as fructose, and is absorbed to approximately the same degree as ferric chloride. The alcohol content of the beer is also believed to contribute to the bioavailability of the iron (Jacobs, 1977; Finch and Monsen, 1972). Based

primarily on drinking habits and analyses of beer samples, the estimated average dietary iron intake of the Bantu men ranged from 50-100 mg/day from beer alone (Bothwell et al., 1964). Using a reference body weight of 70 kg (U.S. EPA, 1987), this range corresponds to 0.7-1.4 mg/kg-day. Histological examinations of the liver of 147 Bantus (129 male, 18 female) ranging in age from 11-70 years (most were between 20 and 50 years old) that died from acute traumatic causes were performed (Bothwell and Bradlow, 1960). Varying degrees of hepatic siderosis were observed in 89% of the cases; the degree tended to increase with age 40-50 years or less. The siderosis was mild in 59% and severe in 19% of the cases, respectively. There was a close correlation between hepatic iron concentration and portal fibrosis and cirrhosis. Although the overall prevalence was low (15.6% fibrosis and 1.4% cirrhosis), all 11 subjects with the highest iron concentrations (>2.0% dry weight of liver) showed either fibrosis or cirrhosis. Histological examination of the spleen (50 subjects) also showed siderosis and unspecified histological changes. Malnutrition and alcoholism could have played a role in the etiology of the hepatic and splenic siderosis in the Bantus. A NOAEL in the range of 0.7 - 1.4 mg/kg-day is indicated but may be low given the likely higher bioavailability of iron in the beer than for normal dietary exposure. Given the generally poor nutritional health status of this population, the relevance of this study for application to the U.S. population is questionable.

Ethiopia reportedly has the highest per capita iron intake in the world, with an average daily intake of 471 mg iron/day (range 98-1418 mg/day; 1.4-20.3 mg iron/kg-day assuming 70 kg body weight) (Roe, 1966; Hofvander, 1968). Increased stored iron in the liver and adverse health effects have not been observed due to low bioavailability of the iron in Ethiopian food.

A few studies have suggested that high iron intake may be a risk factor for myocardial infarction (Salonen et al., 1992; Lauffer, 1991; Sullivan, 1992). Five other large studies found no association between serum ferritin levels and coronary heart disease (NAS, 2001). Various other measures of iron status (serum transferrin saturation, serum iron concentration and total iron-binding capacity) have been examined for a possible link to cardiovascular disease in prospective cohort studies, but results overall have been characterized as contradictory (Meyers, 1996; NAS, 2001). The NAS (2001) concluded that the available evidence "does not provide convincing support for a causal relationship" between the level of dietary iron intake and the risk for coronary heart disease, although iron cannot be definitively excluded as a risk factor.

Animal Studies

Repeated-dose oral studies in experimental animals found no significant effect of treatment with inorganic iron compounds. No treatment-related adverse changes in clinical signs, body or organ weights, food consumption or histopathology were observed in male Sprague-Dawley rats that had daily dietary intakes of 35, 70 or 140 mg of iron (as $FeSO_4$ or FeEDTA) per kg for up to 61 days (Appel et al., 2001). In male and female F344 rats that were exposed to drinking water containing 0.25 or 0.5% ferric chloride ($FeCl_3 \cdot 6H_2O$) for 104 weeks, there were no dose-related effects other than reduced water intake (possibly affected by palatability) and body weight gain (Sato et al., 1992). In the latter study, the iron intakes were 58 or 110 mg/kg-day in males and 65 or 116 mg/kg-day in females.

No treatment-related teratogenic or embryotoxic effects were observed in rats given 2.7 mg iron/kg-day as ferric chloride on gestational days 6-15 (Nolen et al., 1972), or in rats and mice given 24-76 mg iron/kg-day as ferrous sulfate for 6 days during gestation (days unspecified) (Tadokoro et al., 1979). Some embryonic mortality (numbers and species not reported) occurred in the latter study at 240 mg iron/kg-day.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC RfDs FOR IRON

Iron is an essential element, as such, the RfD must be protective against both toxicity and deficiency. Using the values for dietary intake and iron status indices taken from the second National Health and Nutrition Examination Survey (NHANES II) data base, it is possible to establish a NOAEL for chronic toxicity. Looker et al. (1988) made comparisons of dietary iron intake and biochemical indices of iron status using data from NHANES II. The average intakes of iron ranged from 0.15 to 0.27 mg/kg-day. The serum ferritin levels and percent serum transferrin saturation were within the normal range. Thus, intake levels of 0.15-0.27 mg/kg-day are sufficient to protect against iron deficiency. However, the NHANES II data do not provide information to identify daily dietary iron intakes associated with toxicity. Therefore, daily dietary iron intakes were not considered as the basis for the p-RfD.

Most of the quantitative chronic oral toxicity data for iron have been obtained from studies of the Bantu population of South Africa. These data indicate that intakes in the range of 0.7-1.4 mg iron/kg-day in home-brewed beer are associated with hemosiderosis and liver cirrhosis (Bothwell and Bradlow, 1960; Bothwell et al., 1964). However, confounding factors such as malnutrition and unusually high iron bioavailability due to the high acidity and ethanol in the beer preclude use of these data for risk assessment. Much higher dietary intakes (average 6.7 mg/kg-day) of less soluble forms of iron are tolerated in non-western diets as indicated by studies of populations in Ethiopia. Thus, although toxicity associated with iron overload due to chronic oral intake can be demonstrated qualitatively or even semiquantitatively, assignment of a precise LOAEL for normal individuals consuming western diets is compromised by studies containing confounding factors.

Gastrointestinal toxicity, which is commonly associated with the therapeutic use of iron supplements, was identified as the critical effect for the basis of the provisional subchronic and chronic RfDs. The most frequently reported symptoms include epigastric pain, nausea, vomiting, constipation and diarrhea. Several prospective clinical trials in healthy subjects and iron-deficient patients identify a LOAEL for gastrointestinal toxicity of 50 to 180 mg elemental iron/day; NOAELs were not established (Blot et al., 1981; Brock et al., 1985; Coplin et al., 1991; Frykman et al., 1994; Hallberg et al., 1966; Liguori, 1993). The treatment durations in these studies range from 2 weeks to approximately 3 months. Although no chronic exposure studies reporting gastrointestinal toxicity were identified, clinical experience with iron supplements indicates that gastrointestinal effects are associated with oral iron therapy, regardless of the duration of treatment and that symptom intensity does not change over the course of treatment (Hillman, 2001; Santi and Masters, 2001). This observation suggests that the response is related to the concentration of iron in the intestinal tract and not to the time-integrated dose. Therefore,

gastrointestinal toxicity is considered as the critical effect for both the subchronic and chronic p-RfDs.

The lowest LOAEL of 50 mg elemental iron/day for gastrointestinal toxicity associated with iron supplements was reported in two studies that did not use a placebo-controlled design (Brock et al., 1985; Coplin et al., 1991); therefore, data were not considered suitable for derivation of the p-RfD. The placebo-controlled, cross-over design study by Frykman et al. (1994) reporting a LOAEL of 60 mg/day in Swedish men and women was identified as the critical study. Results of this study show that daily treatment with ferrous fumarate (60 mg elemental iron/day) for one month produced a statistically significant increase in gastrointestinal effects compared to placebo. To determine the LOAEL for total daily iron intake, the LOAEL for daily supplementation with ferrous fumarate of 60 mg elemental iron/day was added to the estimated mean dietary intake for six European countries of 11 mg elemental iron/day (NAS, 2001) for a total daily iron intake of 71 mg elemental iron/day. Based on a reference body weight of 70 kg (U.S. EPA, 1987), the LOAEL for gastrointestinal effects for total daily iron intake is 1 mg elemental iron/kg-day. This LOAEL is considered to be a minimal LOAEL because gastrointestinal effects were characterized by most study participants as minor in severity.

The provisional subchronic and chronic RfD for iron was derived from the LOAEL of 1 mg/kg-day for total daily iron intake for adverse gastrointestinal effects as follows:

$$\begin{aligned} \textbf{p-RfD (subchronic and chronic)} &= \textbf{LOAEL} \div \textbf{UF} \\ &= \textbf{1 mg/kg-day} \div \textbf{1.5} \\ &= \textbf{0.7 mg/kg-day} \end{aligned}$$

Dividing the LOAEL of 1 mg/kg-day by an uncertainty factor of 1.5 yields a subchronic and chronic p-RfD of 0.7 mg/mg-day. The uncertainty factor of 1.5 includes the individual uncertainty factors of 1.5 for use of a minimal LOAEL, 1 for sensitive individuals, 1 for less than lifetime exposure, and 1 for an adequate data base. An uncertainty factor of 1.5 was applied to account for extrapolation from a minimal LOAEL to a NOAEL for a non-serious effect. A higher uncertainty factor for use of a minimal LOAEL was not used since the observed gastrointestinal effects are not considered serious and are reversible when exposure is discontinued. Furthermore, gastrointestinal symptoms are not associated with dietary intake of similar levels of iron (NAS, 2001). Because individuals sensitive to gastrointestinal symptoms are considered to be included in the studies investigating effects of therapeutic iron; an uncertainty factor of 1 for sensitive individuals results. An uncertainty factor of 1 was used to account for less than lifetime exposure. Although exposure duration in the Frykman et al. (1994) study was only one month, there is no evidence to suggest that symptoms increase with longer exposure periods. An uncertainty factor of 1 was used to reflect an adequate database in humans, due to the extensive use of therapeutic iron.

Except for individuals with disorders of iron metabolism, little information is available on the long-term systemic toxicity of orally ingested iron. This assessment, therefore, focuses more on what is known to be a safe oral intake of iron for the general human population (i.e., apparently healthy normal individuals). The provisional reference dose is estimated to be an

intake for the general population that is adequately protective from adverse health effects. Further, it is also important to note that individual requirements for, as well as adverse reactions to, iron may be highly variable. Some individuals may, in fact, consume a diet that contributes more than the provisional reference dose, without any cause for concern. In addition, specific population subgroups may have higher nutritional requirements than the provisional RfD would provide. The p-RfD may not be protective of individuals with inherited disorders of iron metabolism or other conditions which affect iron homeostasis.

This assessment is essentially the same as that proposed by Stifelman et al. (2005).

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7-29-05

Provisional Peer Reviewed Toxicity Values for

Iron and Compounds
(CASRN 7439-89-6)

Derivation of a Carcinogenicity Assessment

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

7-29-05

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR IRON (CASRN 7439-89-6) AND COMPOUNDS
Derivation of a Carcinogenicity Assessment

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions (or the EPA HQ Superfund Program) sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

A cancer assessment for iron is not listed on IRIS (U.S. EPA, 2005a), the HEAST (U.S. EPA, 1997), or the Drinking Water Standards and Health Advisories list (U.S. EPA, 2000), and was not considered by the CRAVE Work Group (U.S. EPA, 1995). The CARA list (1991, 1994) includes a Health Effects Assessment for Iron and Compounds (U.S. EPA, 1984) that assigned iron and its compounds to weight-of-evidence Group C, possible human carcinogen. This assessment was based on conflicting evidence of lung tumors following occupational inhalation exposure to ferric oxide (mixed exposure), and injection-site tumors in one patient and in mice treated with iron-dextran. IARC (1972, 1987) assigned ferric oxide to Group 3, not classifiable as to its carcinogenicity to humans based on inadequate data in humans (increased incidence of lung cancer following occupational exposure to iron dusts in mixtures) and apparently negative

evidence for carcinogenicity in mice, hamsters and guinea pigs exposed by inhalation or intratracheal instillation. For ferric oxide dust and fume, the ACGIH (1991, 2001) lists an A4 notation, not classifiable as a human carcinogen; this is based on mixed exposure studies in humans and primarily negative studies in animals. In March, 2004, a literature search was also conducted using TOXLINE, MEDLINE, Chemical Abstracts and Biological Abstracts data bases.

Iron has not been the subject of a toxicological review by ATSDR (2001) or the WHO (2001). Monographs by IARC (1972, 1984, 1987), a toxicity review on iron (Grimsley, 2001), and the NTP (2001a, 2001b) management status report and chemical repository summary were consulted for information relevant to the carcinogenicity of iron and inorganic iron compounds. The following computer searches, performed in April, 1993, were screened to identify additional pertinent studies not discussed in review documents: TOXLINE (1983-April, 1993), CANCERLIT (1990 - April, 1993), MEDLINE (1991 - April, 1993), TSCATS, RTECS, and HSDB. Update literature searches were conducted in September, 2001 in TOXLINE (1992-September, 2001), CANCERLIT (1992- September, 2001), MEDLINE (1992-September, 2001), TSCATS, RTECS, DART/ETICBACK, EMIC/EMICBACK, HSDB, GENETOX, and CCRIS.

REVIEW OF PERTINENT LITERATURE

Human Studies

Oral Exposure

Because iron is an essential element, the NAS (2001) has established guidelines for daily dietary intakes, based on gender, age, and physiological status, that are designed to avoid adverse effects of deficiency and excess. Individuals of northern European descent who are affected by hereditary hemochromatosis, an autosomal, recessive disorder, are not protected by these guidelines. These individuals exhibit excessive absorption of dietary iron, which results in abnormally high accumulations of iron in liver and brain tissues. When the liver consequently develops cirrhosis, the risk of developing primary hepatocellular carcinoma increases significantly. It is not clear whether these findings are relevant to excess iron intake by the general population.

Bird et al. (1996) investigated the association between plasma ferritin and iron intake and the development of adenomatous polyps, which are intermediate markers for colorectal cancer. The study population consisted of men and women between the ages of 50 and 75 years old who underwent routine screening by flexible sigmoidoscopy at one of two medical centers during 1991-1993. Individuals with cancer, inflammatory bowel disease, or familial polyposis were excluded. Cases (300 men and 167 women) were subjects diagnosed for the first time with one

or more histologically confirmed adenomatous polyps. Controls (331 men and 167 women) had no history of polyps and none discovered at sigmoidoscopy. Cases and controls were matched by sex, age (± 5 years), date of sigmoidoscopy (± 3 months), and medical center. Plasma ferritin levels, hematocrit, and certain nutritional indicators (carotenoids, ascobate, folate) were measured in blood samples drawn 6 months after examination. Iron intakes for the year preceding sigmoidoscopy were estimated by means of a semiquantitative food frequency questionnaire. After controlling for possible confounding factors, subjects with high plasma ferritin levels (>289 μg/L) had a multivariate-adjusted odds ratio for colorectal polyps of 1.5 (95% confidence interval (C.I. = 1.0-2.3) compared to subjects with low/normal levels (73-141 μg/L). The pattern for iron intake was U-shaped. Compared with subjects consuming an adequate amount of iron (11.6-13.6 mg/day), multivariate-adjusted odds ratios for colorectal polyps in men were 1.6 (95% C.I. = 1.1-2.4) for intakes below 11.6 mg/day and 1.4 (95% C.I.= 0.9-2.0) for intakes above 27.3 mg/day. The highest odds ratio of 2.1 (95% C.I. = 1.3-3.5) was found after further adjustment for smoking for men at the lowest level of iron intake. The association between iron intake and colorectal polyps disappeared when exposure group class of reaction was based on dietary intake alone (i.e., high iron supplementation ignored). The authors concluded that there was a weak positive association between iron exposure and colorectal polyps that may increase the risk of colorectal cancer but note that some factor in supplementation may have been responsible for the effect.

Inhalation Exposure

Most studies of cancer incidence following occupational exposure to iron dust are excluded from consideration because of confounding exposures to silica, radon daughters, soot, asbestos, or other types of metals in the study populations (U.S. EPA, 1984; IARC, 1972, 1984, 1987).

A case-control study examined cancer incidence in a Swedish male worker population (1958-1971) with a high exposure to iron oxides from the production of sulfuric acid from pyrite (FeS_2) (Axelson and Sjöberg, 1979). The workers were exposed to iron oxide (Fe_2O_3) along with 1-2% copper, 0.01-0.1% arsenic, nickel and cobalt as impurities. Exposure in the workroom was estimated as approximately 50-100 mg/m^3, and the particle size as 25% below 10 μm and 5-10% below 5 μm. No cases of siderosis were known from the plant. The Swedish National Cancer Register was consulted for locating cases of cancer that could have been caused by environmental exposure; the study examined cancers of the stomach, liver, lung, kidney, and bladder, and hematological malignancies. Each cancer case was matched with two controls from the local population register by matching for sex, age, and residency in the same or adjacent neighborhood block. Company files were searched to determine the length of exposure; those with less than 5 months of exposure were considered to be nonexposed. The study found no association between exposure to iron oxides and any of the selected types of cancer.

Animal Studies

Oral Exposure

Groups of F344 rats (50 per sex per group) were given ferric chloride ($FeCl_3 \cdot 6H_2O$) in drinking water at concentrations of 0, 0.25, or 0.5% (weight/volume) for 104 weeks, and then given distilled water for an 8 week recovery period (Sato et al., 1992). The intake of ferric chloride was reported to be 0, 169.7, or 319.7 mg/kg-day for males and 0, 187.9, or 336.0 mg/kg-day for females. The iron intakes were 0, 58.4, or 110 mg/kg-day in males and 0, 64.6, or 115.6 mg/kg-day in females. Rats were observed daily for clinical signs and mortality. Body weights were measured once a week for 13 weeks and every fourth week thereafter. All rats dying prematurely and survivors at week 112 were examined for gross and microscopic neoplastic and non-neoplastic lesions. There were dose-related decreases in drinking water intake and terminal body weight in both sexes. These may have been related to reduced palatability. Survival in both sexes was not significantly affected by exposure to ferric chloride. No increases in tumor incidence were observed in rats exposed to ferric chloride for two years.

Inhalation Exposure

Groups of male Syrian hamsters (132 per group) were exposed to filtered air or Fe_2O_3 (analytic grade) dust at a concentration of 40 mg/m^3, 6 hours/day, 5 days/week for life (Nettesheim et al., 1975). The particle size had a geometric mean diameter of 0.11 μm. In addition, two satellite groups (15 hamsters per treatment) were sacrificed, three animals at a time, at 2, 4, 8, 12, and 104 weeks, so that the accumulation of iron in the lung from inhaled Fe_2O_3 could be compared to background iron concentrations in heme. The animals were examined daily, before and after each exposure, for clinical signs; body weights were recorded monthly. All animals except those cannibalized (<2%) were necropsied. Histological analyses were performed for the major organs, including heart, trachea, lungs, and nasal cavities. Examination of the satellite groups demonstrated a gradual increase in iron accumulation in the lung, reaching a total of 10 mg per lung at 104 weeks. Exposure to Fe_2O_3 had no effect on survival or body weight gain and did not increase the incidence of tumors. The authors concluded that inhalation of Fe_2O_3 was not carcinogenic to hamsters.

Groups of Syrian golden hamsters (24 per sex per group) received intratracheal instillations of 0 or 3 mg[1] of Fe_2O_3 dust in 0.2 ml of saline once a week for 15 weeks, and then were observed up to week 120 (Stenbäck et al., 1976). Analysis by the sedimentation method demonstrated that 98% of the particles were less than 10 μm in diameter. Animals were weighed

[1]The authors characterized the treatment as a 'maximum dose of 3 mg'. It is not clear whether the hamsters received lower doses on some occasions.

weekly and autopsied. Organs with gross lesions and the larynx, trachea, bronchi, and lungs were examined histologically. Treatment with ferric oxide had no effect on survival and did not affect body weight except during the final weeks of survival (data not shown). Treatment did not induce tumors of the respiratory tract and the incidence of forestomach papillomas in the treatment group was less than in the control group.

Other Studies

Genotoxicity

Genotoxicity assays of inorganic iron salts were primarily negative in bacteria, but were more often positive in mammalian systems. Iron did not induce reverse mutations in *Salmonella typhimurium* strains TA98, TA102, TA1535, or TA1537, with or without activation (Wong, 1988). Ferric chloride and ferrous sulfate tested negative in strains TA98, TA100, TA1535, TA1537, and TA1538 with or without metabolic activation (Shimizu et al., 1985; Dunkel et al., 1999). Ferrous sulfate also tested negative in strains TA97 and TA102, with or without activation (Fujita et al., 1994), but positive in TA1537 and TA1538 (U.S. EPA, 1984). Ferrous and ferric chloride did not induce DNA repair in *Bacillus subtilis* (rec assay) (Leifer et al., 1981). Ferrous sulfate increased the frequency of mutations at the TK locus of mouse L5178Y lymphoma cells, with or without metabolic activation, but only at high concentrations that were likely to be cytotoxic; ferric chloride only increased the frequency of TK mutations when tested with metabolic activation (Dunkel et al., 1999). Ferrous sulfate did not induce sister chromatid exchanges *in vitro* (Ohno et al., 1982). DNA-protein cross-links were generated in mammalian cells cultured in the presence of ferrous iron (Altman et al., 1995). Single- and double-strand DNA breaks were produced in supercoiled plasmid DNA (Toyokuni and Sagripanti, 1992) and in isolated rat liver nuclei (U.S. EPA, 1984) treated with ferrous or ferric chloride. No breakage was detected electrophoretically in Chinese hamster ovary cell DNA treated with ferrous chloride (U.S. EPA, 1984). In a model of oxidative damage within cells, ferrous sulfate, in the presence of hydrogen peroxide, was demonstrated to induce double-strand breaks and intra-strand cross-links in DNA *in vitro* (Lloyd and Phillips, 1999).

Cell transformation

Iron compounds have yielded variable results in studies of cell transformation *in vitro*. Particles of magnetite (Fe_3O_4) induced transformation of cultured a Chinese hamster lung cell line (V_{79}), but only at cytotoxic concentrations (Elias et al., 1995). Ferrous chloride and ferrous sulfate induced cell transformation in viral-enhanced Syrian hamster embryo (SA7/SHE) cells (U.S. EPA, 1984).

Mechanistic Studies

Adverse effects of iron are thought to be related to the formation of reactive oxygen species via the Fenton reaction (Henle and Linn, 1997). Hydrogen peroxide can react with ferrous ion, resulting in the conversion to ferric ion and the production of hydroxyl radicals. Ferric ion can also react with hydrogen peroxide, producing superoxide radical. Reactive oxygen species may react with DNA. However, because of the complex homeostatic mechanisms involved in iron transport and metabolism, unbound ferrous iron is not likely to be present except in conditions of excessive iron intake.

PROVISIONAL WEIGHT-OF-EVIDENCE CLASSIFICATION

U.S. EPA (1984) classified iron and its compounds, including ferric dextran, as possible human carcinogens (Group C). This assessment was based on reports associating an increased incidence of lung cancer with exposure to hematite dust (confounded by coincident exposures to tobacco, alcohol, silica, soot, and fumes of other metals), inconsistent reports of lung tumors in animals exposed by inhalation or tracheal instillation to ferric oxide, and reports of injection site tumors in one patient injected with iron dextran and in mice injected with iron dextran or saccharated iron oxide. The current PPRTV assessment excludes organic forms of iron and studies in which the levels of impurities are significant.

Results of the case-control study by Bird et al. (1996) provide evidence of a weak association between elevated iron intake or high plasma ferritin (a measure of body stores) and the prevalence of adenomatous colorectal polyps, a possible precursor to colorectal cancer. Weaknesses of this study include the 6-month period between examination and ferritin measurements, and the possible recall errors affecting the dietary questionnaire for the previous year. In addition, the association between iron intake and colorectal polyps was stronger at low iron intake and not related to dietary (i.e., environmental) intake. Although the association between cirrhotic hereditary hemochromatosis and hepatocellular carcinoma is well established, the evidence for dietary iron intake and hepatic cancer in the general population was characterized by the NAS (2001) as inconclusive. In a chronic rat assay, Sato et al. (1992) found no evidence of carcinogenicity of ferric chloride ingested in drinking water at concentrations up to 0.5%. In summary, the evidence for carcinogenicity of ingested inorganic iron compounds in humans and animals is inadequate.

Evidence from the case-control study of Axelson and Sjöberg (1979) suggests that inhaled iron oxide may not be carcinogenic to humans. However, uncertainty remains because levels of exposure were not measured, the durations of exposure were not reported, and individuals exposed for up to 5 months were categorized as 'nonexposed.' In addition, the lack of reported cases of siderosis in the workplace suggests that the exposure levels may have been

lower than estimated. Thus, the evidence for carcinogenicity of inhaled iron oxide in humans is considered inadequate. Results of the study of Nettesheim et al. (1975) indicate that chronic inhalation exposure to iron oxide at a concentration of 40 mg/m^3 is not carcinogenic to hamsters. This finding is supported by the negative results for carcinogenicity of iron oxide administered by intratracheal instillation to hamsters for 15 weeks (Stenbäck et al., 1976). However, as both hamster studies used single exposure concentrations, the possibility of carcinogenicity at higher exposure levels cannot be disregarded.

Following the U.S. EPA (2005b) guidelines for carcinogen risk assessment, the available data are inadequate for an assessment of the human carcinogenic potential of inhaled iron oxide or ingested iron chloride.

QUANTITATIVE ESTIMATES OF CARCINOGENIC RISK

Derivation of quantitative estimates of cancer risk for ingested or inhaled iron or iron oxide is precluded by the absence of adequate data demonstrating carcinogenicity.

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Acronyms and Abbreviations

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CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

6-16-05

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR IRON (CASRN 7439-89-6) AND COMPOUNDS
Derivation of an Inhalation RfC

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions (or the EPA HQ Superfund Program) sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

An RfC for iron is not listed on IRIS (U.S. EPA, 2001) and was not considered by the RfD/RfC Work Group (U.S. EPA, 1995). The HEAST (U.S. EPA, 1997) reported that data regarding iron were inadequate for quantitative risk assessment. The CARA list (1991, 1994a) includes a Health Effects Assessment for Iron and Compounds (U.S. EPA, 1984) that reported negative epidemiological studies (no association between excess mortality or respiratory diseases and occupational exposure to iron oxide dusts) and no available subchronic or chronic inhalation studies in animals. In March, 2004, a literature search was also conducted using TOXLINE, MEDLINE, Chemical Abstracts and Biological Abstracts data bases.

Occupational exposure limits have been established for soluble iron salts and iron oxide, as well as for organic iron compounds not covered in this issue paper. The ACGIH (1991a,

2001) has adopted a TLV-TWA, NIOSH (2001a) has established a REL-TWA, and OSHA (2001a, 2001b) has adopted a construction industry PEL-TWA of 1 mg/m^3, as Fe, to reduce the likelihood of irritation to eyes, skin, and respiratory tract from exposure to aerosols or mists of soluble iron salts (ferrous and ferric sulfates and chlorides, and ferric nitrate). The ACGIH (1991b, 2001) has adopted a TLV-TWA and NIOSH (2001b) has established a REL-TWA of 5 mg/m^3, as Fe, for dust and fume of ferric oxide (Fe_2O_3) to protect against siderosis, a benign pneumoconiosis. OSHA (2001c) has adopted a PEL-TWA of 10 mg/m^3 for ferric oxide fume, to protect against accumulation of iron dust in the lungs.

Iron has not been the subject of a toxicological profile by ATSDR (2001) or the WHO (2001). Monographs by IARC (1972, 1984, 1987), a toxicity review on iron (Grimsley, 2001), and the NTP (2001a, 2001b) management status report and chemical repository summary were consulted for information relevant to inhalation toxicity of iron and inorganic iron compounds. The following computer searches, performed in April, 1993, were screened to identify additional pertinent studies not discussed in review documents: TOXLINE (1983-April, 1993), CANCERLIT (1990 - April, 1993), MEDLINE (1991 - April, 1993), TSCATS, RTECS, and HSDB. Update literature searches were conducted in September, 2001 in TOXLINE (1992-September, 2001), CANCERLIT (1992- September, 2001), MEDLINE (1992-September, 2001), TSCATS, RTECS, DART/ETICBACK, EMIC/EMICBACK, HSDB, GENETOX, and CCRIS.

REVIEW OF PERTINENT LITERATURE

Human Studies

A number of studies have examined the relationship between respiratory disease and inhalation exposure to iron compounds for workers employed in hematite mining or other iron-related occupations, such as welding or steel-making (U.S. EPA, 1984; IARC, 1972, 1984; Grimsley, 2001). However, since these studies involved concurrent exposure to silica and other metals, they are not suitable for the health risk assessment of iron or iron compounds. The literature search did not discover any studies that examined subchronic or chronic inhalation exposures of humans to quantified levels of iron or iron compounds alone.

In a case-control study of cancer incidence, a Swedish male worker population (1958-1971) was reported to have had a high exposure to iron oxides from the production of sulfuric acid from pyrite (FeS_2) (Axelson and Sjöberg, 1979). The workers were exposed to iron oxide (Fe_2O_3) along with 1-2% copper, 0.01-0.1% arsenic, nickel and cobalt as impurities. Exposure in the workroom was estimated as approximately 50-100 mg/m^3, and the particle size as 25% below 10 μm and 5-10% below 5 μm. However, there were no measurements of exposure levels or particle size, and exposure durations were not reported. No cases of siderosis were known from the plant.

Animal Studies

Inhalation studies for iron compounds in animals include a chronic study of hamsters exposed to ferric oxide (Fe_2O_3) dust (Nettesheim et al., 1975) and a 2-month study in rabbits exposed to aerosols of ferric chloride (Johansson et al., 1992).

In a cancer study, groups of male Syrian hamsters (132 per group) were exposed to filtered air or Fe_2O_3 (analytic grade) dust at a concentration of 40 mg/m^3, 6 hours/day, 5 days/week for life (Nettesheim et al., 1975). The particle size had a geometric mean diameter of 0.11 μm. In addition, two satellite groups (15 hamsters per treatment) were sacrificed, three animals at a time, at 2, 4, 8, 12, and 104 weeks, so that the accumulation of iron in the lung from inhaled Fe_2O_3 could be compared to background iron concentrations in heme. The animals were examined daily, before and after each exposure, for clinical signs, and body weights were recorded monthly. All animals except those cannibalized (<2%) were necropsied. Histological analyses were performed on the major organs, including heart, trachea, lungs, and nasal cavities. Examination of the satellite groups demonstrated the gradual increase in iron accumulation in the lung, reaching a total of 10 mg per lung at 104 weeks. Histological examination revealed iron deposits in the lungs and tracheal and bronchial lymph nodes of all exposed animals. Diffuse and focal alveolar fibrosis was also frequently observed in the lungs of treated animals. Results for the histological endpoints were not reported quantitatively. In this study, 40 mg/m^3 is a LOAEL for respiratory effects (alveolar fibrosis) in hamsters exposed to Fe_2O_3 dust.

Groups of 8 male rabbits (strain not reported) were exposed to aerosols of 0, 1.4, or 3.1 mg/m^3 of iron as $FeCl_3$ 6 hours/day, 5 days/week for 2 months (Johansson et al., 1992). At termination, the upper left lung lobe was examined by light microscopy, pieces of the lower left lung were analyzed by electron microscopy or used for phospholipid analysis, and the right lung was lavaged to obtain macrophages for morphological and functional analyses. The mass median aerodynamic diameter of the aerosols was ~1 μm as measured with an impactor. Treatment had no effect on survival. Lungs were spotted with black in 7/8 high-iron rabbits, in 2/8 low-iron rabbits, and in 0/8 controls. The absolute weight of the left lower lobe of the lung was significantly elevated compared to controls in the high-iron group. Exposure-related histopathology was observed in the lungs. In the high-exposure group, the lungs contained naked granulomas [large nodules (≥ 1 mm) of densely packed granular macrophages], accumulations of granular macrophages in terminal bronchioles, and foci of interstitial lymphocytic inflammatory reaction. Small granulomas were observed in one low-iron and one control rabbit. Accumulations of normal and granular macrophages were observed in the alveoli of exposed rabbits. In the control group, normal lung tissue contained some small accumulations of macrophages with occasional small inflammatory reaction. The high exposure group had a significantly higher density of alveolar type II cells than the controls. Ultrastructural analysis of macrophages showed a significantly higher number of abnormal cells, cells with enlarged lysosomes, and black inclusions in cells in both exposed groups; the high-iron group had higher

percentages of cells with laminar inclusions or with smooth cell surfaces. In functional tests, macrophages from the high-exposure group showed significantly elevated phagocytic activity, but no significant increase in oxidative metabolic activity (superoxide generation). Total phospholipids were elevated in the high-exposure group, but, as indicated by the lack of increase in phosphatidyl cholines or the percentage of 1,2-dipalmitoylphosphatidylcholine, the amount of surfactant was unchanged. In this study, the low concentration of 1.4 mg/m^3 is a NOAEL and the high concentration of 3.1 mg/m^3 is a LOAEL for adverse lung effects (nodular granulomas ≥ 1 mm in diameter, abnormal macrophages) in rabbits exposed to ferric chloride aerosols. Because of its focus on alveolar macrophage effects, this study provided no information regarding clinical signs of toxicity, body weight changes, clinical biochemistry, nasopharyngeal effects or histology of any other tissue besides the lung.

Other Studies

In a cancer study, groups of Syrian golden hamsters (24 per sex per group) received intratracheal instillations of 0 or "a maximum dose"[1] of 3 mg of Fe_2O_3 dust in 0.2 ml of saline once a week for 15 weeks, and then were observed up to week 120 (Stenbäck et al., 1976). Analysis by the sedimentation method demonstrated that 98% of the particles were less than 10 µm in diameter. Animals were weighed weekly and autopsied. Organs with gross lesions and the larynx, trachea, bronchi, and lungs were examined histologically. Treatment with ferric oxide had no effect on survival and no effect on body weight except during the final weeks of survival (data not shown). Deposited iron oxide was grossly visible as dark patches on the lung surface. Histologically, dust accumulations surrounded by cellular infiltrates were observed in the peribronchial region. Interstitial fibrosis was observed occasionally, but distinct inflammatory changes were rare. Results for the nonneoplastic endpoints were not reported quantitatively.

FEASIBILITY OF DERIVING A PROVISIONAL RfC FOR IRON

No adequate human or animal inhalation data are available for exposure to iron or inorganic iron compounds. The epidemiological study of Axelson and Sjöberg (1979) did not provide quantitative measures of exposure and did not characterize noncancer endpoints. Although Nettesheim et al. (1975) reported diffuse and focal alveolar fibrosis in the lungs of hamsters chronically exposed to iron oxide by inhalation at a concentration of 40 mg/m^3, the lack of incidence data prevents an evaluation of the significance of these findings. The subchronic study of Johansson et al. (1992), in which rabbits were exposed to aerosols of ferric chloride for

[1]The authors provided no further information regarding dosage. It is not clear whether animals were given amounts lower than 3 mg on some occasions.

2 months, demonstrated a NOAEL of 1.4 mg/m^3 and a LOAEL of 3.1 mg/m^3 for respiratory effects (granuloma nodules greater than 1 mm diameter in the lungs). However, this study does not meet the minimum standards for an inhalation bioassay as stipulated by the U.S. EPA (1994b) guidelines for derivation of an inhalation reference concentration. Inadequacies of the study include relatively small group sizes, relatively short study duration, and the failure to examine a sufficient array of endpoints. Thus this study is inadequate for the purposes of deriving a p-RfC for iron. Consequently, the available data are insufficient for derivation of a p-RfC.

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3-21-2007

Provisional Peer Reviewed Toxicity Values for

2,4,6-Trichlorophenol

(CASRN 88-06-2)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
i.v.	intravenous
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit

NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration
p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

3-21-2007

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR 2,4,6-TRICHLOROPHENOL (CASRN 88-06-2)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because new information becomes available and scientific methods improve over time, PPRTVs are reviewed on a five-year basis and updated into the active database. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

Neither an RfD or RfC for 2,4,6-trichlorophenol (2,4,6-TCP) is available on IRIS (U.S. EPA, 2007) or in the HEAST (U.S. EPA, 1997). IRIS (U.S. EPA, 2007) provides an OSF and IUR. The Drinking Water and Health Advisories list (U.S. EPA, 2000) does not include an oral RfD for 2,4,6-TCP. ATSDR published a Toxicological Profile for 2,4,6-Trichlorophenol (ATSDR, 1990) in which an intermediate-duration oral MRL of 0.042 mg/kg-day was derived, based on a NOAEL of 4.2 mg/kg-day and a LOAEL of 42 mg/kg-day for reduced litter size in female Sprague-Dawley rats exposed to 2,4,6-trichlorophenol in the drinking water from 3 weeks of age through breeding and parturition (Exon and Koller, 1985). ATSDR subsequently published an updated Toxicological Profile for Chlorophenols (ATSDR, 1997), providing an intermediate-duration oral MRL of 0.003 mg/kg-day for chlorophenols as a class, based on decreased delayed type hypersensitivity response to bovine serum albumin in rats exposed to 2,4-dichlorophenol in drinking water (Exon and Koller, 1985). ATSDR (1997) did not provide an intermediate-duration oral MRL for 2,4,6-TCP per se. The CARA database (U.S. EPA, 1991,

1994) lists a Health Effects Assessment for 2,4,6-TCP (U.S. EPA, 1984) and a Health and Environmental Effects Document for Chlorinated Phenols (U.S. EPA, 1987), neither of which developed an RfD, because the focus was on carcinogenic potential. The NTP Status Report (NTP, 2000) and IARC (1999) were also searched for relevant information. Updated literature searches were conducted from 2000 to present (original search was from 1996). The databases searched were TOXLINE, MEDLINE, CANCERLIT, CCRIS, TSCATS, HSDB, RTECS, GENETOX, DART/ETICBACK, and EMIC/EMICBACK.

REVIEW OF THE PERTINENT LITERATURE

Human Oral Studies

No information was located concerning health effects in humans following oral exposure to 2,4,6-TCP.

Animal Oral Studies

NCI (1979) performed chronic oral studies designed to assess the carcinogenicity of 2,4,6-TCP in Fischer 344 rats and B6C3F$_1$ mice. Groups of 50 male and 50 female Fischer 344 rats were given 2,4,6-TCP (96-97% pure) in the diet at concentrations of 5000 or 10,000 ppm for 106 or 107 weeks. The authors did not estimate daily doses, nor did they report food consumption. Assuming a food factor of 0.05 for a chronic oral study in the rat (U.S. EPA, 2007), estimated doses of 2,4,6-TCP were 250 and 500 mg/kg-day for the 5000- and 10,000-ppm exposure groups, respectively. Groups of 50 male mice were similarly exposed to 5000 or 10,000 ppm for 105 weeks. Assuming a food factor of 0.15 for a chronic oral study in the mouse (U.S. EPA, 2007), the doses were estimated to be 750 and 1500 mg/kg-day, respectively. Groups of 50 female mice were given 10,000 or 20,000 ppm for 38 weeks; the concentrations were reduced to 2500 and 5000 ppm for the remaining 67 weeks of the study, due to excessively low mean body weights among treatment groups. The time-weighted average feed concentrations for the female mice were 5214 and 10,428 ppm in the low- and high-dose groups, respectively (doses of 782 and 1564 mg/kg-day assuming a food factor of 0.15 for a chronic oral study in the mouse). Groups of 20 rats and 20 mice of each sex served as controls. Animals were observed twice daily for clinical signs of toxicity, and gross and microscopic pathological examinations were performed on all major organs and tissues of animals that died or were found in a moribund state during the study (except for cases of cannibalization or autolysis) and on those surviving until terminal sacrifice. Incidences of various neoplastic and nonneoplastic lesions were reported, but none are applicable for derivation of the RfD. There were no significant dose-related trends in mortality in rats or mice of either sex. Throughout the course of the study, male and female rats and mice exhibited dose-related lower mean body weights than controls at the 38-week time period, when concentrations of 2,4,6-TCP were lowered, as well as throughout the remainder of the study. Clinical signs were common to both dosed and control groups of rats and mice. Male rats, only, exhibited dose-related significantly increased incidences of lymphomas or

leukemias. Leukocytosis, monocytosis, and bone marrow hyperplasia were noted in some treated male and female rats not having lymphoma or leukemia, but not in the 20 control rats. In mice, a significantly increased incidence of hepatocyte hyperplasia was observed for mid-dose males. Other hepatotoxic effects (inflammation, necrosis) were commonly seen in the livers of dosed mice. Hepatocellular carcinomas or adenomas occurred in mice at incidences that were dose-related. For the purpose of deriving an RfD, all noncancer effects reported for both rats and mice in NCI (1979) are considered to be related to the carcinogenic process and are not relevant for deriving an RfD.

In preliminary range-finding studies by NCI (1979), groups of rats and mice (5/sex/species) were exposed to 10,000-46,000 ppm (rats) or 6800-31,500 ppm (mice) of 2,4,6-TCP in the diet for 7 weeks. Assuming a food factor of 0.1 for a subchronic oral study in rats and a food factor of 0.15 for a subchronic oral study in mice (U.S. EPA, 2007), estimated dose ranges were 1000-4600 mg/kg-day in rats and 1020-4725 mg/kg-day in mice. Relative to controls, dose-dependent lower mean body weights were reported in all exposed groups of rats, and in groups of mice at doses $\geq$735 mg/kg-day (males) or $\geq$1075 mg/kg-day (females). Survival was 100% for rats and mice (of both sexes) consuming doses $\leq$1470 mg/kg-day and $\leq$3225 mg/kg-day, respectively. The highest dose in rats (4600 mg/kg-day) resulted in the death of 2/5 males and 3/5 females. At the highest dose in mice (4725 mg/kg-day), mortality was observed in two mice of each sex. In rats, histopathologic signs of toxicity were seen only at the highest dose (4600 mg/kg-day) and consisted of moderate to marked increased splenic hematopoiesis in males and females and midzonal vacuolation of hepatocytes in males. Histological examination gave no indication of treatment-related toxicity in male and female mice of the 1075 mg/kg-day dose groups. The authors did not indicate whether or not histopathologic effects were seen at lower doses or the highest dose (4725 mg/kg-day) in mice. No other relevant data were provided. The lowest treatment level (735 mg/kg-day) is considered to be a LOAEL, but the dose levels in this study are too high to be useful for RfD derivation.

In a subchronic gavage study (Bercz et al., 1990), groups of 10 male and 10 female Sprague-Dawley rats, 49 days of age, were administered 2,4,6-TCP in oral doses of 0, 80, 240, or 720 mg/kg-day by gavage (in corn oil) for 90 days. Clinical observations were made daily; mortality and morbidity checks were performed twice daily. Body weights were recorded weekly, at which time animals were examined for obvious signs of abnormalities. Food consumption was measured weekly, ophthalomoscopic examinations were performed prior to treatment and during the final week of the study. Extensive analyses of hematology, blood chemistry, and urine profiles were performed at sacrifice. Comprehensive gross and microscopic examinations were performed on major tissues and organs, as well as all gross lesions. There were no significant treatment-related effects regarding mortality, body weight, food consumption, ophthalmology, or hematology. Significant dose-related effects consisted of increased absolute or relative liver weight in mid- and high-dose males and females and increased absolute and relative kidney weight in high-dose males. Other significant effects occurred primarily in the high-dose group, and included clinical signs (urine staining and salivation); increased relative testes weight (males), absolute lung, and relative adrenal weight (females); increased serum

albumin, total protein, alkaline phosphatase, and ALT (males); decreased BUN (females); and decreased urinary pH (males and females). There were no significant treatment-related adverse effects in the low-dose groups of either sex. Histopathologic examination did not reveal pathological lesions that could be correlated to treatment-related changes in organ weights or biochemistry values. This study establishes a subchronic NOAEL and LOAEL of 80 and 240 mg/kg-day, respectively.

In a subchronic (1-generation female reproduction) study, groups of 12-14 female Sprague-Dawley rats were exposed to 2,4,6-TCP (98% pure) at concentrations of 0, 3, 30, or 300 ppm in the drinking water (Exon and Koller, 1985). Animals were exposed from 3 weeks of age through breeding (at 90 days of age to unexposed male rats) and parturition, for a total exposure period of approximately 13 weeks. The study authors did not report dam body weight or water consumption data, nor did they provide dose estimates. Based on the assumption that rats consume drinking water at a rate of 10% of their body weight per day (U.S. EPA, 2007), 2,4,6-TCP dose levels of 0.30, 3.0, and 30 mg/kg/day for the 3-, 30-, and 300-ppm exposure groups, respectively, were calculated. Following parturition, treatment of dams ceased and pups were observed until weaning. Reproductive toxicity was assessed with respect to percent conception, litter size, number of stillborn, birth and weaning weight, and survival to weaning. Maternal parameters such as body weight during pregnancy, feed consumption, and clinical signs of toxicity were not reported. Significantly decreased mean litter size ($p \leq 0.10$) was noted in the 300-ppm (30 mg/kg-day) group (9.1 pups/litter vs 12.1 in controls and 11.3 and 11.2 in the low- and mid-dose groups, respectively). Although the level of statistical significance (0.10) is higher than that commonly used (0.05), the magnitude of the decrease (25%) is considered to be biologically significant. Similar decreases in litter size were seen with other chlorophenols tested in this study (2-chlorophenol, 2,4-dichlorophenol), lending some support to this being an important endpoint for this class of chemicals. It is noteworthy, however, that average control litter size varied over a considerable range in the three experiments (9.8-12.1). This study identified a LOAEL of 30 mg/kg-day (300 ppm exposure group) and a NOAEL of 3.0 mg/kg-day (30 ppm exposure group) for 2,4,6-TCP, based on decreased mean litter size.

Exon and Koller (1985) also reported a continuation of the initial subchronic study, in which 3-week-old weanling Sprague-Dawley rats (10/exposure group) were randomly selected from the litters generated in the reproductive phase of the study were exposed to the same concentrations of 2,4,6-TCP in the drinking water as those previously used in the exposure of the corresponding dams. The exposure period covered an additional 12 weeks. Following exposure termination, immunologic assays were performed to assess humoral immunity, cell-mediated immunity, and macrophage function. Body weights and weights of liver, spleen, and thymus were recorded. No other information was reported regarding study design or endpoints examined. There were no statistically significant exposure-related effects on immune responses, although the authors noted that antibody levels, delayed type hypersensitivity responses, and macrophage numbers were consistently greater in 2,4,6-TCP-exposed rats, compared with controls. There were no significant exposure-related effects on mean body or thymus weights. The 300-ppm exposure group exhibited significantly increased mean spleen weight (1.07 g vs

0.93 g in controls). Significantly increased mean liver weight was observed in both 30- and 300-ppm exposure groups (12.5 and 14.1 g, respectively, vs 10.9 g in controls). Significantly increased mean spleen and liver weights were also seen in rats similarly exposed to 300-ppm of 2,4-DCP. The effects related to immune response and increased liver weight (at 30 mg-kg-day) were not considered to be adverse by Exon and Koller (1985).

Blackburn et al. (1986) administered 2,4,6-TCP (99% pure) to groups of 30 (low- and mid-dose) or 40 (controls and high-dose) adult female Long-Evans hooded rats in oral doses (gavage, in corn oil) of 0, 100, 500, or 1000 mg/kg-day, 5 days per week for 2 weeks, followed by dosing 7 days per week during mating with unexposed males of the same strain and throughout 21 days of gestation. Body weights were recorded daily from the beginning of treatment until delivery. Females that had not delivered by gestation day 24 were sacrificed, and ovaries and uteri examined for signs of post implantation loss. For those females delivering pups, date of delivery, sex ratio of the litter, and male and female pup body weights were recorded. Litters were culled to 8 pups (approximately equal numbers of males and females) on postpartum day 4. Body weights were recorded weekly thereafter and litters were culled to 2 males and 2 females each at weaning. Female pups were monitored for time of vaginal opening. On postpartum day 42, all remaining pups were sacrificed. Necropsy was limited to establishing whether or not intubation was the cause of death in treated dams that succumbed prior to the termination of treatment. Survival was 38/39, 29/29, 25/30, and 24/40 in 0-, 100-, 500-, and 1000-mg/kg-day groups of treated dams, respectively. The majority of deaths, particularly in the high-dose dams, were due to intubation errors. However, 3/16 high-dose deaths were attributed to 2,4,6-TCP exposure. Urogenital staining was noted in the high-dose group. Dose-related significantly lower mean body weights (relative to controls) were observed in dams at the end of the first and second weeks of pre-mating treatment, as well as throughout the first 14 days of gestation (the actual body weight values could not be determined from the graphically-presented body weight data). No significant treatment-related maternal body weight effects were apparent on gestation day 21. There were no statistically significant dose-related differences in breeding success, although breeding success was low in all study groups (63, 72, 60, and 50% for 0-, 100-, 500-, and 1000-mg/kg groups, respectively). No significant treatment-related differences were seen in mean litter sizes or pup survival. Mean litter body weights were significantly depressed in pups of the 500- and 1000-mg/kg groups initially, but from postpartum day 4 onward, there were no significant differences in mean litter body weights of any exposure group, relative to controls. The study authors indicated that the initial depressed pup body weights were most likely a reflection of maternal toxicity, as evidenced by increased mortality, clinical signs (urogenital staining), and decreased body weights in mid- and high-dose dams. A maternal FEL of 500 mg/kg-day is identified in this study based on decreased survival.

In a second experiment reported in Blackburn et al. (1986), male Long-Evans hooded rats (25 high-dose rats, 15 per group at other dose levels) were administered 2,4,6-TCP (99% pure) in oral doses (gavage, in corn oil) of 0, 100, 500, or 1000 mg/kg-day, 5 days per week for 11 weeks (Blackburn et al., 1986). Males used in this study had initial baseline sperm counts of 20 million or more and ejaculation latencies of 30 minutes or less. After 10 weeks of treatment, copulatory

behavior and semen profiles were evaluated. Following 11 weeks of treatment, high-dose and control males were mated with unexposed females for fertility evaluation. Once mating was confirmed, females were isolated and followed until sacrifice on gestation day 18. Numbers of resorptions and fetal sex, weight, and viability were recorded. Treated and control male rats were sacrificed one week later, and blood was drawn for testosterone analysis. Weights of liver, kidney, lung, adrenal, spleen, heart, testis, prostate, seminal vesicle, vas deferens, and epididymis were recorded. Sperm counts were performed using epididymal tissue. The only consistent clinical sign of toxicity was that of urogenital staining, observed in all 2,4,6-TCP-treated groups. There were no additional clinical signs of toxicity among rats that died during treatment, and due to autolysis, necropsy of these rats was limited to examination for potential intubation errors. Treatment-related mortality was observed in 8/25 high-dose males during the first 4 weeks of treatment. All other deaths in treated animals were attributed to intubation errors. There were no significant treatment-related differences in mean body weights at most time points during treatment. No treatment-related adverse effects were seen in evaluations of mating behavior, which included mount and ejaculation latencies, or sperm count, motility, or morphology. No significant treatment-related differences were detected in male organ weights or plasma testosterone. There were no significant treatment-related effects on litter size, sex ratio, mean pup weight by sex, number of dead fetuses, or number of resorption and implantation sites in evaluations of litters produced by 2,4,6-TCP-treated males mated to untreated females. The lowest dose level of 100 mg/kg-day is considered to be a LOAEL based on clinical observations (urogenital staining).

DERIVATION OF A PROVISIONAL RfD FOR 2,4,6-TRICHLOROPHENOL

A provisional RfD for 2,4,6-TCP can be derived from the oral reproductive toxicity study in rats conducted by Exon and Koller (1985). This study identified a NOAEL of 3.0 mg/kg-day and a LOAEL of 30 mg/kg-day, based on decreased litter size in female Sprague-Dawley rats exposed to 2,4,6-TCP in the drinking water for 10 weeks prior to mating (weanlings when started) and continuing throughout mating and gestation. In the same study, decreased litter size was also noted for similar exposure to 2-chlorophenol and 3,4-dichlorophenol, thus lending some support to this finding. However, the decrease in litter size was small and there was considerable variation in litter size among controls in the three experiments. Apparently conflicting results were reported by Blackburn et al. (1986), in a study in which no reproductive toxicity was observed in female Long-Evans rats administered 2,4,6-TCP by daily gavage in corn oil starting 2 weeks prior to mating (adults when started) and continuing throughout mating and gestation at doses that were in excess of an order of magnitude higher than those estimated for Sprague-Dawley rats used in the Exon and Koller (1985) study. The disparity in results may be attributable, at least in part, to the use of different rat strains and procedural differences [Exon and Koller (1985) initiated exposure to weanlings 10 weeks prior to mating via the drinking water, whereas Blackburn et al. (1986) started dosing of adults 2 weeks prior to mating via bolus oral gavage.] The study of Blackburn et al. (1986) was limited by low reproductive success in all groups, including controls. The marginally increased mean absolute liver weight (11% greater

than controls) reported for the 30 ppm group in the Exon and Koller (1985) continuation study is not considered to be an adverse effect. Also, the effects related to immune response reported by Exon and Koller (1985) are not considered for defining the LOAEL, as there is no dose-response relationship established.

The provisional RfD is derived by dividing the subchronic NOAEL of 3.0 mg/kg-day by an uncertainty factor of 3000 (10 for extrapolation from subchronic to chronic exposure duration, 10 for extrapolation from rodents to humans, 10 for protecting sensitive individuals, and 3 for deficiencies in the database, particularly the lack of a multigeneration reproduction study and supporting long-term toxicity studies in other species). The **provisional RfD** derived in this way **is 3.0 mg/kg-day ÷ 3000 = $1x10^{-3}$ or 1E-3 mg/kg-day.**[1]

STATEMENT OF CONFIDENCE

Confidence in the key studies is low. Although the critical animal study (Exon and Koller, 1985) examined reproductive endpoints, study details were limited, a single generation was produced, and only females were exposed. The study did, however, identify both a NOAEL and a LOAEL for reproductive effects. Confidence in the database is low due to the lack of a multigeneration reproduction study and supporting long-term toxicity studies. Consequently, there is low confidence in the provisional RfD.

DERIVATION OF A PROVISIONAL RfC FOR 2,4,6-TRICHLOROPHENOL

No values are developed due to lack of relevant information.

DERIVATION OF A PROVISIONAL CARCINOGENICITY ASSESSMENT FOR 2,4,6-TRICHLOROPHENOL

Cancer values are provided on IRIS (U.S. EPA, 2007).

[1] The RfD differs from the ATSDR intermediate-duration MRL of 4E-2 mg/kg-day. ATSDR never applies a database uncertainty factor and did not apply a derivation UF. When these UFs are applied the value would be divided by an additional 30 or 1E-3 which is identical to the RfD.

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4-14-05

Provisional Peer Reviewed Toxicity Values for

p-Chloro-m-cresol

(CASRN 59-50-7)

Derivation of a Subchronic Oral RfD

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

4-14-05

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR *p*-CHLORO-*m*-CRESOL (CASRN 59-50-7) Derivation of a Subchronic Oral RfD

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions (or the EPA HQ Superfund Program) sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

Neither a subchronic nor a chronic RfD for p-chloro-m-cresol are available on IRIS (U.S. EPA, 2003) or in the HEAST (U.S. EPA, 1997a). The Drinking Water Standards and Health Advisories list (U.S. EPA, 2002) does not include p-chloro-m-cresol. The RfD/RfC Work Group reviewed the health effects data for p-chloro-m-cresol (U.S. EPA, 1991a) and determined that the existing data were inadequate for the derivation of an oral RfD for purposes of deriving an IRIS value. The CARA database (U.S. EPA, 1991b, 1994) does not contain a listing for p-chloro-m-cresol. However, the HEAST (U.S. EPA, 1997a) lists a Health and Environmental Effects Document for p-Chloro-m-Cresol (U.S. EPA, 1988) in which a human subchronic RfD of 2 mg/kg-day (with a low level of confidence) was derived, based on the Madsen et al. (1986) subchronic oral rat study; U.S. EPA (1988) noted that this study was of insufficient duration to be used as the basis of a chronic RfD. A Reregistration Eligibility Decision (RED) by the Office

of Prevention, Pesticides, and Toxic Substances (U.S. EPA, 1997b) recommended a subchronic NOAEL of 30 mg/kg-day and a Margin of Exposure (MOE) of 300 (100 as a standard value, with an additional 3 because a chronic NOEL is not available), based on maternal effects (decreased body weight gain) in a rat developmental study (Miles et al., 1992a). The RED also identified a chronic LOEL of 28 mg/kg-day, based on depression of the brain in a chronic rat feeding study (Bayer AG, 1992); the MOE was 300 for chronic duration as well. p-Chloro-m-cresol has not been studied by NTP (2000). ATSDR has not published a Toxicological Profile for p-chloro-m-cresol (ATSDR, 2002). The Cosmetic Ingredient Review Expert Panel, a peer review panel sponsored by the Cosmetic, Toiletry, and Fragrance Association, has reviewed the toxicity of p-chloro-m-cresol (Anderson, 1997). Literature searches for oral noncancer data were conducted from 1987 to June, 2000, followed by additional searches from 2000 to September, 2002. The databases searched were TOXLINE, MEDLINE, CANCERLIT, CCRIS, TSCATS, HSDB, RTECS, GENETOX, DART/ETICBACK, and EMIC/EMICBACK. Additional literature searches were conducted by NCEA-Cin up to May 17, 2004 using TOXLINE, MEDLINE, Chemical and Biological Abstract databases.

REVIEW OF THE PERTINENT LITERATURE

Human Studies

No information was located concerning non-cancer health effects in humans following oral exposure to p-chloro-m-cresol.

Animal Studies

Groups of 60 male and 60 female Wistar rats (5 to 6 weeks of age) were fed Preventol CMK (p-chloro-m-cresol, ≥99.9% pure) in the diet at concentrations of 0, 400, 2000, or 10,000 ppm; interim sacrifices were performed on 10 rats/group following 12 months of treatment, and the other 50 rats/group were treated for 24 months (Bayer AG, 1992). Averaged over 24 months (104 weeks) of exposure, the authors reported doses of p-chloro-m-cresol to be 21, 103.1, and 558.9 mg/kg-day in males and 27.7, 134.3, and 743.5 mg/kg-day in females for the 400-, 2000-, and 10,000-ppm exposure groups, respectively. Animals were observed daily for clinical signs. Food and water intake were monitored, and body weights were recorded weekly. Twenty animals from each study group were randomly selected for ophthalmologic examination prior to exposure initiation; additional ophthalmologic examinations were performed on 20 randomly-selected animals from each of the control and high-dose groups following 52 and 104 weeks of treatment. Clinical chemistry and hematological examinations were performed on blood samples taken from 10 rats per group following 27, 53, 79, and 104 weeks of exposure. Hematology included hemoglobin, hematocrit, mean corpuscular volume, prothrombin time, and erythrocyte morphology, as well as erythrocyte, leukocyte, thrombocyte, and reticulocyte counts. Clinical

chemistry included analysis of alkaline phosphatase, aspartate and alanine aminotransferases, gamma-glutamyltransferase, glutamate-dehydrogenase, plasma and erythrocyte cholinesterase, albumin, bilirubin, cholesterol, creatinine, creatin kinase, gluocose, calcium, chloride, iron, and inorganic phosphate. Urinalysis was performed during weeks 26/27, 51/52, 78/79, and 103/104. Gross pathological examinations of all major tissues and organs were performed on all rats found moribund or succumbing prior to study termination, as well as those scheduled for interim or terminal sacrifice. The brain, heart, liver, kidneys, spleen, and testes/ovaries were weighed in animals killed at scheduled sacrifices. Samples of all major organs and tissues, as well as all suspected tumors, were prepared for detailed histological examination. The initial report contains only preliminary histopathological findings; detailed results of histopathological findings were published in a subsequent report (Pharmaco-LSR, 1993).

There were no treatment-related effects on survival and no clinical signs of toxicity in any group of treated rats, with the exception of high-dose female rats exhibiting unspecified signs of poor general condition (Bayer AG, 1992). Mean body weights of high-dose male rats were significantly lower than those of controls, approximately 8% lower from the end of treatment week 1 until the final measurement at the end of week 104; body weights of other male treatment groups were generally not significantly affected. Prior to the initiation of treatment, groups of female rats that were scheduled for treatment exhibited significantly lower mean body weights (approximately 3% lower) than controls. During the treatment period, mean body weights of all female exposure groups were lower than in controls, the difference being approximately 8, 8, and 20% in low-, mid- and high-dose females, respectively, by week 104. Mean food and water intake (averaged over the entire treatment period) did not differ significantly among treatment and control groups. The exposed female rats with lower initial body weights, as compared to controls, continued to show lower body weight gains throughout the study duration. This could be apparently attributed to the deviation of GLP guidelines and unrelated to the chemical exposure. Ophthalmic investigations gave no indication of treatment-related effects. Sporadic statistically significant changes in some hematological parameters were not considered to be treatment-related. Clinical chemistry tests revealed reduced cholesterol and triglycerides in high-dose male and female rats throughout the study (statistically significant some of the time) and significantly lower phosphate concentrations in high-dose male rats at all examination time points (treatment weeks 26, 51, 78, and 103). No consistent patterns of treatment-related effects were observed in other clinical chemistry parameters. Urinalysis revealed slightly lower urine density (accompanied by slightly increased urine volume) in high-dose male rats at all examination time points (statistically significant at most time points), and significantly lower protein excretion in high-dose female rats at the 51-, 78-, and 103-week examination points. There were no consistently significant treatment-related effects on other urinalysis parameters.

No treatment-related changes in organ weights were found at interim sacrifice (Bayer AG, 1992). Upon terminal necropsy, relative kidney weights were found to be approximately 4 and 7 % higher in mid- and high-dose male rats and 8% higher in high-dose female rats, relative to

controls. There were no other changes in absolute or relative organ weights that were attributed to p-chloro-m-cresol exposure. There were no indications of treatment-related gross pathological effects in rats that died or were sacrificed either at scheduled 52-week interim necropsy or when found in a moribund state prior to termination of treatment. At terminal necropsy (week 104), kidney deformation was noted in 6/44 high-dose male rats; histopathological examinations performed on this treatment group revealed significantly increased incidences of renal papillary necrosis (12/44 rats) and cortical dilatation and fibrosis (10/44 rats). When data from all female rats were examined, a significant increase in the incidence of depression of the brain was observed in all dose groups; however, the incidence of this lesion did not increase with dose. The study authors reported that this lesion was not a direct effect of the chemical, but rather was secondary to pituitary enlargement associated with the presence of pituitary adenomas, which were incidental to treatment. No change in the incidence of brain depression was seen in male rats. Male rats at the highest dose level showed a significant increase in epididymal degeneration (reduced spermatozoa) at terminal sacrifice. There were no indications of treatment-related effects in other tissues or organs. This study identified a NOAEL of 2000 ppm (103.1 mg/kg-day) and a LOAEL of 10,000 ppm (558.9 mg/kg-day), based on gross and histopathological kidney effects (increased incidences of renal papillary necrosis and cortical dilatation and fibrosis) in male rats.

In a subchronic range-finding study preliminary to the chronic study, Bayer AG (1992) fed groups (20/sex/group) of male and female rats diets containing 0, 150, 500, or 1500 ppm of p-chloro-m-cresol (calculated from food consumption data to be 0, 12, 41, or 120 mg/kg-day for males and 0, 17, 54, or 167 mg/kg-day for females) for 13 weeks. The only noted signs of toxicity occurred in males of the 500 and 1500 ppm exposure groups, and consisted of slightly decreased (5-6%) body weight gains, relative to controls. No changes were seen in clinical signs, food consumption, clinical biochemistry, urinalysis, organ weights, or gross or microscopic pathology. The highest dosage of 167 mg/kg-day is considered as a NOAEL for this subchronic study.

Madsen et al. (1986) administered p-chloro-m-cresol in soybean oil to groups of 10 male and 10 female rats (strain not reported) at gavage doses of 0, 50, 200, or 400 mg/kg-day for 28 days. Blood samples were taken from 8 males and 8 females in each group after 21 days of dosing. Hematological analysis included hemoglobin, PCV, total erythrocyte count, and glucose in whole blood. Plasma concentrations of creatinine and urea and activity of aspartate aminotransferase and alkaline phosphatase were determined. Upon necropsy, the kidneys, spleen, brain, adrenals, liver, and testes were weighed, and then subjected to microscopic examination along with tissue samples from the stomach, small intestine, pancreas, lung, aorta, heart, thymus, thyroid, and parathyroid. There were no clinical signs of toxicity in any of the treated groups. A significant decrease in body weight gain was noted in high-dose males (32% lower) and females (41% lower), compared to controls. Hematological and clinical chemistry parameters examined were within the normal range in all treated and control groups of rats (data

not shown). There were no significant treatment-related effects on relative organ weights, and no pathological indications of treatment-related effects (data not shown). The authors considered the growth retardation in high-dose males and females to be toxicologically significant. This study identified a NOAEL of 200 mg/kg-day and a LOAEL of 400 mg/kg-day for decreases in body weight gain in exposed rats.

In a developmental toxicity study (Miles Inc., 1992a), groups of 25 pregnant Wistar rats were given 0, 30, 100, or 300 mg/kg of Preventol CMK (p-chloro-m-cresol) by gavage in 0.5% aqueous methyl cellulose, once per day on gestation days 6 through 15. The study authors noted a precipitate in the solution used to expose the high-dose animals, but not in the other two solutions. Clinical examinations were performed daily, food and water intake were noted, and body weights were recorded on gestation days 0, 6-15, and 20. Gross pathological examinations were performed at necropsy on gestation day 20, at which time uteri were removed and examined for numbers of corpora lutea, implantations, live fetuses, and live fetuses per sex. Uterine and fetal weights were recorded, and fetuses were examined for signs of external malformations. Half of the fetuses were examined for gross and skeletal malformations; the other half were prepared for visceral examination.

Among high-dose dams, the initial dosing on gestation day 6 resulted in clinical signs of toxicity that included prostration and convulsions (Miles Inc., 1992a). From gestation day 8 onward, clinical signs of toxicity became increasingly apparent and included labored breathing and bloody nasal exudate. Between gestation days 12 and 18, five of the high-dose dams died and another was sacrificed after being found in a moribund state. Food intake in the high-dose dams was significantly lower than that of controls throughout the treatment period (gestation days 6-15) and until terminal sacrifice on gestation day 20. Decreased water intake was also noted in high-dose dams, but the data were not presented. Mean maternal body weight gain was decreased by 96%, relative to controls. Preliminary pathological investigations revealed gas-filled intestines and vaginal bleeding in 3 of the 6 dams that died prior to scheduled terminal sacrifice, but no indication of significant treatment-related effects among dams surviving until necropsy on gestation day 20. The mid-dose group of dams exhibited significantly lower food intake during gestation days 11 through 16 and significantly lower mean body weight gain (25% lower than that of controls) during the treatment period. The only clinical sign of maternal toxicity in the mid-dose group was labored breathing in a few of the treated dams following dosing; gross pathological examinations gave no indication of treatment-related maternal toxicity. There were no clinical or pathological signs of maternal toxicity within the low-dose group. No significant treatment-related effects were seen regarding numbers of corpora lutea, implantations, live fetuses, and live fetuses per sex in any of the dose groups. Signs of fetotoxicity were observed only in the high-dose group, and included significantly increased early resorptions (a mean of 1.8/dam in the high-dose group vs 0.6/dam in controls) and significantly decreased mean fetal weight (approximately 8% lower than controls). There were no treatment-related fetal malformations at any dose level.

Other Studies

Miles Inc. (1992b) reported clinical signs of toxicity such as tremors, convulsions, immobilization, bloody urine, salivation, and lacrimation in groups of Sprague-Dawley rats administered p-chloro-m-cresol, dissolved in Carbowax, in single gavage doses of 2000-7683 mg/kg (males) or 1500-5762 mg/kg (females); acute oral LD_{50} values were 5129 and 3636 mg/kg for male and female rats, respectively. The review by Anderson (1997) reported an oral LD_{50} value of 1830 mg/kg for male Wistar II rats administered p-chloro-m-cresol by gavage (unpublished data from Bayer AG). Robenek et al. (1980) reported morphological evidence of cellular changes (increased mitochondria, cytoplasmic vacuolation, dilation of sinusoids, activation of Kupffer cells) in the livers of Wistar rats given a single 400 mg/kg oral dose of p-chloro-m-cresol in peanut oil and sacrificed 60 hours later.

A review by Paulus and Genth (1983) reported that a single oral dose of p-chloro-m-cresol is rapidly cleared through the kidneys (Schmidt, 1980). The same review cites a publication by Schmidt and Bomhard (1981) that reported no indication of accumulation of p-chloro-m-cresol in liver and fat of rats exposed for 13 weeks in the diet.

DERIVATION OF A PROVISIONAL SUBCHRONIC RfD FOR *p*-CHLORO-*m*-CRESOL

Data on the subchronic toxicity of p-chloro-m-cresol are limited. Bayer AG (1992) performed a subchronic range finding study prior to their chronic study, but did not report a thorough evaluation of toxicity. The only finding reported was a 5-6% change in body weight gain, which was not deemed to be biologically significant. The subchronic study therefore identified a NOAEL of 167 mg/kg-day, but did not identify a LOAEL. In the chronic study, evaluation of clinical chemistry parameters at 26 weeks revealed significantly reduced cholesterol and triglycerides in high-dose female (743.5 mg/kg-day) and male (558.9 mg/kg-day) rats; high-dose male rats also showed a decreased serum phosphate concentration and decreased urine density (Bayer AG, 1992). No other potentially treatment-related effects were reported in the 26-week evaluations. Madsen et al. (1986) performed a 28-day gavage study in male and female Wistar rats, and identified a NOAEL of 200 mg/kg-day and a LOAEL of 400 mg/kg-day (the highest dose examined) for decreased body weight gain in both male and female rats. No changes in clinical signs, serum chemistry, or histological endpoints were reported at any dose level. Miles Inc. (1992a) exposed pregnant rats by gavage to up to 300 mg/kg-day of p-chloro-m-cresol in 0.5% aqueous methylcellulose from gestation day 6-15. At 300 mg/kg-day, 6/25 of the dams died prior to study termination, and body weight gain was decreased by 96% relative to controls. A decrease in body weight gain of the dams was reported at 100 mg/kg-day; no other effects were reported at this exposure level. Signs of fetotoxicity were observed only at the highest dose level, and fetal malformations were not reported at any exposure level examined.

The mortality reported in the study of Miles Inc. (1992a) is surprising based on the available acute toxicity and pharmacokinetic data. If one assumes a linear relationship for mortality, the rat LD_{25} of p-chloro-m-cresol would be on the order of 900 mg/kg, based on an LD_{50} of 1830 mg/kg. Thus, a 24% mortality in rats exposed to 300 mg/kg-day for gestation days 6-15 (10 days in total) would suggest an accumulation of the compound over time. The review by Paulus and Genth (1983) reported a rapid elimination of p-chloro-m-cresol in the urine following a single oral dose, as well as little to no accumulation of p-chloro-m-cresol in the fat or liver of rats exposed for 13 weeks in the diet. Given that elimination of p-chloro-m-cresol is rapid, and the available pharmacokinetic evidence does not suggest significant bioaccumulation, the fact that Miles Inc. (1992a) reported 24% mortality in dams exposed to 300 mg/kg-day, over 5-fold lower than the lowest reported rat LD_{50} of 1830 mg/kg, on gestational days 6-15, is unexpected.

The report of a precipitate in the solution used to expose the 300 mg/kg animals in the Miles Inc (1992a) study is consistent with the chemical properties of p-chloro-m-cresol. At 10 mL/kg dose volume, the solution for the high-dose animals would have contained 30 mg/mL p-chloro-m-cresol. According to the Merck Index (Budavari et al., 1989), the solubility of p-chloro-m-cresol in water is 3.8 mg/mL, while it is freely soluble in oil or alcohol. The addition of 0.5% methylcellulose to the aqueous solution does not appear to have been sufficient to dissolve the required amount of p-chloro-m-cresol in this study. However, the precipitate was not identified by the investigators, so the potential effect of precipitation on the concentration of the stock solution, or whether it may have influenced the study in some other fashion, cannot be determined. Due to the uncertainties associated with the unexpected early mortality and the lack of available details on the study methods, the Miles Inc (1992a) report was not considered adequate for selection as principal study for derivation of a subchronic p-RfD.

The 28-day study of Madsen et al. (1986), which reported a NOAEL of 200 mg/kg-day and a LOAEL of 400 mg/kg-day for decreased body weight gain in male and female rats, was selected as the key study for derivation of a subchronic RfD. This study also was selected as the key study for a previous subchronic RfD (U.S. EPA, 1988). The Bayer (1992) chronic study reported a LOAEL of 558.9 mg/kg-day and a NOAEL of 103.1 mg/kg-day. The target organ effect in this study was reported to be nephrotoxicity in male rats only. The authors did not evaluate hyaline droplet pathology in this study. The cortical fibrosis (structural remodeling of kidney tissue) observed in this study may be considered an end-stage disease pathology, thus protein degradation (hyaline cell droplet formation) may be observed in earlier stages of nephropathy. Therefore, the male rat nephrotoxicity data is precluded from the derivation of a toxicity value. The Bayer AG (1992) subchronic study identified a NOAEL of 167 mg/kg-day, but not a LOAEL, which supports the NOAEL/LOAEL levels identified by Madsen et al. (1986). The Miles Inc. (1992a) study identified a lower LOAEL, for decreased maternal weight gain. However, as discussed above, a number of uncertainties regarding the study make it inadequate for selection as the principal study for subchronic p-RfD derivation.

To the NOAEL of 200 mg/kg-day, an uncertainty factor of 300 (10 for animal to human extrapolation, 10 for intrahuman variability, and 3 for uncertainties in the database, including a lack of studies of reproductive function) is applied to derive the **subchronic p-RfD of 0.7 mg/kg-day**, as follows:

subchronic p-RfD	=	NOAEL / UF
	=	200 mg/kg-day /300
	=	0.7 or 7E-1 mg/kg-day

Confidence in the principal study is low. While the study reported a number of toxicological endpoints, it examined only one species, reporting of the study results was minimal, and the study was only 28 days in duration. Confidence in the database is low. Multiple subchronic studies of the toxicity of p-chloro-m-cresol exist, but each has significant limitations that limit its utility for risk assessment. No studies of the reproductive toxicity of p-chloro-m-cresol have been reported in the literature. Low confidence in the provisional subchronic RfD follows.

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10-23-2006

Provisional Peer Reviewed Toxicity Values for

Aluminum
(CASRN 7429-90-5)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
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Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
IRIS	Integrated Risk Information System
i.v.	intravenous
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level
MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	provisional inhalation unit risk
p-OSF	provisional oral slope factor
p-RfC	provisional inhalation reference concentration

p-RfD	provisional oral reference dose
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	Provisional Peer Reviewed Toxicity Value
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR ALUMINUM (CASRN 7429-90-5)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions or the EPA Headquarters Superfund Program sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

This document has passed the STSC quality review and peer review evaluation indicating that the quality is consistent with the SOPs and standards of the STSC and is suitable for use by registered users of the PPRTV system.

INTRODUCTION

Verified toxicity values for aluminum (Al) and its compounds are unavailable on IRIS or HEAST (U.S. EPA, 2006, 1997), except for a chronic oral RfD of 4E-4 mg/kg-day for aluminum phosphide. However, occupational guidelines and standards have been established for a number of chemical and physical forms of Al, including, from ACGIH, 8-hour TWA-TLVs of 10 mg/m^3 for the compound as a metal dust or oxide, 5 mg/m^3 as "pyro" powders or welding fumes, and 2 mg/m^3 for soluble salts or organic forms of the metal (ACGIH, 1998). From NIOSH, 10-hour TWA-RELs of 10 mg/m^3 are specified for "total" Al dust versus 5 mg/m^3 for the respirable portion (NIOSH, 1994). NIOSH covers all other forms of the metal by identical values to those specified by ACGIH (ACGIH, 1998). OSHA PELs for Al include an 8-hour TWA value of 15 mg/m^3 for "total" metal dust, versus 5 mg/m^3 for the respirable portion (NIOSH, 1994). The U.S. EPA's CARA list (U.S. EPA, 1994) cites a HEA for Al (U.S. EPA, 1987), and ATSDR has updated its toxicological profile of the element (ATSDR, 1998).

The U.S. FDA (2000) has specified a maximum aluminum concentration of 25 mcg/L in large-volume parenterals (LVP) used in total parenteral nutrition (TPN). The FDA regulation applies to all LVPs used in TPN, including but not limited to parenteral amino acid solutions, highly concentrated dextrose solutions, parenteral lipid emulsions, sodium chloride and electrolyte solutions, and sterile water for injection.

Research papers pertinent to the potential toxicological and carcinogenic effects of Al were sought through computer searches of the HSDB, RTECS, MEDLINE and TOXLINE (and its subfiles) databases, covering the time period 1995-1999. The literature searches were conducted in June, 1999.

REVIEW OF PERTINENT DATA

The review by Stokinger (1981) gives an account of Al as an all-pervasive component of products that are central to the daily lives of most Americans. For example, the metal is a crucial part of manufactured products for the building, automobile and container industries, while Al as powder or flake is a component in a number of consumer products, such as paints, fireworks, etc. Al complexes and minerals are used in the brewing and paper industries, and as coagulants for water purification. Aluminum oxide finds application in abrasives, as a catalyst or absorbent, and as a component in fillers. Aluminum chloride is included in cosmetic formulations such as deodorants.

Human exposure to Al arises principally from food and water, through its widespread use in food additives, packaging and cooking utensils and Al-containing medications, particularly antacid, buffered aspirin, anti-ulcer and anti-diarrheal formulations (Marquis, 1989; Lione, 1985). Pennington and Schoen (1995) estimated daily Al intakes of 0.1-0.3 mg/kg-day for infants and children 6 months-6 years of age and 0.1-0.18 mg/kg-day for older children and adults, based on the FDA Total Diet Study (1993) and the U.S. Department of Agriculture Nationwide Food Consumption Survey (1987-1988). These data are in broad agreement with those of Wilhelm et al. (1995) who reported the dietary intake of Al in German children (living in the Duisberg area) as ranging from 0.008 to 0.11 mg Al/kg-day. In addition, these values are consistent with a range of 1-20 mg/day (0.014-0.3 mg/kg -day) for normal oral daily Al intake from food and water reported by other investigators (Ganrot, 1986; Iyengar et al., 1987; Wilhelm et al., 1990). However, users of Al-containing medications can ingest much larger amounts of the element, possibly as high as 840-5000 mg/day (12-71 mg/kg-day) from antacids, 126-728 mg/day (1.8-10.4 mg/kg-day) from buffered aspirins and 828 mg/day (11.8 mg/kg-day) from anti-ulcer compounds when taken at recommended dosages (Lione, 1985).

Toxicokinetics of Aluminum

There is a large amount of information available on the absorption, transfer from tissue to tissue and elimination of Al from the body, including data that have been amassed from studies on either human volunteers or laboratory animals. In general, the chemical appears to be poorly absorbed from the gastrointestinal tract, though the portion of the load that is retained will vary depending on the concentration, the chemical species administered, the fasting or fed state of the

host, gastrointestinal pH, animal model, etc. For example, Yokel and McNamara (1988) administered single oral doses of a number of Al compounds (both water soluble and insoluble) to New Zealand white rabbits and obtained absorbed proportions of the load ranging from 0.27% to 27%. Fractional uptake of Al in humans under normal conditions (i.e., with no intake of large quantities of Al from medicine) was estimated to be 0.1-0.3% assuming an intake of 20 mg Al/day (0.3 mg Al/kg-day) and urinary excretion of 20-50 µg Al/day (0.3-0.7 µg Al/kg-day) (Ganrot, 1986). However, little information is available on the actual mechanism by which the element and its compounds are transported across the brush border. (Wilhelm et al., 1990; Lione, 1985).

Although the overall extent of Al absorption is poor following oral exposure, there may be significant intake of the compound by those taking large amounts of Al compounds in patented remedies. As stated, absorption of Al is influenced by gastrointestinal conditions and content because Al can form various complexes with different solubilities and oxidation states depending on pH and interactions with dietary constituents. At low pH (3-5) in aqueous solutions, the soluble (ionic) forms of the Al prevail (Al^{3+}); at high pH (>8), Al in the form of soluble aluminum oxide is present; and at pH 5-8, the element is predominantly in the form of aluminum hydroxide, which is insoluble (van der Voet and de Wolff, 1986; Wilhelm et al., 1990). Ingested constituents that can influence absorption by forming complexes with Al include phosphate, fluoride, calcium, citrate and lactate. For example, Al is used to bind dietary phosphorus and decrease its absorption as a control for hyperphosphatemia, and citrate and lactate are complexing agents that can significantly increase Al absorption (Slanina et al., 1984, 1985, 1986; Partridge et al., 1989; Domingo et al., 1991; Ittel et al., 1991; Lione, 1985; Wihelm et al., 1990).

A number of recent reports of studies on the gastrointestinal absorption of Al have examined the influence of organic anions such as citrate. In general, the presence of such components appears to enhance the absorption of Al, within narrow limits. For example, Deng et al. (1998) administered a single oral dose of either distilled water, 2 mmoles/L aluminum chloride or 2 mmoles/L aluminum chloride plus 2 mmoles/L sodium citrate to six male Wistar rats/group. Animals were bled at 1, 2 and 4 hours after dosing, then terminated after 6 hours. Inductively coupled plasma (ICP) was used to measure Al concentrations in blood, bone (tibia), kidney, liver and the intestinal wall. Irrespective of treatment, the appearance of Al in the blood of dosed groups peaked after 1 hour, with the concentration of the element at higher levels in those animals receiving citrate in addition to aluminum chloride. In those animals receiving aluminum chloride alone, significant tissue concentrations of the element were restricted to the gastrointestinal wall. Those receiving citrate displayed measurable quantities of the element in several of the other monitored tissues, including bone.

Sutherland and Greger (1998a) used a similar dosing regimen to examine the kinetics of absorption and elimination of Al in male Sprague-Dawley rats that had received a single oral dose of 0, 0.25, 0.5 or 1 mmoles/L/kg body weight aluminum lactate in 1 mL of 16% citrate. Concentrations of Al in serum, liver, kidney or bone (tibia) were measured at various post-dosing time intervals up to 6 hours. Depending on the dose, absorption factors for Al of up to 4.2% of the administered dose were observed, with the greater proportion retained in bone. The authors reported a slower rate of absorption in those animals receiving Al at the higher doses, an

observation potentially indicating reduced gut motility and/or saturation of the transcellular absorption processes at the higher concentrations. Aluminum deposited in kidney and bone appeared to turn-over at a slower rate than in the liver.

The influence of citrate on the gastrointestinal absorption of Al in man was examined directly by Taylor et al. (1998) who administered a drink containing Al and citrate to three volunteers. Aluminum and citrate concentrations were monitored in serial blood and urine samples for up to 24 hours. The kinetics of citrate and Al differed markedly, the former peaking in plasma after 32 minutes, versus 87 minutes for Al. This suggests that Al probably does not cross the gastrointestinal barrier as the citrate. Furthermore, the authors reported that the overall extent of Al absorption had probably not exceeded 1% in their experiment, a finding that contrasts with the higher values reported by Sutherland and Greger (1998a) in Sprague-Dawley rats and by Deng et al. (1998) in Wistar rats.

As discussed in a report by Glynn et al. (1999), gastrointestinal absorption of Al from aqueous media will be almost impossible to predict, because of the likelihood that the element will become absorbed to food particles in the intestinal lumen. Accordingly, depending on the dose, mode of delivery and caloric state of the experimental animal (fed/fasted), significant amounts of aqueous forms of Al will be absorbed only when available binding sites on food have become saturated. This presents an inherently complex overall picture of the element's absorption since, additionally, the normal dietary content of Al will be substantial. Thus, it may be assumed that some sequestered Al will be absorbed along with non-sequestered water soluble forms of the element, while the rest will be retained within the gastrointestinal tract.

Sutherland and Greger (1998b) used their aluminum lactate in 16% citrate dosing regimen to examine the comparative importance of biliary versus urinary excretion of Al. Five to seven male Sprague-Dawley rats/group who had previously received an implanted bile cannula were treated by gavage. Another similarly-treated cohort of five animals/group were housed in metabolic cages immediately after dosing to provide 0- to 3-hour and 3- to 6-hour urine specimens. At termination, all animals were sacrificed and exsanguinated, and tissue, bile and urine samples were measured by graphite furnace atomic absorption spectroscopy. Among the key findings to emerge from this study was the incremental appearance of Al in bile as early as 15 minutes after dosing. However, overall amounts of Al were greater in the 3-hour urine samples than those that had accumulated in bile samples collected within a similar time frame. The fact that control rats excreted 3 times more Al in bile than in urine during the first 3 hours after dosing led the authors to conclude that, at low exposure to Al (in controls receiving Al solely from food), the liver is capable of excreting the element to the bile, a mechanism that becomes saturated as the level of Al administration becomes increased. Thereafter, urinary excretion becomes the primary route of elimination in circumstances of Al overload.

Aluminum can also be absorbed by inhalation as indicated by age-related deposition in the lungs of the general population and exposure-related increased blood and urine concentrations in workers exposed to Al (Bast-Pettersen et al., 1994; Sjogren et al., 1996; Hosovski et al., 1990; Wilhelm et al., 1990; U.S. EPA, 1987). Aluminum occurs primarily in particulate form in the ambient atmosphere and as various dusts and fumes during its production and use. Common forms of inhaled Al include aluminum oxide (alumina; Al_2O_3), pyro powders

(powder and flake Al-treated to reduce surface oxidation), Al welding fume and soluble salts (e.g., aluminum chloride and sulfate) (ACGIH, 1998).

Neurotoxicity as a Primary Toxicological Effect of Aluminum

One of the greatest health concerns regarding Al is its neurological effects. The first evidence for Al-induced neurotoxicity in humans was seen in patients who, as a result of receiving long-term hemodialysis for chronic renal failure, developed a degenerative neurological syndrome (dialysis dementia) characterized by the gradual loss of motor, speech and cognitive functions (Alfrey, 1993). This dementia, attributable to Al in the dialysate, is usually fatal within 6-9 months after the first clinical signs appear. In addition, many patients received high oral doses of Al to act as phosphate binders. Autopsies of these patients revealed increased concentrations of Al in the gray matter and cerebral spinal fluid (CSF) but no evidence of neurofibrillary degeneration (NFD) despite the elevated Al levels. Once the connection between Al and dialysis dementia was established, Al was removed from dialysis fluid and the incidence of dementia rapidly declined, thereby strengthening the argument that Al was a causal agent in dialysis dementia (Ganrot, 1986).

Amyotrophic Lateral Sclerosis (ALS) and Parkinson's Disease (PD) are other neurological diseases which have been associated with Al exposure. ALS is a progressive disease of the Central Nervous System (CNS) that is characterized by an accumulation of neurofibrillary tangles. In Guam, southern West New Guinea and parts of Japan, there is an unusually high prevalence of ALS and PD. This may be related to the natural abundance of Al coupled with the virtual lack of magnesium and calcium in the drinking water supplies and soil of these areas. In a study designed to evaluate effects of high Al and low calcium levels in the diet, much like the conditions associated with Guam and other similar areas, cynomolgus monkeys were placed on a low calcium diet either with or without supplemental Al and manganese (Garruto et al., 1989). Chronic calcium deficiency alone produced neurodegenerative effects, although neurofibrillary changes were most frequently seen in the monkeys on a low calcium diet supplemented with Al and manganese.

Though a cause and effect relationship between Al and three forms of chronic encephalopathy in humans: senile dementia of the Alzheimer type (SDAT, Alzheimer's Disease), endemic Amyotrophic Lateral Sclerosis (ALS) and endemic Parkinsonism-dementia (PD, a mixture of Parkinsonism and senile dementia) has been suggested, there is no firm evidence that it plays a causal role in the development of these diseases (Ganrot, 1986; Lione, 1985). The condition is degenerative and characterized by the progressive loss of speech, motor and cognitive functions, with death typically occurring within 1-6 months. Autopsies of patients revealed increased concentrations of Al in the gray matter and cerebral spinal fluid (CSF), though with no conclusive evidence of NFD or other neuropathological changes despite the elevated Al levels.

The neurotoxicity of Al is well documented in certain animal species. Aluminum induces a spectrum of behavioral abnormalities and brain neurofibrillary degenerative changes in rabbits and cats when injected intracranially or parenterally in high doses, though hamsters and monkeys are less sensitive (Ganrot, 1986; Lione, 1985). Such studies have been designed as models for

the possible neurotoxicological effects of Al in humans. However, it should be noted that the neurofibrillary changes in affected animals differ in morphological detail from those associated with SDAT. As discussed further in the Oral Toxicity section, oral doses of Al can also induce neurobehavioral effects in adult mice and rats and in their developing offspring. In general, such neurotoxic effects of Al appear to be more subtle than those induced through routes of administration that by-pass the gastrointestinal tract, perhaps reflecting the lower doses of Al reaching the brain.

Recent reports of studies on the effects of Al on neurotoxicity in animals have sought to define the biochemical mechanisms that are impaired when Al crosses the blood-brain barrier. However, a unifying concept has yet to emerge, though the passage of the element into various regions of the brain has been clearly demonstrated (Deloncle et al., 1995). Among the many biochemical functions and processes that appear to be perturbed by the presence of Al in the brain are the peroxidation status of biological membranes (Katyal et al., 1997; Deloncle et al., 1999), inhibition of the neuronal glutamate-nitric oxide-cyclic GMP pathway (Cucarella et al., 1998), and the marked reduction of protein- and non-protein-bound thiols and the specific activity of Na^{+}/K^{+} and Mg^{++} ATPases (Katyal et al., 1997). The relative importance of each of these mechanisms and how (or whether) they interact to bring about the observed physiological changes remains unclear.

Other Effects of Aluminum

Osteomalacia was frequently observed among long-term dialysis patients with neurological signs and is commonly attributed to Al overload (Ganrot, 1986; Lione, 1985). This bone condition is characterized by widened osteoid (unmineralized bone matrix) with no fibrosis, reduced mineralization rate, skeletal pain and a strong tendency for fractures, lack of response to vitamin D therapy and increased Al concentration in bone. Effects on bone histology and elevated bone Al levels have also been observed in patients with normal renal function who received total parenteral nutrition with Al-contaminated casein as a protein source, and in parenteral Al loading induced osteomalacia in rats and dogs (Lione, 1985).

There are a number of published reports of studies in which the carcinogenicity of aluminum compounds has been evaluated. These include oral exposure studies in which the compounds were made available to experimental animals in the drinking water or diet (Schroeder and Mitchener, 1975a,b: Oneda et al., 1994), and inhalation epidemiological studies, in which the incidence of tumor formation in persons exposed to aluminum-containing dusts and fumes in an occupational setting was compared to unexposed individuals (Spinelli et al., 1991; Thériault et al., 1984, 1990; Armstrong et al., 1986; Tremblay et al., 1995; Selden et al., 1997; Cullen et al., 1996; Dufresne et al., 1996; Ronneberg and Langmark, 1992). However, it has been generally concluded that the inferential association between exposure to Al and marginally increased incidences of tumors of the bladder and/or lung are confounded because of the co-exposure of subjects in such settings to other harmful and potentially carcinogenic substances, such as polycyclic aromatic hydrocarbons (PAHs and coal tar pitch volatiles (CTPV) (Ronneberg and Langmark, 1992). Therefore, the issue of the potential carcinogenicity of Al compounds remains uncertain.

Human Studies

Oral Exposure

Few reports have been identified that address the toxicological effects of Al in humans exposed orally. Furthermore, in a review, Reiber et al. (1995) pointed to the conflicting findings that have been reported when the incidence of neurological symptoms has been assessed in relation to Al exposure in either cross-sectional, ecological or case-control epidemiological studies. Among the more recent studies that have used this approach, Martyn et al. (1997) discussed the findings of a case-control study involving 441 men in England and Wales who were afflicted with either Alzheimer's disease, brain cancer, dementia or other neurological conditions. Assessing the historical exposure of these subjects failed to establish a link between Al in drinking water at the prevailing concentrations (below 0.2 mg/L) and the incidence of one or more of the conditions under investigation. No data were located regarding the oral carcinogenicity of aluminum compounds in humans.

Inhalation Exposure

Neurobehavioral effects were evaluated in a group of 87 Al foundry workers who were occupationally exposed to 4.6-11.5 mg/m^3 Al fumes and dust for a mean of 12.0 years [standard deviation (SD) 4.5 years, shortest exposure 6 years] compared to an unexposed control group (n=60) who were matched for age, job seniority and social status to exposed subjects (Hosovski et al., 1990). It is reported that environmental Al concentrations were measured for each worker separately during the winter and summer, implying that personal sampling may have been used and that the contributing concentrations are time-weighted averages. In certain places, the number of particles ranged as high as 329-1020/cm^2 air, and dust particle sizes were ≤1, 1-5 and ≤5 microns in 65.6, 26.6 and 7.6% of the samples, respectively. Tests of psychomotor ability (simple and complex reaction time, oculomotor coordination), intellectual ability (Wechsler intelligence, performance intelligence and verbal intelligence quotients and Wechsler subtests on information processing, memory, understanding, calculation, coding, picture completion, picture grouping, object assembling, assembling of cubes and common concepts) and cerebral damage (Bender visual motor test) were conducted. Performance of the exposed workers was found to be significantly ($p<0.02$) impaired on the complex reaction time, oculomotor coordination, memory, coding, picture completion and object assembling tests. However, the investigators noted that the performance deficits had no clinical manifestations, and that additional studies were probably needed to confirm the possibility of cerebral damage. The study yielded a lowest available non-duration adjusted LOAEL of 4.6 mg Al/m^3 for psychomotor and cognitive impairment during repeated 8-hour occupational exposures (Hosovski et al., 1990), that could be corrected for discontinuous exposure (10 m^3/20 m^3 and 5 days/7 days) to yield a $LOAEL_{HEC}$ of 1.64 mg/m^3 Al.

Aluminum oxide powders were administered to Canadian miners (mainly underground gold and uranium miners) in known exposures as a means of prophylaxis against silicosis (Stokinger, 1981; Rifat et al., 1990). Data in which more than 42 million Al treatments (≈150,000 man-years) had been given over a period of 27 years ending in 1971 were reviewed

by Stokinger (1981). The effectiveness of this treatment is uncertain but no lung damage or other ill effects (not specified) were observed. The powders (McIntyre powder) were prepared by grinding Al pellets so that 96% of the particles were ≤1.2 μm in diameter. During this process most of the particles became oxidized to aluminum oxide; the powder contained 85% aluminum oxide and 15% elemental Al. According to Stokinger (1981), recommended exposure concentrations were 30,000 particles of respirable size per cubic centimeter (ppcc) for 10 minutes/day or 10,000-20,000 ppcc for 20 minutes/day (total treatment days not indicated). Rifat et al. (1990) stated that the recommended exposure was to an Al dust concentration of 20,000-34,000 parts per ml air in the miners' changing rooms before each shift for 10 minutes. Stokinger (1981) reported that the 30,000 ppcc concentration corresponds to ≈350 mg/m^3, which is equivalent to an 8-hour average concentration of 2 mg/m^3. Based on the Stokinger (1981) data and the fact that one unspecified study used levels 30 times higher than advised, the TLV of 10 mg/m^3 is recommended for Al dust (ACGIH, 1998).

The increasing awareness of the potential neurotoxicity of Al has resulted in a number of investigations of the incidence of neurotoxicological symptoms in Al workers. Although treatment with McIntyre powder had not produced apparent adverse effects, a neurobehavioral evaluation of male miners (261 exposed to McIntyre powder, 346 unexposed) who started working between 1940 and 1979 (additional duration data not reported) was performed in 1988-1989 (Rifat et al., 1990). There were no significant differences between exposed and unexposed miners in reported diagnoses of neurological disorder. Results of cognitive testing (Mini-Mental State Examination for general cognitive function, Ravens colored progressive matrices test for reasoning and Symbol Digit Modalities Test for spatial perceptual accuracy and information processing), however, showed that the exposed group had significantly ($p \leq 0.001$) impaired performance on at least one test, and when all test scores were summed. Also, the likelihood of scores in the impaired range increased with duration of exposure.

A neurologic syndrome was described in Al smelting plant potroom workers (White et al., 1992). Twenty-five men were evaluated for suspected work-related neurologic illness based on findings in three patients studied previously. The average duration of employment was 18.7 years (SD, 3.6; range, 12-23 years), 15 of the patients were working at the time of evaluation, and 10 had taken early retirement or medical leave due to workplace-related symptoms (mean length of time since exposure was 1.3 years ranging from 0.2-5 years). Quantitative exposure level data were not reported, but 21 of the workers had been employed in the potroom prior to installation of fume hoods for a mean duration of 5.3 years (range 3-7 years). Symptoms most often reported by the patients were frequent loss of balance (88%), memory loss (84%) and joint pain (84%); other symptoms included dizziness (80%), numbness (80%), parasthesias (72%) and tremor (68%). Neurologic examinations showed mild to moderate signs of lack of coordination (tremor, dyssynergy of upper extremity limb movement or ataxia) in 84% of the patients. Neuropsychologic effects were evaluated in 21 of the patients using the Wechsler Adult Intelligence Scale-Revised (intellectual functioning), Wide Range Achievement Test-Revised (academic functioning), Halstead-Reitan Neuropsychological Test Battery (neuropsychological assessment) and Minnesota Multiphasic Personality Inventory (personality functioning). Memory function was assessed with the Wechsler Memory Scale (14 patients) and Wechsler Memory Scale-Revised (8 patients). The memory function evaluation showed mild to moderate impairment on subtests of immediate recall for verbal or visual information (70-75% of the

tested patients) and delayed verbal or visual recall (50-70%). Other effects included mild or moderate impairment on Halstead-Reitan tests of abstract reasoning and flexible thinking (42% of the tested patients), memory for tactile information (53%) and sustained attention and discrimination of tonal and speech patterns (44 and 64%, respectively). On the Wechsler memory and Halstead-Reitan tests, mild and moderate impairment was defined as scores 1.5-2 and ≥2 standard deviations below the mean of the normal population, respectively. Most (89%) of the patients tested with the Minnesota Multiphasic Personality Inventory had abnormally elevated scores (≥2 SDs above the population mean) indicative of clinical depression. Significant positive correlations were found between severity of incoordination (signs and symptoms) and degree of exposure (qualitative) before the introduction of the ventilation hoods.

White et al. (1992) noted two other studies that described neurologic problems among Al smelter workers. Thus, an evaluation of 444 electrolysis workers found neuropsychiatric changes in 123 (28%), "neurotic syndromes" in 89 (20%) and "slight pyramidal and cerebellar changes" in 39 (9%) (Langauer-Lewowicka and Braszczynska, 1983). In the second study, symptoms including mental confusion, concentration and memory problems were described in six potroom workers (Cawthon, 1988).

In another study of Al production workers, neuropsychological effects were assessed in 38 elderly men who had been exposed for at least 10 years exclusively in the potroom (n=14), foundry (n=8) or other manual labor departments of the same plant (n=16, control group) (Bast-Pettersen et al., 1994). The mean ages and employment durations of the groups were in the ranges of 62.5-63.5 and 19.2-19.6 years, respectively. The men were examined soon after or just before retirement in 1991. Limited environmental monitoring data indicates that the degree of Al exposure varied between the subgroups and over the years. Average annual total dust concentrations in the potroom were reduced significantly from 9.5 mg/m^3 in 1977 to 3.0 mg/m^3 in 1990. Aluminum levels were not specifically reported, but the average Al content in the total potroom dust was approximately 20% by weight; other constituents of the dust included fluoride and coal tar pitch components. Data from an Al uptake/excretion study of workers from the same plant indicated that the level of Al exposure was approximately 8 times higher in the potroom than in the foundry (0.48 and 0.06 mg/m^3, respectively) (Drablos et al., 1992). Medical examinations (including lung function, standard laboratory tests and serum and urine Al concentrations) and a neuropsychological test battery were performed. The battery assessed six mental functions (neuropsychiatric symptoms, motoric/sensoric, reaction time, psychomotor speed/efficiency, memory/learning and intelligence) using a questionnaire and 15 different objective tests. Some subtle deficits were found in potroom workers that were not considered to be indicative of a significant neurological syndrome. The findings in potroom workers included a subclinical tremor as indicated by results of a static steadiness test [time scores on one of two test indices were significantly worse in comparison with the control group (84% slower, p=0.03)], and possible tendencies (i.e., test results that were about 1 SD below normal mean values but not statistically significant) for increased risk of impaired visuospatial organization (Block Design subtest of the Wechsler Adult Intelligence Scale) and psychomotor tempo (one Halstead ReitanTrail Making test). Although these findings were not considered to be indicative of a neurologic syndrome, it was suggested that they may be early signs of CNS impairment. Additionally, the finding of a subclinical tremor seems to be consistent with the tremor and other

signs of incoordination observed in 84% of the patients in the White et al. (1992) study summarized above.

Studies of Al welders are consistent with those of Al smelter workers in indicating that occupational exposure to Al can be neurotoxic. CNS function was evaluated in 17 welders who had an average of 15 years (range 5-27 years) experience, with the last 4 years exclusively with Al (Hanninen et al., 1994). Most of the welders had equipment that ventilated the welding masks but the respiratory protection was not always used. The assessment included measurements of serum and urinary Al, neuropsychological tests (simple reaction time, three tests for psychomotor speed, two tests for visual and spatial ability, four memory tests and two verbal ability tests), a symptom questionnaire and neurological interview, quantitative electroencephalography (QEEG) and P-300 event-related auditory-evoked responses. Serum and urine Al levels were 3.5 and 8.5 times higher, respectively, than an unexposed reference population. The welders performed normally on the neuropsychological tests, although correlation analysis of test scores and exposure parameters showed weak negative associations between the four memory tests and urinary Al level and a positive association between the variability (standard deviation) of visual reaction times and serum Al levels. Analysis of the QEEG data showed that serum Al levels were positively correlated with the amount of delta and theta activity in the brain frontal region and negatively correlated with the amount of alpha activity in the frontal region. Results of this study (disturbances of memory and attention, QEEG changes similar to those in patients with Al encephalopathy) were interpreted as consistent with known CNS effects of Al, but insufficient for establishing a definite relationship between Al exposure and effects.

In another study of Al welders, CNS evaluations were performed on 38 men who had at least 5 years exposure (mean 17.1 years) and a control group of 44 railway track welders exposed to metal fumes other than Al (mean 13.8 years) (Sjogren et al., 1996). Limited monitoring data indicated that the median exposure to welding fumes was 10 mg/m^3 and that the Al content was 40% of the total fumes. Symptom questionnaires, psychological tests (simple reaction time, finger tapping speed and endurance, digit span, vocabulary, tracking, symbol digit coding, cylinders, olfactory threshold and Luria-Nebraska motor scale), neurophysiological indices [electroencephalography, P-300 auditory-evoked responses, brain-stem auditory evoked responses and diadochokinesis (ability to perform rapidly alternating movements with one limb)] and blood and urine Al levels were assessed. The blood and urine Al concentrations were approximately 3 and 7 times higher in the Al welders than in the controls, but there were no clear correlations between duration of exposure to Al and concentration of Al in blood or urine. The Al welders reported more acute CNS symptoms (e.g., concentration difficulties) and had decreased motor function in five tests (finger tapping in non-dominant hand, two tasks from the Luria-Nebraska motor scale, pegboard peg movement with dominant hand, amplitude of diadochokinesis in dominant hand) when compared to the control group. Urinary Al concentration was significantly correlated with acute CNS symptoms, but not with any of the performance measures. To further study possible dose-effect relationships of Al exposure, the Al welders were combined with the control group and divided into three exposure categories according to urinary Al levels, using the 50^{th} and 75^{th} percentiles as category dividers. The group with the highest mean urinary Al level had significantly more acute CNS symptoms and significantly reduced performance on one of the motor function tests (a Luria-Nebraska motor

scale task) when compared to the group with the lowest Al level. In an earlier study of 65 welders with ≥10 years of exposure to Al fumes, the highest exposure category (based on exposure duration) was 2.8 times more likely than unexposed workers to have three or more neuropsychiatric symptoms (Sjogren et al., 1990).

A body of epidemiological evidence has pointed to an increased incidence of cancers of various kinds in workers employed in the aluminum production industry. However, as discussed in a review by Ronneberg and Langmark (1992), the concern about potential cancer hazards in the aluminum industry has primarily arisen because of exposures to polycyclic aromatic hydrocarbons (PAHs) and coal tar pitch volatiles (CTPVs) rather than to Al *per se*. Thus, while a number of studies have provided inferential data linking occupationally exposed aluminum workers with an increased risk of developing tumors of the bladder or lung (Gibbs, 1985; Thériault et al., 1984, 1990; Armstrong et al., 1986; Spinelli et al., 1991; Pearson et al., 1993; Tremblay et al., 1995), it would be unwise to ascribe any excess tumor formation to the effects of Al in view of the concurrent exposure to well-documented carcinogenic PAHs such as benzo(a)pyrene. The issue is further complicated by the likely exposure of production workers to other substances such as fluorides, sulfur dioxide, aromatic amines and asbestos (Ronneberg and Langmark, 1992; Tremblay et al., 1995; Dufresne et al., 1996), and to the possible effects of cigarette smoking in affected individuals. Consequently, these studies have failed to provide direct evidence for the carcinogenicity of Al fumes and dusts.

Animal Studies

Oral Exposure

Numerous subchronic animal studies were located in the biomedical/toxicological literature but only those that define the threshold region of the oral dose-response relationship are summarized in this paper. A major limitation of many of the studies of Al toxicity is the lack of complete information on total dietary (e.g., food and drinking water) intake of Al and of other elements that are known to effect Al biokinetics and toxicity (e.g., calcium and magnesium). Estimated or reported dosages used in studies in which Al content of the basal diets are not reported must be assumed to underestimate the actual experimental dosages. The magnitude of the underestimate may be considerable. For example, a range of Al contents of 200-1200 mg Al/kg for commercial grain-based diets (Golub et al., 1992b) would provide 30-200 mg Al/kg bw-day in a subchronic or chronic mouse bioassay [based on U.S. EPA (1988) default values for body weight and food intake]. On this basis, studies in which complete dietary Al intakes were not reported or could not be estimated may provide some information about the hazards of oral exposure to Al but are inappropriate for establishing NOAELs or LOAELs for the critical effect of Al. NOAELs and LOAELs from studies that provide estimates of total Al dosages, or otherwise provide information relevant to determining the NOAEL/LOAEL boundary for the critical effect of Al are presented in Table 1 and are summarized below.

Systemic toxicity

Groups of 10 female Sprague-Dawley rats were administered aluminum nitrate nonahydrate in sugar-containing drinking water at doses of 360, 720 and 3600 mg/kg-day (26, 52

and 259 mg Al/kg bw-day, respectively) for 100 days (Domingo et al., 1987). A control group received sugar-containing distilled water only. Sugar had been added to the drinking water of all groups to reduce the taste-aversive effects of Al. The level of Al in the diet was not reported. Animals were housed in metabolic cages to facilitate the collection of fecal and urine samples. Food and water consumption were measured daily, body weights were noted weekly and blood samples were taken at monthly intervals and at termination to monitor clinical chemistry and hematological parameters. At termination, all animals were necropsied, and the weights of major organs (brain, heart, lungs, kidneys, liver and spleen) were monitored. Aluminum concentrations were measured in various tissues, pieces of which were processed for histopathological examination. A significant decrease ($p<0.05$) in body weight gain was observed in the 259 mg Al/kg-day group, attributed by the authors to decreased food intake. Overall, no consistent variations in hematological (hemoglobin, hematocrit) or clinical chemistry (SGOT, SGPT, alkaline phosphatase, urea, creatinine, total protein, cholesterol, glucose) parameters were observed. No histopathological alterations in the heart, liver, kidney, spleen, brain and cerebellum were observed. Interpretation of these data was complicated by the concurrent exposure of the rats to high doses of nitrate of up to 475 times the RfD for nitrate (1.6 mg nitrate-nitrogen/kg-day) which is based on methemoglobinemia in humans (U.S. EPA, 1999). Therefore, because of nitrate co-exposure, the absence from the study design of a food-restricted control group and uncertainty surrounding the contribution of Al in food, the apparent effect of Al on body weight gain cannot be conclusively attributed to Al alone.

Some recent studies have identified a number of potential toxicological responses in laboratory animals exposed orally to Al compounds in a subchronic or chronic dosing regimen. In most cases, however, only one dose level was employed in the study compared to controls, and since the amount of Al in the diet was not given, the resulting dose level represents an incremental dose of Al compared to that of controls as baseline. However, while these studies may offer inadequate quantitative dosimetric information for NOAEL/LOAEL identification and consequent RfD development, they provide an qualitative indication of a range of potential toxicological responses that might be induced in humans exposed to the element. For example, Garbossa et al. (1998) studied the potential for water-soluble Al to affect the erythropoietic integrity of late erythroid progenitor cells in the bone marrow. Three groups of five male Wistar rats/group were either (1) gavaged with citrate at a dose of 1.0 μm Al/g-day (27 mg/kg-day), 5 days/week, for 15 weeks, (2) had drinking water containing 100 mmol Al/L made available to them as the citrate for the same length of time or (3) maintained as controls. As calculated by the authors, the dose associated with the applied concentration of Al in drinking water approximated to 14-17 μmol/g-day (420 mg/kg-day). Rats had access to a standard chow diet, though with no indication of the baseline concentration of Al provided therein. At the end of the in-life phase of the study, all rats were sacrificed, and samples of blood were obtained for hematological investigation. Femoral bone marrow cells were flushed with physiological medium, stimulated with recombinant human erythropoietin, then monitored for the comparative incidence of colony-forming units-erythroid (CFU-E). Further tests were carried out to monitor the osmotic fragility and average life-span of erythrocytes from each test group. The animals in the group receiving Al at the higher dose showed decreased hematocrit, hemoglobin concentration, median osmotic fragility and erythrocyte life-span values compared to controls. The content of Al increased in the serum and bone of both exposed groups, the distribution of concentrations in bone correlating inversely with the extent of an animal's CFU-E development.

That Al in drinking water may have the ability to cause histopathological changes and altered hepatic enzyme activities was suggested by Basu et al. (1997) who made available aluminum chloride in drinking water to groups of eight male Sprague-Dawley rats at a dose of 50 mg/kg-day (10.1 mg Al/kg-day) for 40 days. Additionally, other groups of similarly-treated rats received drinking water containing either 0, 50, 100, 200 or 400 ppm (mg/L) added calcium (Ca), as the chloride. The authors reported increased specific activities of acid and alkaline phosphatases in liver 10,000 x g supernatants from Al-receiving animals versus controls, and in alkaline phosphatase activity in equivalent kidney preparations. The presence of Ca in the drinking water appeared to reverse these changes, plus the accompanying histopathological features associated with them.

Konishi et al. (1996) examined the ability of Al and Ca to cause opposite and potentially harmful effects in laboratory animals, in relation to the well-documented association between Al and the onset of osteomalacia. Male STD Wistar rats were divided into four groups (n=4), receiving either (1) a normal diet (Group I), (2) a normal diet supplemented with Al (Group II), (3) a Ca-deficient diet (Group III) or (4) a Ca-deficient diet with supplemental Al (Group IV), for 10 weeks. Blood samples were taken at termination, and then animals were perfused with paraformaldehyde/glutaraldehyde fixative. Levels of Ca, iron (Fe) and Al in serum and bone were measured by atomic absorption spectrophotometry, and sections of the resected right tibia were prepared for histopathological examination after decalcification in 5% formic acid in 10% formalin.

There were statistically-significant changes in body weight gain when those of groups 3 and 4 were compared to animals from groups 1 and 2, the values for the latter groups remaining constant from about 4 weeks of dosing. In discussing their histopathological findings, the authors described no decrease in the thickness of cortical bone in Group II compared to control, while bone specimen from Groups III and IV showed “an increase in osteoid as well as osteoblasts and osteoclasts”, in addition to other disturbances of ossification. Such effects were considered to suggest bone fragility, with changes being more marked in Group IV compared to III. The amount of Al in the tibia of exposed rats was significantly greater in Group II than in Group I, whereas the average levels in Groups III and IV showed a further increase in Al deposition, most notably in group IV. There were also differences among the groups in the concentration of Fe in bone (tibia), and in the concentrations of Al, Ca, Fe and the levels of parathyroid hormone in blood. The authors concluded that Ca deficiency appeared to potentiate the deposition of orally administered Al in bone, and the attendant inhibition of ossification. Iron deposition was also thought to play a role in the osteogenic disturbance, where Ca is deficient.

A histopathological investigation indicated profound changes in the cerebrovascular and neuronal integrity when male Long-Evans rats (n=9) were exposed for 52 weeks to 0.5 ppm aluminum fluoride in drinking water (Varner et al., 1998). This corresponded to an Al dose of 0.019 mg/kg-day, based on a default drinking water consumption of 0.057 L/day, and a default body weight of 0.472 kg for male Long-Evans rats (U.S. EPA, 1988). Duel control groups received either NaF (fluoride controls) or double distilled deionized water. Tissue levels of Al were measured in brain, liver and kidney by the use of a direct current plasma technique.

Animals receiving aluminum fluoride showed poor survival compared to the other groups, with 6/9 having died by week 48. The tissue concentrations of Al were increased in the brain and kidney compared to both the control groups, with Al-fluorescence being used to demonstrate that Al deposition was mostly in the vasculature. Morphological and histopathological changes due to treatment were apparent in the liver, kidney and spleen. Some changes in neuronal integrity were also evident in the hippocampus and neocortex. Other cytological changes in the brain were associated with chromatid clumping, pyknosis and vacuolation.

A report by Somova et al. (1997) describes a study in which 10 male Wistar rats/group received either 0, 5 or 20 mg/kg-day aluminum chloride by gavage in water for 6 months. At termination, all animals were exsanguinated, then subjected to a necropsy in which excised pieces of liver, kidney and cardiac and skeletal muscle were taken for histopathological examination. Pieces of brain were examined by electron as well as light microscopy, and all tissues were monitored for Al concentration by atomic absorption spectrophotometry. As tabulated by the authors, Al in plasma and all of the listed tissues was dose-dependently increased to levels that were statistically significantly greater than controls. However, though described in qualitative terms and illustrated photographically, the Al-induced lesions did not receive a quantitative treatment in the report. Thus, while at least some of the low dose rats displayed NFD (neuro fibrillar degeneration) of the hippocampal region of the brain, insufficient data are provided in the report to apply this observation to the identification of a NOAEL or LOAEL.

Dietary experiments

Six Beagle dogs/sex/group were fed a diet providing either, in males, 0, 118, 317 or 1034 mg/kg-day sodium aluminum phosphate (0, 3.4, 9.0 or 29.4 mg Al/kg-day, respectively) or, in females, 0, 112, 361 or 1087 mg/kg-day sodium aluminum phosphate (0, 3.2, 10.3 or 30.9 mg Al/kg bw-day, respectively), for 6 months (Katz et al., 1984). No information was available on the level of Al in the diet, and no compound-related effects on body weight gain, hematological and clinical chemistry parameters (parameters not specified) or histopathological endpoints (major organs and tissues examined) were observed. A highest NOEL of 30.9 mg Al/kg-day could be tentatively identified in this study, but this would not include the contribution of Al from the basal diet, nor reflect the identification of any toxicological effects, since the NOEL occurred at the upper limit of the dose-response curve.

Neurotoxicity

A number of studies have been reported in which neurotoxicological/neurobehavioral effects have been explicitly evaluated. In others, the effects of Al on neurological developmental have been addressed. For example, Golub et al. (1989) fed diets containing Al as the lactate at 25 (controls), 500 or 1000 mg Al/kg diet (3.3, 65 or 130 mg Al/kg-day) to groups of 15 female Swiss-Webster mice for 6 weeks (Golub et al., 1989). No mice were exposed to lactate alone. While no statistically significant differences in food intake or body weight gain were observed, mice fed the highest Al concentration gained less weight than the controls or low-dose group. As reported by the authors, a significant decrease (20%) in spontaneous motor activity (i.e., total, vertical and horizontal movement) was observed in the 130 mg Al/kg-day group. Activity in the

65 mg Al/kg-day group was not significantly different than the controls. Thus, the highest NOAEL is 65 mg Al/kg-day and the LOAEL is 130 mg Al/kg-day.

Neurobehavioral effects of aluminum lactate were evaluated in groups of 12 female N:NIH Swiss-Webster mice (4.5-5.5 weeks old) that were fed 25 (controls) or 1000 mg Al/g diet for 90 days (Golub et al., 1992a). Based on a food factor of 0.19 kg diet/kg body weight/day calculated using an algorithm relating food consumption to body weight (U.S. EPA, 1988) and reported body weight data (the time-weighted average weight is 25.4 g), the dosage in the treated mice is estimated to be 190 mg Al/kg bw-day. No mice were exposed to lactate alone. A neurobehavioral test battery used by Donald et al. (1989) was administered at the beginning of the experiment (day 0) and after 45 and 90 (±3) days, with motor activity evaluated at the latter two time points. Aluminum levels were measured in brain, femur and liver at the end of the exposure period.

Body weight was significantly increased in the treated mice but no exposure-related changes in food intake or overt signs of neurotoxicity were observed. Results of the neurobehavioral tests showed significantly decreased hindlimb grip strength at 90 days, decreased air puff startle response at 90 days and decreased auditory startle response at 45 days in the treated mice. Spontaneous motor activity was reduced at 90 days as indicated by decreased total activity counts, horizontal activity counts and percentage of intervals with high activity counts. Aluminum concentrations in the brain and liver were increased approximately 3-fold in the treated mice, but brain and liver lipid peroxidation indices were not altered.

Male Wistar rats (6-8 per group) were exposed continuously for 6 months to food containing 1.52 mg Al/kg (normal diet) or 1000 mg Al/kg as aluminum chloride with citrate (Florence et al., 1994). The average daily Al intake was estimated to be 0.13 or 84 mg Al/kg bw-day, assuming a body weight of 0.305 kg (arithmetic mean of default mature weight of male Wistar rats and the starting weight in this study of 0.11 kg) and a food intake of 0.026 kg food/kg bw-day, calculated using an algorithm relating food intake to body weight (U.S. EPA, 1988). The citrate content of the diet was in a 1:1 stoichiometric proportion to Al, therefore, the estimated daily intake was 598 mg/kg-day. Rats exposed to Al developed histopathological abnormalities in brain tissue, not specific to any brain region, characterized by extensive cytoplasmic vacuolization in astrocytes, swelling of astrocytic processes, particularly of astrocyte end-feet abutting blood vessels. Neurons also exhibited vacuolization and nuclear inclusions. Although no specific behavioral assays were reported, the investigators noted that "no significant behavioral changes were observed". Accordingly, the functional significance of the histopathological lesions is uncertain. The lesions appear to differ from the NFD observed with parenteral Al exposures (Kowall et al., 1989; Wakayama et al., 1993); or from exposures to Al in combination with calcium deprivation (Garruto et al., 1989; Kihira et al., 1995; Mitani, 1992). The LOAEL for histopathological changes in the brain was 84 mg Al/kg-day.

Male Sprague-Dawley rats (40 per group) were exposed in drinking water to 0, 50 or 100 mg Al/kg bw-day as aluminum nitrate with citric acid for 6.5 months beginning at 21 days of age, 8 months of age or 16 months of age (Domingo et al., 1996). The citric acid dosage was 355 or 710 mg/kg-day in the 50 or 100 mg Al/kg bw-day groups, respectively. Controls did not receive citric acid. Dietary Al intake was not reported; the rats were maintained on Panlab rat

chow. Animals from control and exposed groups were subjected to a number of neurobehavioral tests, and at termination, Al levels were measured in various excised regions of the brain. The authors observed the highest Al levels in the olfactory bulb and rhachidical bulb, while the cortex and thalamus were the regions showing the lowest Al content. However, compared to controls, there were no significant effects ($p>0.05$) of Al (with citric acid) on spontaneous motor activity (open-field) or passive avoidance operant training or performance (grid floor shock, light/dark shuttle box). Thus, the NOAEL was 100 mg Al/kg-day with citric acid; although this does not include the Al contribution from food. This study is listed on Table 1 because the NOAEL, although probably underestimated because of unreported Al intake from food, is still lower than the LOAELs from other studies.

Groups of six male albino rats were administered 0 or 25 mg Al/kg bw-day as aluminum nitrate in normal saline by gavage, 10% ethanol in drinking water, or 25 mg Al/kg bw-day by gavage combined with 10% ethanol in drinking water, 6 days/week for 6 weeks (Flora et al., 1991). The level of Al in the diet was not reported. Urinary Δ-aminolevulinic acid (ALA), blood ALA-dehydratase (ALAD), blood zinc protoporphyrin (ZPP), glutamic oxaloacetic transaminase (GOT) and glutamic pyruvic transaminase (GPT) in serum and liver and brain biogenic amines and their metabolites [dopamine (DA), norepinephrine (NE), 5-hydroxytryptamine (5-HT), homovanillic acid (HVA) and 5-hydroxyindolacetic acid (5-HIAA)] were evaluated at the end of the treatment period. Treatment with Al alone caused significantly increased blood ALAD ($p<0.01$), decreased liver GPT ($p<0.05$), decreased brain DA ($p<0.01$), increased brain NE ($p<0.05$) and decreased brain 5-HT ($p<0.05$). Compared to treatment with Al alone, concurrent exposure to ethanol and Al produced significantly decreased ALAD, increased ALA, increased ZPP, increased liver GPT, increased serum GOT and increased brain HVA. Significant changes found only in the combined Al and ethanol group included increased serum GPT, increased brain NE and decreased brain 5-HT. Treatment with ethanol alone only inhibited blood ALAD. The rats were co-exposed to relatively high levels of nitrate [comparable to those in the Domingo et al. (1987) subchronic study], but it seems likely that some of the changes (i.e., effects on brain chemicals) are related to aluminum which is known to be neurotoxic. Because the toxicological significance of the changes is unclear due to lack of evaluation of neurobehavioral performance and other endpoints, there is uncertainty whether the 25 mg Al/kg-day dose is a NOAEL or a LOAEL, an uncertainty compounded by the absence of information about the level of Al in the basal diet.

Reproductive/developmental toxicity

A number of studies have been carried out to examine the effects of Al compounds on developmental toxicity, particularly their effects on postnatal neurobehavioral development. For example, Bernuzzi et al. (1989) exposed groups of 6-12 pregnant Wistar rats to aluminum chloride or aluminum lactate in the diet on gestational days 1 through 21. The rats received nominal daily doses of 0, 100, 300, 400 mg Al/kg as aluminum chloride or 0, 100, 200 or 400 mg Al/kg as aluminum lactate. No rats were exposed to lactate alone, and information regarding level of Al in the basal diet was not reported. On the average, there was a less than 10% decrease in maternal body weight gain and no effect on food or water intake. No significant difference in litter size was observed. However, postnatal mortality increased 55% and 26% in offspring of the rats exposed to 300 or 400 mg Al/kg-day, respectively. The offspring of dams

fed ≥300 mg Al/kg-day weighed significantly less than controls on postnatal day 1. Decreased body weight was also observed on postnatal days (PD) 4 and 14 in the offspring of rats fed 400 mg Al/kg-day as aluminum lactate. The following tests were used to assess neuromotor development (maturation): righting reflex, grasping reflex, negative geotaxis, suspension test and locomotor coordination. The tests were performed on PDs 4, 6, 9, 12 and 20, respectively. Impairment of neuromotor development (righting and grasping reflexes) was observed in the pups exposed to ≥200 mg Al/kg-day. Impaired grasping reflex was also observed in the 100 mg/kg-day aluminum lactate group. Offspring of rats fed 400 mg/kg-day also exhibited altered performance on the locomotor coordination test.

A follow-up study by the same research group found that ingestion of 400 mg Al/kg bw-day as aluminum lactate had no effect on postnatal mortality, body weight and righting and grasping reflex tests (Muller et al., 1990), although significant differences between control and exposure groups were noted in locomotor coordination and operant conditioning tests. Significant differences between controls and exposed groups in the negative geotaxis test were limited to those pups of dams treated during the second and third weeks of gestation, a finding interpreted by the authors to indicate the possibility of long-term effects on the central nervous system of trans-placenta exposure to Al during a later organogenic phase. According to Muller et al. (1990), the contradictions between this and their earlier study (Bernuzzi et al., 1989) could be related to environmental modifications. In particular, the mothers and pups were much more protected in the Muller et al. (1990) study than in the previous one because they were housed in plastic cages instead of wire mesh cages and received cotton to build nests. Body temperature of the pups, therefore, may have been more adequately maintained in the Muller et al. (1990) study. As discussed in this study, toxicity in pups can be confounded by insufficient body temperature, and delayed pup weight gain could explain the differences in neuromotor performance.

Muller et al. (1990) administered diets supplemented with 0 or 400 mg Al/kg bw-day as aluminum lactate to groups of 6-9 pregnant Wistar rats on days 1-7, 1-14 or 1-21 of gestation. No rats were exposed to lactate alone, and information regarding level of Al in the basal diet was not reported. Neuromotor development was assessed on postnatal days 4, 6, 9, 12 and 20 using tests of righting reflex, grasping reflex, negative geotaxis, suspension and locomotor coordination, respectively. Learning ability was also tested on PD 65 using operant conditioning. No effects on maternal body weight or food intake were observed in dams exposed on gestational days 1-7 or 1-14. In the dams exposed on gestational days (GD) 1-21, a significant decrease in maternal body weight (26 and 35%, respectively) was observed on days 16 and 19 of gestation. Decreased food intake was also observed on day 19 of gestation. No effects on litter size, postnatal mortality or postnatal body weight were observed. Impairment of neuromotor development ($p<0.05$) was observed in two of the five tests (negative geotaxis and locomotor coordination); no differences between the three treated groups were observed. For the operant conditioning test, there were significant differences ($p<0.05$) between the treated and control young rats. No differences between the three treated groups were observed. The LOAEL for developmental toxicity is 400 mg Al/kg-day, but this does not include the contribution of Al from the basal diet.

Groups of 10 pregnant Sprague Dawley rats were administered 180, 360 or 720 mg/kg-day aluminum nitrate nonahydrate by gavage (13, 26, 52 mg Al/kg bw-day) on GDs 6-14

(Paternain et al., 1988). A vehicle (water) only control group was used. The level of Al in the diet was not reported. Aluminum exposed dams gained significantly less weight than the controls. No significant effects on the numbers of litters, corpora lutea, total implants, live fetuses, resorptions or runt fetuses were observed. Significant decreases in fetal body weight and tail length were observed at all three Al doses; decreased fetal body length was also observed at the 52 mg Al/kg-day dose level. No dose-related external or visceral malformations were observed in the offspring. However, a significant increase in the incidence of skeletal malformations (delayed ossification, hypoplastic deformed ribs) was observed at all three treatment levels. In addition, the incidence of hematomas was significantly increased at the high dose. Because the rats were co-exposed to relatively high levels of nitrate [comparable to those in the Domingo et al. (1987) subchronic study], the effects of treatment cannot be conclusively attributed to Al alone, in the absence of a nitrate-exposed control group.

By contrast to the striking findings of potentially teratogenic effects of aluminum nitrate in Sprague-Dawley rats, as described above (Paternain et al., 1988), equivalent experiments by Domingo et al. (1989) in Swiss mice did not reveal any reproductive, developmental or teratogenic effects of Al, when administered to dams as the hydroxide. Domingo et al. (1989) administered by gavage 0, 66.5, 133 or 266 mg/kg-day aluminum hydroxide (0, 23.9, 47.8 or 95.5 mg Al/kg bw-day) to groups of 20 pregnant Swiss mice on GD 6-15. The level of Al in the diet was not reported. The dams were killed on GD 18. No compound-related effects were observed on maternal mortality, clinical signs, body weight, food intake or absolute or relative heart, lung, spleen, liver, kidney and brain weights. In addition, no compound-related effects were observed on numbers of implantations, resorptions, live and dead fetuses, sex ratio and the incidences of external malformations, internal soft-tissue defects or skeletal abnormalities. Therefore, this study identifies a NOEL of 95.5 mg Al/kg-day by default for reproductive, developmental and teratogenic toxicity in mice. However, neuromotor development was not assessed and the contribution of Al from the basal diet was not stated in the report.

A number of studies have been designed to evaluate the influence of citrate or lactate on the potential developmental toxicity of Al. For example, Gomez et al. (1991) exposed groups of 15-19 pregnant Sprague-Dawley rats to either distilled water (controls) or 133 mg Al/kg bw-day in the form of either aluminum hydroxide (384 mg/kg-day), aluminum citrate (1064 mg/kg-day) or aluminum hydroxide (384 mg/kg-day) concurrent with citric acid (62 mg/kg-day) by gavage on GD 6-15. The level of Al in the diet was not reported and no rats were exposed to citric acid alone. Terminations were performed on GD 20. Maternal and fetal evaluations showed exposure-related effects only in the group exposed to aluminum hydroxide and citric acid concurrently. Significant changes included reduced maternal body weight gain on GDs 6-20 (but not at sacrifice on day 20), reduced fetal body weight and some skeletal variations (increased delayed occipital and sternebrae ossification and increased absence of xiphoides). No effects were seen on maternal food consumption or clinical signs, maternal absolute or relative liver, kidney or brain weights, gravid uterine weight, corpora lutea/dam, implantations/litter, pre- or postimplantation loss/litter, viable or nonviable implants/litter, fetal sex ratio or fetal malformations (external, visceral or skeletal). This study identified a stand alone minimum LOAEL of 133 mg Al/kg-day for non-neurobehavioral developmental toxicity of aluminum hydroxide and aluminum citrate in rats. Although confidence in this LOAEL is low (because aluminum hydroxide administered concurrently with citric acid induced did developmental

effects and because the dose does not include a contribution of Al from the basal diet) the value is consistent with the developmental NOAEL of 95.5 mg Al/kg-day for aluminum hydroxide in mice (Domingo et al., 1989).

In a similar experimental protocol, groups of 11-13 pregnant female Swiss albino (CD-1) mice were administered 57.5 mg Al/kg bw-day as either aluminum hydroxide (166 mg/kg-day), aluminum lactate (627 mg/kg-day) or aluminum hydroxide (166 mg/kg-day) concurrent with lactic acid (570 mg/kg-day) by gavage on gestation days 6-15 (Colomina et al., 1992). Other groups were treated with lactic acid alone (570 mg/kg-day, equivalent to the amount in 627 mg/kg of aluminum lactate) or distilled water (controls). The level of Al in the diet was not reported. Fetal evaluations were performed on GD 18, including examinations for skeletal and visceral abnormalities in approximately two-thirds and one-third of the pups, respectively. The investigators noted that the dose of Al (57.5 mg/kg-day) is equivalent to ingestion of 3.5 g Al/day by a 60 kg person, which is higher than the usual quantities of Al ingested therapeutically for peptic disorders. Maternal body weight gain was significantly lower than control values in the aluminum lactate-treated mice when evaluated over GDs 6-9 (92%), 6-12 (55.6%) and 0-18 (38.5%) and in the mice treated with combined aluminum hydroxide and lactic acid evaluated over GDs 6-12 (37.8%), 6-15 (42.7%) and 0-18 (15.7%). The decreased maternal weight gain in the aluminum lactate group was accompanied by significantly reduced food consumption during gestation days 6-18. Significant developmental and/or teratological effects in the aluminum lactate group included 16% reduced fetal body weight ($p<0.01$) and increased incidences of cleft palate (13.2%, $p<0.05$), dorsal hyperkyphosis (i.e., excessive flexion of spine) (13.5%, $p<0.05$) and delayed parietal ossification (15.4%, $p<0.01$). These developmental effects were not observed in any of the control or aluminum hydroxide exposed pups, and the only other significant changes in the other groups were decreased maternal relative liver weight and delayed fetal parietal ossification in the lactic acid only exposure group. Other types of internal or skeletal malformations or variations were not found in any of the fetuses. Additionally, no effects were seen on maternal absolute or relative kidney weight, gravid uterine weight, numbers of implantation sites/litter, live or dead fetuses, resorptions, postimplantation loss/litter, litters with dead fetuses or fetal sex ratio in any of the groups. By analogy to the findings of the Domingo et al. (1989) and Gomez et al. (1991) studies, the lack of developmental effects of aluminum hydroxide at the tested dose could be related to low solubility and absorption.

In a more recent study, pregnant Swiss mice were administered gavage doses of 0 or 104 mg Al/kg bw-day as aluminum hydroxide on days 6-15 of gestation (Colomina et al., 1994). Dietary Al intake was not reported; the mice were maintained on Panlab rodent chow. Compared to controls, there were no effects ($p>0.05$) of Al on maternal body or organ weight, number of implantations per litter, number of resorptions per litter, number of dead fetuses per litter, percentage of positive post-implantation loss, sex ratio or fetal body weight per litter. Gross external, visceral or skeletal examination of fetuses revealed no abnormalities or developmental variations. Thus, the NOAEL for development effects from this study is 104 mg Al/kg-day, however, this does not include the Al contribution from food. Thus, based on this study and the previous study (Colomina et al., 1992), aluminum lactate appears to be more potent as a developmental toxicant in mice than the less water soluble aluminum hydroxide.

Groups of 16 pregnant Swiss-Webster mice were fed 25 (control group), 500 or 1000 mg Al/kg diet as aluminum lactate throughout gestation and lactation (Donald et al., 1989). The control diet was fed to pups that were selected for post-weaning neurobehavioral assessment. Reported maternal doses were 5, 100 and 200 mg Al/kg bw-day at the beginning of pregnancy and 10.5, 210 and 420 mg Al/kg bw-day near the end of lactation. No mice were exposed to lactate alone. There were no treatment-related changes in maternal survival, body weight (measured on GD 0 and 16 and PDs 0, 5, 10, 15 and 20), food intake, toxic signs or neurobehavior (evaluated after pups were weaned at PD 21 using the same test battery used for the pups and described below), or on litter size or postnatal growth and development in pups as assessed by body weight, toxic signs on PDs 0-55, and by crown-rump length on PDs 0 and 20. Neurobehavioral maturation was tested in two pups per litter on PDs 8-18 with a 12-item test battery (fore- and hindlimb grasp, fore- and hindpaw placement on sticks of 2 widths, vibrissa placing, visual placing, auditory and air puff startle, eye opening and screen grasp, cling and climb). A neurobehavioral test battery was administered to six pups per litter at age 25 days (4 days postweaning) or 39 days (fore- and hindlimb grip strengths, temperature sensitivity of tail, negative geotaxis, startle reflex to air puff and auditory stimuli) or age 21 and 35 days (foot splay). The pre-weaning neurobehavioral testing showed that a significant ($p=0.007$) number of pups in the high dose group had impaired vertical screen climb performance. The postweaning neurobehavioral assessment showed significantly ($p<0.05$) altered performance on several tests. These included decreased forelimb grip strength at age 39 days in the low dose group, increased hindlimb grip strength at age 25 days in both low and high dose groups, increased foot splay distance at age 21 days in both low and high dose groups and at age 35 days in the low dose group, and increased forelimb grip strength at age 25 days and decreased thermal sensitivity at age 25 and 39 days in the high dose group. There were no treatment-related changes in concentrations of Al in pup liver or bone (brain tissue was not analyzed).

In a more recent study of similar design by the same group of investigators, groups of 14 and 9 female Swiss Webster mice (6-8 weeks old) were fed 25 (control) or 1000 mg Al/g diet as aluminum lactate, respectively, during gestation and lactation (Golub et al., 1992b). The 1000 mg/g concentration was selected based on the demonstration of neurobehavioral effects in weanlings at this level (Donald et al., 1989). No mice were exposed to lactate alone. Using food intake and body weight values estimated from reported data, maternal doses are estimated to be approximately 4.3 and 174 mg Al/kg bw-day at the beginning of gestation and 4.8 and 607 at the end of the lactation period. At birth, litters were fostered either within or between groups to provide four groups of offspring that were exposed to excess Al via maternal diet during gestation, lactation, both or neither (i.e., 25 ppm during gestation and lactation, 1000 ppm during gestation and 25 ppm during lactation, 25 ppm during gestation and 1000 ppm during lactation, and 1000 ppm during gestation and lactation). Maternal effects included significantly ($p\leq0.015$) reduced (10-12%) body weight gain and food intake in the treated group during late pregnancy and lactation, and signs of neurotoxicity (hindlimb splaying and dragging) in one treated dam at postnatal day 21 (weaning); this dam had seizures and died 4 days later. No treatment-related effects on litter size, birth weight, crown-rump length, righting ability at birth, sex ratio or postnatal survival were observed. Both gestation-only and lactation-only exposure caused significantly ($p<0.05$) decreased body weight gain in the treated pups beginning on postnatal day 10; combined gestation and lactation exposure produced the greatest decrease (approximately 24% at weaning). Neurobehavioral testing using the same battery as Donald et al. (1989) was

performed at weaning on the dams and on a total of 12, 16, 12 and 6 pups (1 male and 1 female pup per litter) from the control, gestation-only, lactation-only and combined gestation and lactation groups, respectively. Results of this testing showed effects only in pups, including significantly decreased forelimb grip strength after gestation-only exposure, increased hindlimb grip strength after both gestation and lactation exposure, decreased temperature sensitivity after lactation-only exposure, and longer negative geotaxis latency after lactation-only exposure. In general, the findings of this study are consistent with those of Donald et al. (1989) in showing neurodevelopmental effects at the 1000 mg/kg dietary concentration, although intake dosages are dissimilar at the end of lactation. Using the dosage at the beginning of gestation, this study defines a LOAEL of 174 mg/kg-day for developmental effects.

The Donald et al. (1989) study differs from that of Golub et al. (1992b) in that offspring were not fostered, were tested at a later age (25 vs. 21 days), were allowed 4 days of recovery from the treated diet prior to testing, participated in other behavioral tests currently, and experienced no growth retardation. The effects found only in the cross-fostered groups in the Golub et al. (1992b) study (lower forelimb strength after gestation exposure and altered negative geotaxis latencies after lactation only exposure) were not observed by Donald et al. (1989). Increased footsplay was observed by Donald et al. (1989) but not by Golub et al. (1992b), perhaps due to an opposing effect of smaller pup body size in this study. Neither gestation or lactation exposure affected pup brain or liver Al concentrations, but lactation exposure caused significantly lower manganese and iron concentrations in liver and manganese concentrations in brain.

In a further extension of the two previous studies (Donald et al., 1989; Golub et al., 1992b), pregnant female Swiss-Webster mice were exposed continuously to a semi-purified diet containing 7 (control), 500 or 1000 mg Al/kg from the time of conception, through pregnancy and lactation (Golub et al., 1995). At weaning, pups were exposed to the same Al diet as their mothers (500 or 1000 mg Al/kg) until they were 150-170 days of age or were switched to the control diet (7 mg Al/kg) for the same time period. Based on reported dosages in previous studies by the same investigators, estimated daily dosages for mice exposed to 1000 mg Al/kg diet were as follows: 200 mg/kg bw-day in pregnant mice, 420 mg/kg-day in lactating mice and 130 mg/kg-day in offspring (Golub et al., 1994); doses for the mice exposed to 500 mg Al/kg diet were assumed to be approximately half of that of mice fed 1000 mg Al/kg, or 100 mg/kg-day in pregnant mice, 210 mg/kg-day in lactating mice and 65 mg/kg-day in offspring. Compared to the control diet, the Al diet had no effect on dam weight, gestation length, litter size, pup weight, offspring growth or organ weights. Operant conditioning (nose poke) of offspring for delayed spatial alternation or discrimination reversal tasks was initiated at 50 days of age and continued 5 days/week for a total of 35 sessions. A neurobehavioral test battery was conducted when the offspring were 150-170 days of age (forelimb and hindlimb grip strength, temperature sensitivity, negative geotaxis, air puff and auditory startle response). Maternal and pre-weaning exposure to 500 mg Al/kg significantly affected ($p<0.05$) operant training in the offspring, but not performance after training in delayed spatial alternation or discrimination reversal tasks (i.e., decreased number of training sessions to achieve the training criteria). This exposure also significantly decreased forelimb and hindlimb grip strength and puff startle response ($p<0.05$). Pre-weaning and combined pre- and post-weaning exposure to 1000 mg Al/kg significantly increased ($p<0.05$) incidence of cagemate aggression at the time behavioral

testing. No effects were observed on auditory startle response, temperature sensitivity or negative geotaxis in offspring. Histopathological examination of the brain and spinal cord revealed no treatment-related changes. Thus, the LOAEL for combined maternal and pre-weaning exposure on neurobehavioral effects in mice would approximate to 100 mg Al/kg-day (estimated daily maternal dosage).

Pregnant Charles River CD rats were administered gavage doses of 0, 250, 500 or 1000 mg Al/kg bw-day ("experiment A") or 0, 5, 25, 50, 250 or 500 mg Al/kg bw-day ("experiment B") as aluminum lactate in distilled water on GDs 5-15 (Agarwal et al., 1996). Dietary Al intake was not reported. Offspring were examined for body weight, anogenital distance, oestrus cycle regularity (after puberty), duration of pseudopregnancy induced by mechanical stimulation of the cervix, oocyte production induced by an injection of human chorionic gonadotropin, and male and female gonad weights. Aluminum had no effect on litter size and no consistent effects on birth weight were observed. For example, birth weights were decreased in male offspring from dams that received 250 mg Al/kg-day, but not at higher dosages, and the effect was observed only in experiment A. Female offspring birth weights decreased at certain dosage levels in experiment A and increased at these same dosage levels in experiment B. Similar inconsistencies between experiment A and B were observed for gonadal weights, anogenital distance, time to puberty (vaginal opening), duration of pseudopregnancy or numbers of superovulated oocytes. A significantly increased ($p<0.05$) number of abnormal oestrus cycle lengths (defined as less than 4 days or greater than 5 days) occurred in offspring from dams that received 250 mg Al/kg-day (in experiment A, the endpoint was not measured in experiment B). However, the effect was most pronounced in the first three oestrus cycles (of five observed) and not detected by the 5th cycle. Thus, the NOAEL for temporary disturbance of the oestrus cycle in offspring of dams administered Al is 250 mg Al/kg-day. NOAELs for all other reproductive endpoints in this study were 1000 mg Al/kg-day. These NOAELs do not include the contribution of Al in food.

In a three-generation study, Ondreicka et al. (1966) exposed initial groups of seven female and three male Dobra Voda mice to either 0 or 19.3 mg Al/kg bw-day as aluminum chloride in drinking water. The diet also contained 160 to 180 ppm Al, giving an estimated intake of 27-31 mg/kg-day based on default values for food consumption and body weight for chronic exposure of mice (U.S. EPA, 1988). Using this estimate, the total Al intakes (drinking water and food) were 27 mg/kg-day (controls) and 46.3 mg/kg-day (exposed group). The P_0 group produced three litters (designated F_{1a}, F_{1b} and F_{1c}) and the F_{1a} group produced two litters (designated F_{2a} and F_{2b}) from which the weanlings were exposed to Al in the drinking water starting at 4 weeks of age. There was no difference in body weight gain among the groups in the P_0 generation, a result that contrasted with the striking decrease in this parameter in the treated F_{1b}, F_{1c}, F_{2a} and F_{2b} groups. Though no effects on erythrocyte count, hemoglobin levels or histopathology of the liver, spleen and kidneys were observed in the P_0, F_1 or F_2 generations at the end of the study and no significant differences were seen in the number of litters or offspring between the exposed and control groups, the study identified a LOAEL of 46.3 mg Al/kg-day, based on the observed changes in body weight gain.

Other toxicological effects of aluminum

In a study designed to determine the effects of oral Al exposure on susceptibility to bacterial infection, female Swiss-Webster mice (13-14 per group) were exposed to a diet containing 25 (control), 500 or 1000 mg Al/kg as aluminum lactate during pregnancy, through lactation and for 10 days following weaning of the pups (Yoshida et al., 1989). Based on reported dosages in previous studies by the same investigators, estimated daily dosages for mice exposed to 1000 mg Al/kg diet are as follows: 200 mg/kg-day during pregnancy and 420 mg/kg-day during lactation; doses for the mice exposed to 500 mg Al/kg diet are assumed to be approximately half of that of mice fed 1000 mg Al/kg, or 100 mg/kg-day in pregnant mice and 210 mg/kg-day in lactating mice (Golub et al., 1994). At weaning, dams and pups were inoculated with a tail vein injection of *Listeria monocytogenes* and monitored for mortality for 10 days. In a separate experiment, female mice, 6 weeks of age, were exposed to the same dietary Al levels for 6 weeks and then inoculated with *L. monocytogenes*. Estimated Al dosages were 5, 98 or 195 mg Al/kg bw-day for the 25, 500 or 1000 mg Al/kg dietary levels, respectively, based on a default food factor of 0.195 kg diet/kg bw-day assuming a reference "subchronic" food intake and body weight for female B6C3F1 mice over the period from weaning to 90 days (U.S. EPA, 1988). Inoculation resulted in significantly greater ($p<0.025$) mortality in dams exposed to 500 or 1000 mg Al/kg diet compared to controls. There were no differences in mortality between the groups of inoculated pups or between groups of inoculated adult mice exposed to Al for 6 weeks. The LOAEL for pregnant mice was 100 mg Al/kg bw-day and the NOAEL for adult, non-pregnant mice was 195 mg Al/kg bw-day. Although the exposure duration in this study was only 7 weeks, it is included in Table 1 because it provides the only dose-response data on the effects of Al on resistance to pathogens.

Carcinogenicity studies

Schroeder and Mitchener (1975a) exposed 52 Long-Evans rats/sex/group to 0 or 5 ppm Al as potassium aluminum sulfate in drinking water for life. Based on default values for drinking water consumption and body weight for this strain of rat in a chronic study (U.S. EPA, 1988), these values are equivalent to Al doses of 0.472 and 0.67 mg/kg-day, for males and females, respectively. Study endpoints included body and heart weight; serum glucose, cholesterol and uric acid; and urinary protein, glucose and pH. All animals were necropsied at the time of natural death, and histological examinations were carried out on heart, lung, kidney, liver, spleen and gross tumors, for approximately 50% of the animals in the group. The only remarkable finding was a significant increase ($p<0.005$) in gross tumor incidence in exposed male rats [13/25 (52%) compared to 4/26 (15%) in controls], although the tumor sites were not reported. Six of the tumors in the exposed males (46% of total) were considered malignant compared to two malignant tumors (50% of total) in the male controls. There were no significant differences in tumor incidences between exposed and control females.

In another study by the same investigators, 54 Swiss mice/sex/group were exposed to drinking water containing 0 or 5 ppm Al as aluminum potassium sulfate for life (Schroeder and Mitchener, 1975b). Based on default values for drinking water consumption and body weight for B6C3F1 mice in a chronic study (U.S. EPA, 1988), these values approximate to Al doses of 1.2 mg/kg-day in both males and females. Study endpoints included body weight, gross pathology,

and some limited histology of the heart, lung, liver, kidney and spleen. The incidences of gross tumors were 15/41 (36.6%) and 11/38 (28.9%) in exposed and control males, respectively, and 19/41 (46.3%) and 14/47 (29.8%) in exposed and control females, respectively, differences that did not achieve statistical significance by Fisher's exact test, although incidences of multiple tumors and lymphoma leukemia were considered by the authors to be significantly increased in females ($p<0.025$ and $p<0.05$, respectively). However, a definitive assessment of aluminum carcinogenicity in both this and the rat study (Schroeder and Mitchener, 1975a) is precluded by the limitations of the pathology examinations and reporting.

In a more recent study, the tumorigenic potential of aluminum potassium sulfate was assessed in B6C3F1 mice chronically exposed in the diet (Oneda et al., 1994). Sixty animals/sex/group were fed a diet containing 0, 1.0, 2.5, 5.0 or 10.0% (w/w) for 20 months. These concentrations of aluminum potassium sulfate (as the dodecahydrate) are equivalent to 0, 569, 1422, 2844 and 5687 ppm Al. Using food factors calculated with an algorithm relating food consumption to body weight (U.S. EPA, 1988) and body weight data estimated from growth curves reported by the investigators, the dosages of aluminum are estimated to be 0, 95, 237, 483 or 1024 mg Al/kg-day in males and 0, 97, 242, 512 or 1110 mg Al/kg-day in females. Clinical signs, food consumption, and body weight were evaluated weekly. Hematology, clinical chemistry or urine endpoints were not assessed. Necropsies that included organ weight measurements and comprehensive histological examinations (including brain) were performed on all animals, including those that died during the course of the study. Survival rates were higher than control values in all treated male and female groups, ranging from 86.7-95.0% compared to 73.3% in males and 86.7-91.7% compared to 78.3% in females. No changes in food consumption were observed, but body weight gain was increased in both sexes at 95-97 and 237-242 mg Al/kg-day (weights were 10-23% higher than controls at end of study), was similar to controls in both sexes at 483-512 mg Al/kg-day, and decreased in both sexes at 1024-1110 mg Al/kg-day (11-16% lower than controls at end of study). There were no exposure-related increased incidences of tumors, other proliferative lesions or non-neoplastic lesions. In fact, the incidence of spontaneous hepatocellular carcinomas was significantly decreased in males at 1024 mg Al/kg-day (5.5% compared to 20.5% in controls, $p<0.01$).

Inhalation Exposure

Groups of 20 weanling Fischer 344 rats/sex and 20 weanling Hartley guinea pigs/sex were exposed to 0, 0.25, 2.5 or 25 mg/m^3 aluminum chlorhydrate [$Al_2(OH)_5Cl{\geq}x(H_2O)$] for 6 hours/day, 5 days/week for 6 months (Steinhagen et al., 1978). Analysis of the aluminum chlorhydrate by the investigators showed it to contain 24.5% Al, indicating that the animals were exposed to 0, 0.061, 0.61 and 6.1 mg Al/m^3. Body weights were measured weekly for the first 8 weeks and biweekly thereafter. At the end of the exposure period, 10 animals (5/sex) of each species were sacrificed for organ weight measurements (heart, lung, liver, kidney, spleen and brain) and histological examination of the lungs, liver and kidney. In addition, comprehensive histological examinations were performed on animals in the control and 6.1 mg AL/m^3 groups. The remainder of the animals was used for hematology evaluation (RBC, WBC, hematocrit and hemoglobin) and Al measurements in blood and tissues. Apparent effects of Al included multifocal granulomatous pneumonia in both species at ≥0.61 mg Al/m^3, significantly increased absolute and relative lung weights in both species, and decreased body weight gain in rats and

minimal lung edema in guinea pigs at 6.1 mg Al/m^3. The granulomatous reaction was characterized by foci of giant vacuoled particle-containing macrophages in the lungs and macrophages that did not appear to contain vacuoles or other evidence of phagocytized material in the peribronchial lymph nodes. There was a significant dose-related accumulation of Al in the lungs of both species at ≥0.061 mg Al/m^3. However, a NOAEL of 0.061 mg/m^3 could be identified for the onset of compound-induced histopathological effects.

In other studies, groups of 14-30 guinea pigs, rats and hamsters were exposed to fine metallic Al powders (pyro, atomized and flaked) at concentrations of 15, 30, 50 or 100 mg powder/m^3 air for 6 hours/day, 5 days/week for 6 months (Gross et al., 1973). Alveolar proteinosis occurred in exposed animals of all three species after 2 months of exposure, but fibrosis or other pulmonary changes did not develop. Similarly, groups of 23 or 46 rats and 48 hamsters were exposed to undetermined concentrations of Al fumes or Al powder (20% Al, 80% $Al(OH)_3$) for morning hours only or morning and afternoon for up to 20 months (Christie et al., 1963). Effects were similar for both forms of Al in both species, including initial increased alveolar macrophage proliferation followed by nodular hyalinized areas, with development of pneumonia but no fibrosis.

Exposure to 2.18 mg Al fibers/m^3 for 6 hours/day, 5 days/week for up to 86 weeks produced slightly increased alveolar macrophages and some irritation of the nasal passages in a group of 50 Alderly Park rats (Pigott et al., 1981). Finally, a study by Drew et al. (1974) observed the development of granulomatous nodules also developed in male hamsters that were exposed to 8 mg Al/m^3 of *Alchlor* (a propylene glycol complex of aluminum-chloride-hydroxide) for 6 hours/day, 5 days/week for 20 or 30 exposures. The alterations persisted at the longest post treatment observation (6 weeks) and consistently developed at the bifurcation of the bronchioloalveolar ducts, which is a likely site of particulate deposition.

DERIVATION OF A PROVISIONAL CHRONIC RfD FOR ALUMINUM

This survey of the toxicological effects of Al in rodents suggests that neurotoxicological and developmental (including neurodevelopmental) endpoints are among the most sensitive indicators of Al toxicity. However, as vehicles for the development of toxicity values such as a provisional chronic RfD, the latter group of studies are considered to be more appropriate, since the level of exposure to Al appears to be better characterized. In fact, neurobehavioral deficits have been observed in mice and rats exposed during various stages of development and in subchronic studies (Bernuzzi et al., 1989; Donald et al., 1989; Golub et al., 1989, 1992a, b, 1995; Muller et al., 1990), as described above. These deficits include impaired operant learning, changes in grip strength, altered startle response and impaired motor coordination. In addition, several studies have shown that oral Al can produce histopathological changes in the CNS, although the histopathological lesions have yet to be causally related to the neurobehavioral deficits. Thus, Florence et al. (1994) reported histopathological changes in the brain of rats exposed to dietary Al for 6 months, the changes including the appearance of vacuolation of the cell body and cell processes of astrocytes in the brain and swelling of astrocytic processes. In addition, more localized vacuolization of neurons in the brain also was observed. These changes

were observed in rats exposed to elevated Al in the diet and are distinct from the NFD that has been observed in rats, rabbits and monkeys maintained on elevated dietary Al in combination with reduced dietary calcium (Garruto et al., 1989; Kihira et al., 1994; Mitani, 1992; Yano et al., 1989; Yoshida et al., 1990) or in rabbits administered intracisternal or intraventricular injections of Al (Kowall et al., 1989; Wakayama et al., 1993). Interpretation of the low-calcium studies is complicated by the observation that NFD was observed in animals maintained on low-calcium diets without excess Al and was enhanced by the addition of excess Al to these diets (Garruto et al., 1989; Kihira et al., 1994). Furthermore, Al has been shown to inhibit the gastrointestinal absorption of calcium (Orihuela et al., 1996), an effect that may exacerbate the calcium deprivation induced by low calcium diets. Thus, it is not clear whether calcium deprivation enhances the neurotoxicity of Al or Al exacerbates the adverse effects of calcium deprivation.

Donald et al. (1989) and Golub et al. (1995) are co-principal studies that identify a LOAEL of 100 mg Al/kg-day for minimal neurotoxicity in the offspring of mice exposed to dietary aluminum lactate (soluble aluminum) during gestation and lactation. The neurotoxicity associated with this LOAEL is consistent with LOAELs from other developmental and subchronic neurobehavioral studies in mice and rats which used higher dietary dosages of aluminum lactate or aluminum chloride (Golub et al., 1989, 1992a,b; Bernuzzi et al., 1989; Muller et al., 1990). Of the above, Golub et al., (1995) is the only study in which a histopathological examination of the brain and spinal cord was conducted and no abnormalities were reported. The Florence et al. (1994) study indicates that histopathological abnormalities of the CNS can occur in rats exposed subchronically to 84 mg/kg-day; although this is lower than the LOAEL for neurobehavioral effects, it was not chosen as the principal study because the functional significance of the histopathological lesions are uncertain.

A number of studies were identified that, at face value, appeared to indicate LOAELs at lower doses than the 100 mg Al/kg-day value selected herein, for example, Paternain et al. (1988) and Colomina et al. (1992). However, in these as in many of the studies under consideration, insufficient information on dietary Al (Al content and/or feed type) was reported to permit a reliable estimation of the overall dose level to which the animals were subjected.

Other developmental studies with aluminum hydroxide and/or citrate in mice and rats identified a NOAEL which are equivalent (95.5 mg Al/kg-day), or a minimum LOAEL that was greater (133 mg Al/kg-day) than the 100 mg Al/kg-day critical LOAEL (Domingo et al., 1989; Gomez et al., 1991), an overlap potentially related to differences in effective doses due to variations in unreported Al dietary content and factors affecting absorption such as chemical form (e.g., the use of less absorbable aluminum hydroxide). In addition, the LOAEL of 43.3 mg Al/kg-day for decreased body weight gain in mice exposed to aluminum chloride for 180-390 days (Ondreicka et al., 1966) was thought be inappropriate for risk assessment due to the small sample size and to the poor reporting of study details. Aluminum nitrate caused alterations in levels of brain biogenic amines and hepatic and hematological indices in rats exposed to 21.4 mg Al/kg-day for 6 weeks (Flora et al., 1991). This dose is not a LOAEL because insufficient information is available to determine if the effects are adverse.

Therefore, the LOAEL of 100 mg Al/kg-day for minimal neurotoxicity in the offspring of mice (Donald et al., 1989, Golub et al., 1995) is selected as the basis for the provisional chronic

RfD. The LOAEL is considered minimal because the results of the postweaning neurobehavioral test battery indicate that performance deficits may be marginal. In particular, of the three observed effects (decreased forelimb and increased hindlimb grip strengths, increased hindlimb foot splay distance), one effect (increased grip strength) has unclear toxicological significance and two effects (increased grip strength and foot splay distance) did not persist after 2 weeks of no further exposure.

Application of an uncertainty factor (UF) of 100 (3 for use of a minimal LOAEL, 10 for interspecies extrapolation and 3 for intrahuman variability where the critical effects have been observed in a sensitive sub-group) results in a provisional RfD of

p-RfD = 1E-0 mg Al/kg-day.

The provisional RfD of **1E-0** mg Al/kg-day is approximately 3-fold higher than estimated normal daily Al intake of approximately 0.2-0.3 mg/kg-day (Iyengar et al., 1987; Ganrot, 1986; Wilhelm et al., 1990). Chronic users of medications such as antacids, buffered aspirins and antiulceratives would be expected to ingest much larger amounts of Al, possibly as high as 10-70 mg/kg-day. However, these subjects would not represent the most sensitive population (developing infants), as indicated by the animal data.

Low confidence is placed in the co-critical studies, because they only identify a LOAEL for a sensitive effect and evaluated comparatively small numbers of animals. Confidence in the data base is low because the most reliable supporting data for neurotoxicity of Al in humans are of limited general relevance (e.g., dialysis encephalopathy is manifested in patients with impaired renal function and excessive Al uptake from intravenous exposure). In fact, neurotoxicity remains to be assessed in animals chronically exposed to Al, and developmental morphology has not been adequately investigated in two animal species. These limitations in the Al data base do not increase uncertainty in the RfD; therefore, a data base uncertainty factor was not used. However, reflecting the low confidence in the co-critical studies, there is low overall confidence in the RfD.

DERIVATION OF A PROVISIONAL CHRONIC RfC FOR ALUMINUM

Al seems to be the most likely cause for the generally and consistently reported psychomotor and cognitive effects (particularly signs of impaired coordination) in Al production workers and welders (Bast-Pettersen et al., 1994; Rifat et al., 1990; Hosovski et al., 1990; White et al., 1992; Hanninen et al., 1994; Sjogren et al., 1990, 1996). In addition, there is strong evidence that Al is neurotoxic by other routes of exposure. Thus, a degenerative neurological syndrome (dialysis dementia) has been documented in humans with chronic renal failure, apparently due to an increased exposure to Al from dialysis treatment and/or ingestion of phosphate binding agents which contain Al (Alfrey, 1993). This syndrome is characterized by gradual loss of motor, speech and cognitive functions. Neurotoxicity, particularly neuromuscular effects such as decreased motor activity, startle responsiveness and grip strength, has also been observed in mice following subchronic oral exposure and in the offspring of mice and rats exposed orally during gestation and/or lactation. Based on this information, as well as evidence

that Al is absorbed by Al production workers and welders, the hypothesis that the occupational studies are indicative of a neurotoxic effect of Al appears to be justified. However, the only occupational study that has yielded suitable monitoring data is that of Hosovski et al. (1990), in which workers were exposed to presumed time-weighted average (TWA) concentrations of 4.6-11.5 mg Al/m^3 magnitude for an average of 12 years. Using 4.6 mg Al/m^3 as the LOAEL for psychomotor and cognitive impairment for an 8-hour occupational exposure (Hosovski et al., 1990) and corrections for discontinuous exposure (10 m^3/20 m^3 and 5 days/7 days), the $LOAEL_{HEC}$ is 1.64 mg/m^3. Applying an uncertainty factor of 300 for intrahuman variability (10), use of a LOAEL (10) and an incomplete database (3) yields a provisional RfC of

p-RfC = 1.64 mg/m^3/300 = 5E-3 mg/m^3.

The lack of inhalation developmental studies may increase uncertainty in the database because oral data in animals indicate that neurotoxic and morphological developmental effects may occur at lower doses than neurotoxicity in adults. Additionally, there is uncertainty related to the lack of corroborating data on air concentrations associated with neurotoxicity. Confidence in the critical study is low to medium because only a LOAEL was identified. Confidence in the database is medium because (1) there are no corroborating data on effect levels (NOAELs and additional LOAELs), (2) no data are available for developmental neurotoxicity by the inhalation route and (3) a well-designed two-generation reproduction study is lacking. Reflecting the low to medium confidence in the critical study and database, there is low to medium confidence in the provisional RfC.

PROVISIONAL CARCINOGENICITY ASSESSMENT FOR ALUMINUM

Weight-Of-Evidence Classification

A considerable number of epidemiological studies have examined the incidence of excess tumor formation in persons occupationally exposed to Al in the form of dusts or fumes. In general, a body of inferential evidence exists for an increase in cancer of the bladder and lung through such occupational exposure to Al, although conclusions linking these responses to the effects of Al are confounded by attendant co-exposure to other harmful emissions such as PAHs and by cigarette smoking. A 20-month exposure of B6C3F1 mice to Al potassium sulfate dodecahydrate in the diet at concentrations up to 10% w/w displayed no indication of compound-related carcinogenicity and, in general, no indication of adverse toxicological effects of any kind (Oneda et al., 1994). Similarly, the life-time exposure of Swiss mice and Long-Evans rats to 5 ppm Al as aluminum potassium sulfate in drinking water provided no convincing evidence for the carcinogenicity of Al compounds (Schroeder and Mitchener, 1975a,b). Gene reversion experiments on Al compounds resulted in negative results in *S. typhimurium* (Ahn and Jeffrey, 1994). Taking all of the evidence of Al carcinogenicity together, and in accordance with the U.S. EPA (2005) cancer guidelines, aluminum is classified as *inadequate information to assess carcinogenic potential*. The basis for this classification is insufficient evidence in epidemiological/occupational studies, lack of demonstrated carcinogenicity or mutagenicity in

available animal studies, lack of positive evidence of non-carcinogenicity and lack of mode of action data for aluminum.

Quantitative Estimates of Carcinogenic Risk

Due to insufficient data, a provisional oral slope factor and inhalation unit risk could not be developed.

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Table 1. Summary of oral toxicity data for aluminum[a]

Study	Type	Species	Al	Exposure Concentration (ppm)	Exposure Dosage (mg Al/kg-day)	Exposure Frequency and Duration	Critical Effect	NOAEL (mg Al/kg-day)	LOAEL (mg Al/kg-day)	FEL (mg Al/kg-day)
Ondreicka et al., 1966	Subchronic 3-gen dietary	Dobra Voda mice	chloride	--	27 (control), 46	Continuous, 180-390 days	Decreased body weight gain in F1 and F2.	--	46	--
Golub et al., 1989	Subchronic dietary	S-W mice	lactate	25 (control), 500,1000	3.3 (control), 65,130	Continuous, 6 weeks	Decreased spontaneous motor activity; decreased weight gain.	65	130	--
Golub et al., 1992a	Subchronic dietary	S-W mice	lactate	25 (control), 1000	190	Continuous, 90 days	Decreased hindlimb grip, decreased spontaneous motor activity, decreased startle response.	--	190	--
Florence et al., 1994	Subchronic dietary	Wistar rat	chloride (with citric acid)	1.52 (control), 1000	0.13 (control), 84	Continuous, 6 months	Histopathological changes in brain astrocytes and neurons.	--	84	--
Domingo et al., 1996	Subchronic drinking water	Sprague Dawley rats	nitrate (with citric acid)	--	0, 50, 100 (plus unreported dietary Al)	Continuous, 6.5 months	Operant conditioning and performance	100	--	--
Yoshida et al., 1989	Subchronic dietary	S-W mice	lactate	25 (control), 500, 1000	5 (control), 98, 195	Continuous, 7 weeks	Increased mortality from *L. monocytogenes* inoculation	195	--	--
Donald et al., 1989	Developmental dietary	S-W mice	lactate	25 (control), 500, 1000	5 (control), 100, 200	Continuous, gestation and lactation	Neurobehavioral effects.	--	100	--
Golub et al., 1992b	Developmental dietary	S-W mice	lactate	25 (control), 1000	4 (control), 174	Continuous, gestation and lactation	Neurobehavioral effects.	--	174	--
Golub et al., 1995	Developmental dietary	S-W mice	lactate	7, 500, 1000	1 (control), 100, 200	Continuous, gestation, lactation to maturity	Neurobehavioral effects.	--	100	--

Table 1. Summary of oral toxicity data for aluminum[a]

Study	Type	Species	Al	Exposure Concentration (ppm)	Exposure Dosage (mg Al/kg-day)	Exposure Frequency and Duration	Critical Effect	NOAEL (mg Al/kg-day)	LOAEL (mg Al/kg-day)	FEL (mg Al/kg-day)
Yoshida et al., 1989	Developmental dietary	S-W mice	lactate	25 (control), 500, 1000	4 (control), 100, 200	Continuous, gestation and lactation	Increased mortality of dams from *L. monocytogenes* inoculation	--	100	--

[a]Studies for which total dosages were reported or could be estimated (unless otherwise noted).

9-29-2005

Provisional Peer Reviewed Toxicity Values for

Benzyl alcohol
(CASRN 100-51-6)

Superfund Health Risk Technical Support Center
National Center for Environmental Assessment
Office of Research and Development
U.S. Environmental Protection Agency
Cincinnati, OH 45268

Acronyms and Abbreviations

bw	body weight
cc	cubic centimeters
CD	Caesarean Delivered
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CNS	central nervous system
cu.m	cubic meter
DWEL	Drinking Water Equivalent Level
FEL	frank-effect level
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
g	grams
GI	gastrointestinal
HEC	human equivalent concentration
Hgb	hemoglobin
i.m.	intramuscular
i.p.	intraperitoneal
i.v.	intravenous
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
kg	kilogram
L	liter
LEL	lowest-effect level
LOAEL	lowest-observed-adverse-effect level
LOAEL(ADJ)	LOAEL adjusted to continuous exposure duration
LOAEL(HEC)	LOAEL adjusted for dosimetric differences across species to a human
m	meter
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
MF	modifying factor
mg	milligram
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MRL	minimal risk level

MTD	maximum tolerated dose
MTL	median threshold limit
NAAQS	National Ambient Air Quality Standards
NOAEL	no-observed-adverse-effect level
NOAEL(ADJ)	NOAEL adjusted to continuous exposure duration
NOAEL(HEC)	NOAEL adjusted for dosimetric differences across species to a human
NOEL	no-observed-effect level
OSF	oral slope factor
p-IUR	**provisional inhalation unit risk**
p-OSF	**provisional oral slope factor**
p-RfC	**provisional inhalation reference concentration**
p-RfD	**provisional oral reference dose**
PBPK	physiologically based pharmacokinetic
ppb	parts per billion
ppm	parts per million
PPRTV	**Provisional Peer Reviewed Toxicity Value**
RBC	red blood cell(s)
RCRA	Resource Conservation and Recovery Act
RDDR	Regional deposited dose ratio (for the indicated lung region)
REL	relative exposure level
RfC	inhalation reference concentration
RfD	oral reference dose
RGDR	Regional gas dose ratio (for the indicated lung region)
s.c.	subcutaneous
SCE	sister chromatid exchange
SDWA	Safe Drinking Water Act
sq.cm.	square centimeters
TSCA	Toxic Substances Control Act
UF	uncertainty factor
µg	microgram
µmol	micromoles
VOC	volatile organic compound

9-29-2005

PROVISIONAL PEER REVIEWED TOXICITY VALUES FOR BENZYL ALCOHOL (CASRN 100-51-6)

Background

On December 5, 2003, the U.S. Environmental Protection Agency's (EPA's) Office of Superfund Remediation and Technology Innovation (OSRTI) revised its hierarchy of human health toxicity values for Superfund risk assessments, establishing the following three tiers as the new hierarchy:

1. EPA's Integrated Risk Information System (IRIS).

2. Provisional Peer-Reviewed Toxicity Values (PPRTV) used in EPA's Superfund Program.

3. Other (peer-reviewed) toxicity values, including:

   - Minimal Risk Levels produced by the Agency for Toxic Substances and Disease Registry (ATSDR),
   - California Environmental Protection Agency (CalEPA) values, and
   - EPA Health Effects Assessment Summary Table (HEAST) values.

A PPRTV is defined as a toxicity value derived for use in the Superfund Program when such a value is not available in EPA's Integrated Risk Information System (IRIS). PPRTVs are developed according to a Standard Operating Procedure (SOP) and are derived after a review of the relevant scientific literature using the same methods, sources of data, and Agency guidance for value derivation generally used by the EPA IRIS Program. All provisional toxicity values receive internal review by two EPA scientists and external peer review by three independently selected scientific experts. PPRTVs differ from IRIS values in that PPRTVs do not receive the multi-program consensus review provided for IRIS values. This is because IRIS values are generally intended to be used in all EPA programs, while PPRTVs are developed specifically for the Superfund Program.

Because science and available information evolve, PPRTVs are initially derived with a three-year life-cycle. However, EPA Regions or the EPA Headquarters Superfund Program sometimes request that a frequently used PPRTV be reassessed. Once an IRIS value for a specific chemical becomes available for Agency review, the analogous PPRTV for that same chemical is retired. It should also be noted that some PPRTV manuscripts conclude that a PPRTV cannot be derived based on inadequate data.

Disclaimers

Users of this document should first check to see if any IRIS values exist for the chemical of concern before proceeding to use a PPRTV. If no IRIS value is available, staff in the regional Superfund and RCRA program offices are advised to carefully review the information provided in this document to ensure that the PPRTVs used are appropriate for the types of exposures and circumstances at the Superfund site or RCRA facility in question. PPRTVs are periodically updated; therefore, users should ensure that the values contained in the PPRTV are current at the time of use.

It is important to remember that a provisional value alone tells very little about the adverse effects of a chemical or the quality of evidence on which the value is based. Therefore, users are strongly encouraged to read the entire PPRTV manuscript and understand the strengths and limitations of the derived provisional values. PPRTVs are developed by the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center for OSRTI. Other EPA programs or external parties who may choose of their own initiative to use these PPRTVs are advised that Superfund resources will not generally be used to respond to challenges of PPRTVs used in a context outside of the Superfund Program.

Questions Regarding PPRTVs

Questions regarding the contents of the PPRTVs and their appropriate use (e.g., on chemicals not covered, or whether chemicals have pending IRIS toxicity values) may be directed to the EPA Office of Research and Development's National Center for Environmental Assessment, Superfund Health Risk Technical Support Center (513-569-7300), or OSRTI.

INTRODUCTION

The HEAST (U.S. EPA, 1997) lists subchronic and chronic RfD values for benzyl alcohol of 1E-0 and 3E-1 mg/kg-day, respectively. The source document for these assessments was a Health and Environmental Effects Document (HEED) (U.S. EPA, 1989). The subchronic RfD was based on a NOAEL of 143 mg/kg-day in a 13-week study in rats (NTP, 1989a); the reported critical effect was decreased body weight, and an uncertainty factor of 100 was used. The chronic RfD was based on a LOAEL of 286 mg/kg-day in a 2-year study in rats (NTP, 1989a); the reported critical effect was epithelial hyperplasia in the forestomach, and the uncertainty factor was 1000. No RfD assessment for benzyl alcohol is available on IRIS (U.S. EPA, 2005a) or in the Drinking Water Standards and Health Advisories list (U.S. EPA, 2002). Other than the HEED discussed above, the CARA list (U.S. EPA, 1991, 1994) does not include any relevant documents. Benzyl alcohol was also included in two reviews on benzyl derivatives

prepared by the Joint FAO/WHO Expert Committee on Food Additives (FAO/WHO, In Press; FAO/WHO, 1996). The Committee derived an ADI of 0-5 mg/kg for benzyl alcohol (FAO/WHO, 2003). The National Toxicology Program has conducted 16-day and 13-week oral studies and a 2-year oral exposure cancer bioassay on benzyl alcohol. ATSDR (2003) has not assessed the toxicity of benzyl alcohol.

An RfC for benzyl alcohol is not available on IRIS (U.S. EPA, 2005a) or in the HEAST (U.S. EPA, 1997). The HEED (U.S. EPA, 1989) reports that there were no available inhalation toxicity data in humans or animals at the time of publication. Occupational exposure limits for benzyl alcohol have not been derived by ACGIH (2003), NIOSH (2003), or OSHA (2003).

A Weight of Evidence classification for benzyl alcohol was not listed in the HEAST. The HEED (U.S. EPA, 1989) assigned benzyl alcohol to Weight of Evidence Group D (not classifiable as to human carcinogenicity) in the executive summary and Group E (evidence of non-carcinogenicity) in the text. A cancer assessment for benzyl alcohol is not available on IRIS (U.S. EPA, 2005a) or in the Drinking Water Standards and Health Advisories list (U.S. EPA, 2002). NTP (1989a) concluded that there was no evidence of carcinogenic activity in male or female rats or mice administered benzyl alcohol via oral gavage for 2 years. The carcinogenicity of benzyl alcohol has not been assessed by IARC (2003).

Literature searches were conducted from 1988 through September, 2003 for studies relevant to the derivation of provisional toxicity values for benzyl alcohol. Databases searched included: TOXLINE (supplemented with BIOSIS and NTIS updates), MEDLINE, CANCERLIT, TSCATS, RTECS, CCRIS, DART, EMIC/ EMICBACK, HSDB and GENETOX. Literature reviews conducted by FAO/WHO (Undated) were also examined for relevant information. Additional literature searches were conducted by NCEA-Cincinnati from September 2003 through October 2004 by using TOXLINE, MEDLINE, Chemical and Biological Abstracts databases.

Benzyl alcohol is used as a topical anesthetic and was shown to induce a spectrum of behavioral responses identical to ethyl alcohol intoxication. Benzyl alcohol is also used as a preservative in medicinal products and was identified as a component associated with brain hemorrhage in infants and neonates (NTP, 1989a).

REVIEW OF PERTINENT DATA

Human Studies

Available data in humans are limited to case reports where exposure to benzyl alcohol occurred with other solvents or when administered as a bacteriostatic agent with other medications. These reports provided no dose-response in humans for quantitative assessments. Workers occupationally exposed for an undetermined duration to a high vapor concentration of a mixture containing benzyl alcohol, benzene, and ester solvents reported temporary headaches, vertigo, nausea, diarrhea, and weight loss (Treon and Stasik, 1983). Also, several reports describe toxicity in pre-term neonates exposed intravascularly to solutions that contained benzyl alcohol as a preservative (Brown et al., 1982; Gershanik et al., 1982). Brown et al. (1982) gave details of 10 of 16 low birth weight infants (<1250 g) who died following exposure to bacteriostatic normal saline containing benzyl alcohol at a dose between 130 and 405 mg/kg-day. Symptoms of toxicity were observed between days 2 and 4 of administration and included slowly progressive bradycardia, often with gasping respiration (resulting in the name "gasping syndrome"), seizures, unresponsiveness, and extremely depressed EEGs characteristic of progressive metabolic acidosis. Gershanik et al. (1982) reported that 10 low birth weight or premature infants developed gasping syndrome following hospitalization and exposure to benzyl alcohol intravenously in medications. Effects were similar to those reported by Brown et al. (1982). Infants that developed gasping syndrome received benzyl alcohol doses ranging from 99 - 234 mg/kg-day. A matched control group of infants who did not develop gasping syndrome received 27 - 99 mg/kg-day of benzyl alcohol intravenously. Menon et al. (1984) and Benda et al. (1986) reported a possible association between benzyl alcohol and brain hemorrhages in low birth weight infants given medicine with benzyl alcohol added as a preservative. Benda et al. (1986) also reported significant ($p<0.001$) decreases in the incidences of cerebral palsy and developmental delay in surviving low birth weight infants after benzyl alcohol use was discontinued in a neonatal intensive care unit.

Animal Studies

The subchronic and chronic toxicity and carcinogenicity of benzyl alcohol following oral exposure has been studied by NTP (1989a). Several screening assays that investigated the developmental toxicity of orally administered benzyl alcohol were also located (York et al., 1988; York et al., 1986; Hazelden, 1983; Hardin et al., 1987). No studies were located that evaluated the toxicity of benzyl alcohol using inhalation exposure.

In 13-week repeated-dose studies, groups of rats and mice (10 per sex and dose) were administered 0, 50, 100, 200, 400 or 800 mg/kg-day of benzyl alcohol in corn oil 5 days/week via oral gavage (NTP, 1989a). Dose selection was based on results from 16-day studies in rats and mice that observed treatment-related effects (including increased mortality, lethargy, decreased

mean final body weight, and presence of blood around the nose, mouth, GI tract, and urinary tract) at ≥1000 mg/kg-day. In the 13-week studies, animals were observed twice daily for signs of toxicity and mortality. Animals were weighed individually at the beginning and end of the studies and were weighed as groups weekly during the study. All animals were necropsied after 13 weeks of treatment (or if killed *in extremis* during the study), and unspecified tissues were microscopically examined from all control and high-dose animals. The brain was microscopically examined at 0, 400, and 800 mg/kg-day in rats and mice and in all mice that died prior to scheduled sacrifice. No clinical pathology examinations (e.g., clinical chemistry, hematology, urinalysis) were conducted.

In rats, 8/10 males and 2/10 females in the 800 mg/kg-day group died; 4/10 of the deaths in males and 1/10 deaths in females were attributed to gavage error (NTP, 1989a). Signs of neurotoxicity (including staggering, labored breathing, and lethargy) were observed in male and female rats at 800 mg/kg-day, and 5/10 males at this dose were observed with blood around the nose and mouth after 8 weeks of treatment. No toxicologically significant (i.e., >10%) decrease in final mean body weight was observed at any dose. No treatment-related gross lesions were reported. Histopathologic effects attributable to treatment at 800 mg/kg-day included necrosis of the dentate gyrus of the hippocampus (9/9 males; 7/7 females); skeletal muscle necrosis (5/10 males); thymic congestion, hemorrhage, and atrophy (8/10 males); and renal nephrosis (6/9 males) similar to spontaneous age-related renal disease. The NTP report states that these lesions were not observed at lower doses. However, according to the methods section of the report, only the brain would have been examined in a lower dose group (400 mg/kg-day). Interpretation of this study is, therefore, somewhat uncertain. For purposes of this assessment, the statement in the results section that lesions were not seen at doses below 800 mg/kg-day is taken to imply that all of these tissues were examined in the 400 mg/kg-day group. Therefore, treatment-related effects were only observed at the high dose (800 mg/kg-day) in rats administered benzyl alcohol for 13 weeks, and there were no apparent effects at 400 mg/kg-day. The NOAEL and LOAEL values in rats were 400 mg/kg-day and 800 mg/kg-day, respectively.

In mice, 1 or 2 animals died in most treated groups; however, all deaths except one (a high-dose female) were attributed to the gavage procedure (NTP, 1989a), and there was no clear trend in mortality incidence. Final mean body weights of mice in all treatment groups were within 10% of controls. In the first 2 weeks of the study, male and female mice staggered after receiving 800 mg/kg-day of benzyl alcohol. No other treatment-related clinical signs were observed. No gross or microscopic lesions attributable to treatment were seen in mice at any dose. Interstitial pneumonia observed in all groups was consistent with Sendai infection. Treatment-related effects in this study included clinical observation of staggering in high-dose males and females; no effects were observed at 400 mg/kg-day. Therefore, the NOAEL and LOAEL values in mice were 400 mg/kg-day and 800 mg/kg-day, respectively.

In the 2-year studies conducted by NTP (1989a), technical-grade benzyl alcohol (99% pure) dissolved in corn oil was administered by gavage 5 days/week for 103 weeks to 50 male and female F344/N rats at 0, 200 or 400 mg/kg and B6C3F$_1$ mice at 0, 100 or 200 mg/kg. Mice were unintentionally given α-methylbenzyl alcohol for 4 days during week 80 with no obvious consequences. Animals were observed twice daily for signs of toxicity. Body weight was recorded at study initiation, weekly for 12 weeks, then monthly thereafter. After 2 years of treatment, all animals were necropsied, and a comprehensive set of tissues was microscopically examined from all female rats, control and high-dose male rats and mice, male rats and mice that died prior to 22 months of treatment, and male rats and mice with gross lesions. In addition, the pituitary gland and testes were microscopically examined in low-dose male rats, the adrenal gland, brain, kidney, liver and lungs were examined in low-dose male mice, and the brain, liver, spleen, and uterus were examined in low-dose female mice. When mortality at the high dose was ≥15% above the control group for a particular sex and species, then a complete histopathologic examination was performed on all animals of that sex and species in the low- and high-dose groups. Clinical chemistry, hematology, urinalysis, or ophthalmology parameters were not evaluated.

Survival of the benzyl alcohol treated female rats was significantly lower than controls after week 50 in high-dose animals and after week 71 in low-dose animals (NTP, 1989a). Many of the deaths were attributed to gavage error (1, 17 and 13 in the control, low and high-dose groups, respectively); however, there was an apparent dose-response trend in non-accidental deaths in females (13/50, 16/50 and 20/50, respectively, at 0, 200 and 400 mg/kg-day). Because of the high incidence of gavage-related deaths, it is not clear if the apparent increase in non-accidental mortality in treated female rats was related to benzyl alcohol toxicity. In males, an apparent dose-related increase in gavage-related deaths was observed (4/50, 8/50 and 14/50 at 0, 200 and 400 mg/kg-day, respectively); however, survival curves in males were similar in both treated groups compared with controls. No effects on body weight or incidences of clinical signs of toxicity were observed.

High-dose male rats were observed with a higher incidence of epithelial hyperplasia in the forestomach than controls (0/48, 0/19 and 4/50 at 0, 200 and 400 mg/kg-day, respectively) (NTP, 1989a). It is possible that this observation was related to benzyl alcohol treatment because benzyl acetate, which is metabolized to benzyl alcohol (NTP, 1989a), induced forestomach hyperplasia and squamous cell neoplasms in male and female mice dosed via oral gavage at 1000 mg/kg-day (molar equivalent to 720 mg/kg-day of benzyl alcohol) (NTP, 1986), but not in male or female rats or mice exposed at up to 350 mg/kg-day (molar equivalent to 252 mg/kg-day benzyl alcohol) in the diet for two years (NTP, 1993). Because benzyl acetate is metabolized to benzyl alcohol (NTP, 1989a), these data provide suggestive evidence that the forestomach is a potential target organ for benzyl alcohol in gavaged animals. However, the incidence of forestomach hyperplasia in high-dose benzyl alcohol treated male F344/N rats (4/50) was within the control incidence in male F344/N rats reported in 2-year oral studies published by NTP the

same year as the benzyl alcohol study was published (up to 4/50 in gavage studies and up to 19/50 in feed studies) (NTP, 1989b,c,d); therefore, it does not appear that there is sufficient evidence to attribute the marginal increase in the incidence of forestomach hyperplasia to benzyl alcohol administration. Also, there was no evidence that hyperplasia progressed to or was associated with more severe effects in the forestomach at the doses evaluated in benzyl alcohol treated animals. Increased incidences of microscopic lesions of the respiratory tract, larynx, and lungs were also observed in treated rats; however, these effects appear to have been caused by gavage error or by reflux of the gavage material and aspiration into the lungs due to the anesthetic properties of the test substance. High-dose rats were also observed with an increased incidence of cataracts and retinal atrophy, but this was attributed to those animals being housed in cages on the top racks, permitting greater exposure to fluorescent lighting. The data from this study indicate that there were no toxic effects that were clearly associated with benzyl alcohol administration to male or female rats at any dose; therefore, the NOAEL in rats observed in this study was 400 mg/kg-day, and a clear LOAEL was not established. There is some uncertainty, however, as meaningful interpretation of the mortality data was not possible due to the high rate of gavage errors, particularly in females.

In mice, no effects on survival, clinical signs of toxicity, or body weight were observed (NTP, 1989a). High-dose male and female mice had an increased incidence of corpora amylacea (incidence of 15/49, 21/48 and 22/50 in males and 14/50, 15/48 and 25/50 in females in the control, low-, and high-dose groups, respectively). The lesion was described as consisting of "one or several small foci of mineralization in the thalamus" and was noted to be a common, spontaneously occurring lesion. Inspection of 2-year studies published in 1989 by the National Toxicology Program indicates that the incidences of corpora amylacea in the 2-year benzyl alcohol study in mice were within the vehicle or untreated control incidence of brain mineralization in mice in these studies (NTP, 1989e,f). Therefore, it does not appear that this lesion was likely related to benzyl alcohol treatment. There was also an increased incidence ($p=0.044$ by the life table and incidental tumor tests) in adrenal cortex adenomas in high-dose male mice (adjusted terminal rates of 0/33, 0/30, and 3/35 in the control, low, and high dose groups, respectively). The incidence at the high dose, however, was within the historical control incidence and was, therefore, not attributed to benzyl alcohol treatment. Overall, no treatment-related effects were observed in this study at any dose. Therefore, the NOAEL in mice was 200 mg/kg-day (143 mg/kg-day when adjusted for a 5 day/week dosing schedule), the highest dose tested, and a LOAEL was not achieved.

Interpretation of the 2-year study in mice is unclear because it appears that this species like rats, could have been given doses higher than 200 mg/kg-day, the highest dose tested. The study authors indicated that mice were given lower doses than rats based on reduced relative body weight gain observed at $\geq$400 mg/kg-day and on the anesthetic properties of benzyl alcohol, which may have contributed to the gavage related deaths in the 13-week studies (NTP, 1989a). However, the 13-week studies appeared to indicate that rats were more sensitive to benzyl

alcohol toxicity than mice, and rats tolerated doses up to 400 mg/kg-day for two years; therefore, it appears that mice could have tolerated doses substantially higher than 200 mg/kg-day for two years.

The developmental toxicity of benzyl alcohol has been evaluated in several screening assays (Hazelden, 1983; Hardin et al., 1987; York et al., 1986; York et al., 1988). In one study, groups of 50 SPF, pregnant female CD-1 mice, 6-8 weeks old, were gavaged with benzyl alcohol in distilled water at 0 or 750 mg/kg-day on gestation days (GDs) 6-13 (presence of vaginal sperm plug = Day 0) (Hardin et al., 1987; Hazelden, 1983). Mice were observed twice daily for clinical signs of toxicity and mortality during treatment, once daily during GDs 14-17, and twice daily after GD 18 for signs of parturition. Mice that died early were necropsied for the purpose of excluding gavage error as a cause of death. Body weights of the dams were recorded at study initiation, on GDs 6 and 17, and on Day 3 postpartum. Number of pups/litter and total litter weights were recorded within 12 hours of parturition (Day 1 postpartum) and again 48 hours later. The following parameters were evaluated: maternal mortality and weight change, number of viable fetuses, number of live births per litter, and pup birth weight, percent survival and weight gain. Nineteen of the 50 treated mice died. Reproductive and gestation indices and mean gestation lengths were not significantly different in treated and control mice. Maternal body weight was significantly less than controls throughout the exposure period and on post partum Day 3. Other signs of maternal toxicity included increased mortality, cyanosis, dyspnea, hypothermia, behavioral pathologies, and piloerection. Mean litter weight was also significantly less than controls on Days 1 and 3 post partum. The maternal and developmental LOAEL was 750 mg/kg-day, the only dose tested. A NOAEL was not achieved.

In a similar study, York et al (1986) administered benzyl alcohol by oral gavage to 50 mice/dose at 0 or 550 mg/kg-day on gestation days (GDs) 6-15. All dams were allowed to deliver naturally. Body weight was recorded daily and all animals were observed for clinical signs of toxicity and mortality daily throughout treatment until Day 3 postpartum. No clear effects on mortality, clinical signs of toxicity, maternal body weight or body weight gain, gestation index, average number of live pups per litter, postnatal survival or pup body weight on days 0 and 3 postpartum were observed. The NOAEL in this study was 550 mg/kg-day, the only dose tested.

In another preliminary, short-term developmental toxicity test in mice, benzyl alcohol was given a score of intermediate priority classification or “no decision” when rated relative to five indices of potential developmental toxicity (i.e., the proportion of pregnant survivors that produced a litter of at least one live born pup, average litter sex ratio and pup weight at birth, and average pup survival and weight gain) to 3 days of age (York, et al., 1988). No other information was given.

Taken together, the available data were not adequate to fully evaluate the ability of benzyl alcohol to induce developmental toxicity because the presence of visceral or skeletal malformations were not systematically evaluated in any of the studies. However, the data generated at NIOSH laboratory (York et al., 1986; Hardin et al., 1987) and the extensive evaluation reported by the Flavor and Extract Manufacturers Association (FEMA) expert panel (Adams et al., 2005) suggest that the developmental toxicity parameters that were evaluated are not sensitive indicators of benzyl alcohol toxicity.

Other Studies

Benzyl alcohol did not induce reverse mutations in seven *Salmonella typhimurium* tester strains or in two strains of *E. coli* with or without addition of an exogenous metabolic activation system (S9) (NTP, 1989a; Mortelmans et al., 1986; Florin et al., 1980; Rogan et al., 1986; Ishidate et al., 1984; Fluck et al., 1976). Benzyl alcohol at cytotoxic concentrations produced forward mutations (triflourothymidine resistance) in the mouse L5178Y/TK+/- lymphoma assay without S9 addition but not with S9 (NTP, 1989a). The chemical also caused DNA damage in *Bacillus subtilis* (Kuroda et al., 1984; Yoo, 1986). Benzyl alcohol did not induce DNA damage in human alveolar cells (Waters et al., 1982). Benzyl alcohol was negative in an *in vitro* chromosomal aberrations test in Chinese Hamster Lung cells without metabolic activation (Ishidate et al., 1988); in Chinese Hamster ovary (CHO) cells, benzyl alcohol induced chromosomal aberrations in the presence of S9 mix, but not without S9 (NTP, 1989a). An equivocal increase in sister chromatid exchanges was observed in CHO cells in the presence or absence of S9 activation (NTP, 1989a). The substance did not induce micronucleus formation in mice *in vivo* (Hayashi et al., 1988). Overall, benzyl alcohol has produced mixed results in genotoxicity assays; however, the data suggest that benzyl alcohol is not likely a potent genotoxic agent.

A recent online report prepared by an expert panel sponsored by the FEMA is in the press for publication (Adams et al., 2005). The expert panel included eleven scientists representing both industry and academia. Scientific data relevant to the safety re-evaluation of the use of benzyl derivatives (which includes benzyl alcohol) as flavoring agents are included in this extensive report. The report concluded that the group of benzyl derivatives was determined to be generally recognized as safe (GRAS) under conditions of intended use as flavor ingredients by the FEMA expert panel in 1965. The evidence of safety is supported by the fact that the intake of benzyl derivatives as natural components of traditional foods is greater than their intake as intentionally added flavoring substances.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC ORAL RfD VALUES FOR BENZYL ALCOHOL

Available human studies have several limitations, such as exposure as mixtures and exposure as bacteriostatic agents with other medications. Benzyl alcohol was the subject of subchronic and chronic studies conducted by the National Toxicology Program (1989a), but no other relevant repeated-dose toxicity studies were located. In the subchronic studies (NTP, 1989a), treatment-related effects were only observed at the high dose, 800 mg/kg-day, and included mortality in male and female rats, increased incidences of clinical signs of neurotoxicity (including staggering, labored breathing, and/or lethargy) in male and female rats and mice, presence of blood around the nose and mouth in male rats, necrotic lesions of the brain in male and female rats, thymic congestion, hemorrhage, and atrophy in male rats, and nephrosis in male rats. No effects were observed at lower doses ($\leq$400 mg/kg-day). Therefore, the NOAEL and LOAEL in this study in both rats and mice was 400 mg/kg-day and 800 mg/kg-day, respectively. There is some uncertainty, however, regarding the extent of histopathological examination in the 400 mg/kg-day group rats.

In the chronic studies (NTP, 1989a), benzyl alcohol was administered by gavage 5 days/week for 103 weeks to groups of 50 male and 50 female F344/N rats at 0, 200 or 400 mg/kg and B6C3F$_1$ mice at 0, 100 or 200 mg/kg for 2 years. The study featured comprehensive histopathological examination of the test animals. No effects were clearly related to benzyl alcohol administration in either species. The NOAEL in rats and mice was 400 and 200 mg/kg-day, respectively, the highest dose tested in both species. The rat study, however, experienced a high incidence of accidental deaths, precluding a meaningful interpretation of the mortality data in this study.

Benzyl alcohol has been evaluated in several reproductive and developmental screening assays. Data on developmental and reproductive toxicity are limited to single dose studies in mice (York et al., 1988; Hardin et al., 1987). Benzyl alcohol administered at 550 mg/kg-day by gavage during 6-15 days of gestation produced no adverse effects (York et al., 1988). Hardin et al. (1987) reported both maternal toxicity and fetotoxicity in mice when exposed to 750 mg benzyl alcohol/kg-day during 6-13 days of gestation. This LOAEL is similar to the LOAEL for neurotoxicity observed in both male and female rats exposed to 800 mg benzyl alcohol by gavage reported in the NTP (1989a) subchronic study. These studies are not adequate to derive p-RfD values because they did not evaluate a comprehensive set of developmental or reproductive toxicity parameters; however, the results of these assays suggest that developmental and reproductive endpoints are not sensitive indicators of benzyl alcohol toxicity. The lack of treatment-related effects on reproductive organs in rats or mice in the available chronic and subchronic studies (NTP, 1989a) also support the conclusion that reproductive toxicity is not a sensitive endpoint for benzyl alcohol toxicity.

A provisional subchronic RfD for benzyl alcohol can be derived based on the subchronic NTP (1989a) study in rats. This study identified a LOAEL of 800 mg/kg-day and NOAEL of 400 mg/kg-day in rats based on death, clinical signs of neurotoxicity, and lesions in the brain and other tissues in both males and females. Although there is some uncertainty regarding the extent of histopathological examination in the 400 mg/kg-day group in the 13-week study, the 400 mg/kg-day NOAEL is supported by the results of the chronic rat study, which found no treatment-related lesions in the brain or other tissues despite comprehensive histopathological examinations at this dose level. The NOAEL/LOAEL approach was used to derive the p-RfD. The incidence of brain lesions in male and female rats was 0% at 400 mg/kg-day and 100% at 800 mg/kg-day. The data, therefore, provide no indication of the shape of the dose-response curve in this dose range, and are not suitable for benchmark dose modeling (U.S. EPA, 1996, 2000).

The NOAEL in rats of 400 mg/kg-day was adjusted to a continuous exposure basis (400 x 5 day/7 days = 286 mg/kg-day) and divided by a composite uncertainty factor of 300 (10 for interspecies extrapolation, 10 for human variability, and 3 for database deficiencies, including lack of adequately conducted reproductive, developmental, and neurological toxicity tests) to derive a provisional **subchronic RfD of 1 mg/kg-day**, as follows:

subchronic p-RfD = NOAEL / UF
= 286 mg/kg-day / 300
= 1 or 1E+0 mg/kg-day

Confidence in the key study is medium. The study evaluated a sufficient number of doses and animals per dose in two species (rats and mice), and a sufficient number of tissues appeared to be evaluated; however, the identity of the tissues that were microscopically examined was poorly documented, and clinical pathology evaluations were not conducted. Confidence in the database is low. No supporting studies other than the ensuing chronic study were located, and adequate reproductive, developmental, and neurological toxicity studies were not available. Because the brain was shown to be a target, it has not been established that the most sensitive toxicological endpoint has been adequately characterized. Therefore, confidence in the provisional subchronic RfD is low.

The chronic NTP (1989a) study in mice provides a suitable basis for derivation of a provisional chronic RfD for benzyl alcohol. This study determined a NOAEL of 200 mg/kg-day for effects on survival, growth, and tissue histopathology; a LOAEL was not identified. The mouse study was chosen over the similar rat study, with a NOAEL of 400 mg/kg-day, as the critical study because the rat study was compromised by a high number of accidental deaths, precluding a meaningful interpretation of the mortality data from this study. The free standing NOAEL in mice of 200 mg/kg-day was adjusted to a continuous exposure basis (200 x 5 days/7days = 143 mg/kg-day) and divided by a composite uncertainty factor of 300 (10 for

interspecies extrapolation, 10 for human variability, and 3 for database deficiencies, including lack of adequately conducted reproductive, developmental, and neurological toxicity tests). Although York et al. (1988) and Hardin et al. (1987) did not examine all the developmental or reproductive parameters, data from these studies suggest higher threshold for benzyl alcohol toxicity. A provisional **chronic RfD of 0.5 mg/kg-day**, is derived as follows:

p-RfD = NOAEL / UF
= 143 mg/kg-day / 300
= 0.5 mg/kg-day or 5E-1 mg/kg-day

Confidence in the principal study is medium. Although the study performed a comprehensive histopathology examination, no effects clearly associated with benzyl alcohol administration were identified. Confidence in the database is low; supporting data for the critical study were available only from the subchronic study, and only limited information was located on the potential of ingested benzyl alcohol to induce developmental or reproductive effects. Benzyl alcohol was shown to affect the nervous system in rats and mice in the 13-week studies; however, a comprehensive neurological toxicity study was not located. Therefore, it has not been established that the most sensitive toxicological endpoint has been adequately characterized. Confidence in the provisional chronic RfD is low.

On the basis of recent annual use volume data, FAO/WHO (In Press) estimated per capita daily intake of approximately 17 mg/day (0.3 mg/kg-day) for benzyl alcohol from its use as a flavoring agent in the U.S. This report is unavailable for review. The provisional RfD of 5E-1 mg/kg-day is slightly (1-5x) higher than the estimated daily intake of 3E-1 mg/kg-day. The publication of FAO/WHO report and any subsequent studies for benzyl alcohol will be considered in future evaluations.

DERIVATION OF PROVISIONAL SUBCHRONIC AND CHRONIC INHALATION RfC VALUES FOR BENZYL ALCOHOL

No adequate human or animal data regarding the toxicity of benzyl alcohol following subchronic or chronic inhalation exposure are available, precluding derivation of provisional RfC values.

DERIVATION OF A PROVISIONAL CARCINOGENICITY ASSESSMENT FOR BENZYL ALCOHOL

There are no human carcinogenicity data for benzyl alcohol. Benzyl alcohol did not induce tumors in a 2-year study in male or female rats and mice (NTP, 1989a). The sensitivity of

the studies to detect carcinogenicity may have been compromised by the lack of a maximum tolerated dose achieved in mice of both sexes. No clear toxic effects occurred in male or female mice at up to 200 mg/kg-day, and only mild toxic effects (staggering during the first two weeks of the study) occurred at 800 mg/kg-day in mice during the 13-week range-finding study. Also, mice appeared to be less sensitive than rats to benzyl alcohol toxicity in the 13-week study, and rats tolerated up to 400 mg/kg-day for two years. Therefore, it appears that mice could have been given substantially higher doses than 200 mg/kg-day for two years. Although a clear NOAEL was not observed in rats either, severe effects were observed in the 13-week range-finding study (NTP, 1989a) at a dose only 2-fold higher than the highest dose tested in the 2-year bioassay. Therefore, it appears that the maximum tolerated dose was approached in the rat study. Although not clearly related to treatment, survival was significantly reduced at both doses in female rats due to a large number of accidental deaths. However, the increased mortality in the treatment groups did not appear to substantially affect the sensitivity of the bioassay because survival rates at 12, 18, and 24 months were within U.S. EPA (1998) guidelines. NTP (1989a) considered survival to be adequate for cancer assessment. Benzyl alcohol has produced mixed results in genotoxicity assays; however, the data suggest that benzyl alcohol is not likely a potent genotoxic agent. Under the U.S. EPA (2005b) cancer guidelines, the available data are inadequate for an assessment of human carcinogenic potential.

Derivation of quantitative estimates (provisional oral slope factor or inhalation unit risk) of cancer risk for benzyl alcohol is precluded by the absence of positive carcinogenicity data.

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APPENDIX J

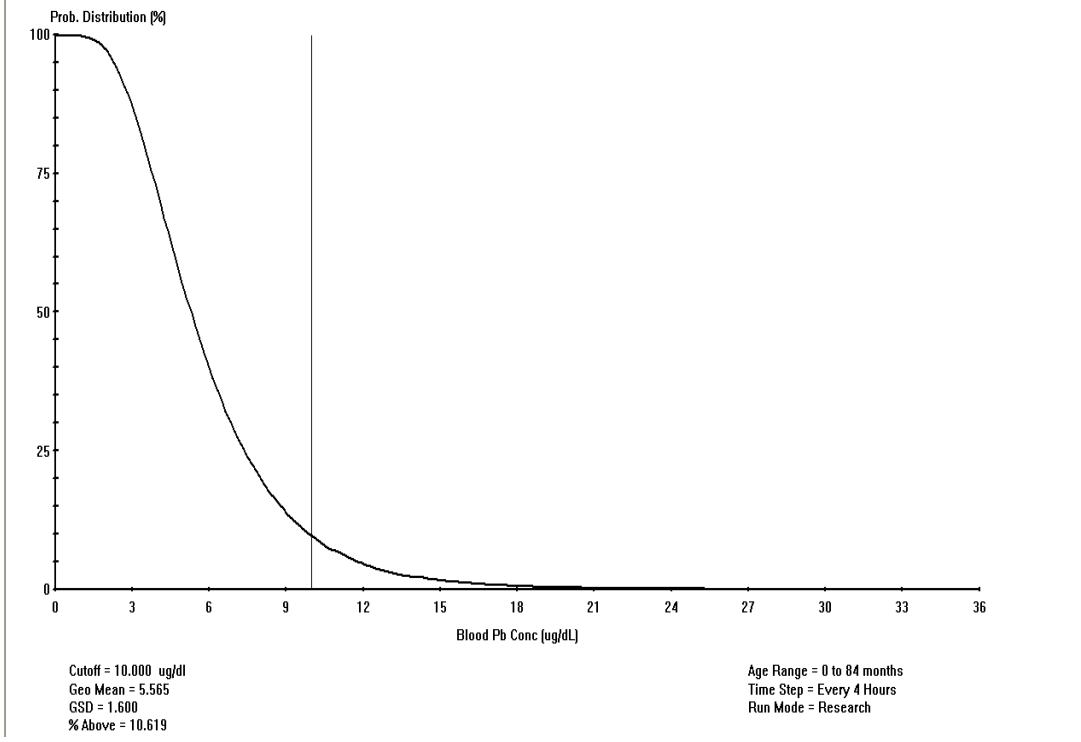
RAGS D Lead Worksheet

APPENDIX J
IEUBK CHILDHOOD LEAD EXPOSURE MODEL SUMMARY
HONEYWELL, WILLIS AVENUE CHLORBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current
Receptor Population:	Resident
Receptor Age:	Child (0-84 months)

Parameter	Value	Unit	Rationale
Soil lead level	NA	NA	Not Applicable
Outdoor air lead concentration	NA	NA	Not Applicable
Indoor air lead concentration (% of outdoor)	NA	NA	Not Applicable
Time spent outdoors	NA	NA	Not Applicable
Ventilation rate	NA	NA	Not Applicable
Lung absorption	NA	NA	Not Applicable
Dietary lead intake	Varies with age	ug/day	default
GI method/bioavailability	NA	NA	Not Applicable
Lead concentration in drinking water	58.97	ug/L	Average sitewide groundwater concentration.
Drinking water intake	Varies with age	L/day	default
Indoor dust lead level	NA	NA	Not Applicable
Soil/dust ingestion weighting factor (%)	NA	NA	Not Applicable
Paint lead intake	NA	NA	Not Applicable
Maternal contribution method	infant model	NA	default
Mother's blood lead at birth	2.5	ug Pb/dL	default
Target blood lead level	10	ug/dL blood	default
Goemetric Mean	5.6	ug/dL blood	IEUBK model
Geometric Standard Deviation	1.6	NA	default
Probability of exceeding target blood lead level	**10.6**	**%**	**IEUBK model**

IEUBK model output:



APPENDIX J
RAGS D LEAD WORKSHEET
FUTURE CHILD RESIDENT (<6 YEARS OLD) EXPOSURE TO MEDIA AS DESCRIBED
HONEYWELL, WILLIS AVENUE CHLORBENZENE SITE, GEDDES, NEW YORK

1. Lead Screening Questions

Medium	Lead Concentration Used in Model Run		Basis for Lead Concentration Used For Model Run	Lead Screening Concentration		Basis for Lead Screening Level
	Value	Units		Value	Units	
Groundwater	0.5897	ug/L	Average sitewide groundwater concentration.	0.015	mg/L	USEPA (2008) national primary and secondary drinking water regulations.

2. Lead Model Questions

Question	Response for Residential Lead Model
What lead model (version and date) was used?	Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK). Software: IEUBKwin32 Model 1, Build 264, Version 1, 2007
Where are the input values located in the risk assessment report?	RAGS Table 3.26 Sitewide Groundwater
What range of media concentrations were used?	Average detected lead concentration in site wide groundwater for future child resident.
What statistics were used to represent the exposure concentration terms and where are the data on concentrations in the risk assessment that support use of these statistics?	Average detected lead concentration in site wide groundwater for future child resident.
Was soil sample taken from top 2 cm? If not, why?	Not Applicable. Only exposure to groundwater for the future child resident was evaluated.
Was soil sample sieved? What size screen was used? If not sieved, provide rationale.	Not Applicable.
What was the point of exposure/location?	Sitewide Groundwater - Potable Water
Where are the output values located in the risk assessment report?	See Page 2.
Was the model run using default values only?	No. See Page 2
Was the default soil bioavailability used?	Not Applicable.
Was the default soil ingestion rate used?	Not Applicable.
If non-default values were used, where are the rationale for the values located in the risk assessment report?	Not Applicable.

3. Final Result

Medium	Result	Comment/PRG
Site-wide Groundwater	See Page 2.	

APPENDIX K

USEPA ProUCL Version 4.0 Output

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output
General UCL Statistics for Data Sets with Non-Detects
User Selected Options
From File C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

1,1,2,2-TETRACHLOROETHANE

General Statistics

Number of Valid Data	61	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	60
		Percent Non-Detects	98.36%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable 1,1,2,2-TETRACHLOROETHANE was not processed!

1,2,3-TRICHLOROBENZENE

General Statistics

Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,3-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2,4-TRICHLOROBENZENE

General Statistics

Number of Valid Data	32	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	24
		Percent Non-Detects	75.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.2	Minimum Detected	-1.609
Maximum Detected	1000	Maximum Detected	6.908
Mean of Detected	219.7	Mean of Detected	3.847
SD of Detected	340	SD of Detected	2.606
Minimum Non-Detect	2.5	Minimum Non-Detect	0.916
Maximum Non-Detect	150	Maximum Non-Detect	5.011

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	29
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	90.63%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.699	Shapiro Wilk Test Statistic	0.895
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	60.75	Mean	2.213
SD	186.9	SD	1.658
95% DL/2 (t) UCL	116.8	95% H-Stat (DL/2) UCL	54.67
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	659.4	Mean in Log Scale	-0.302
SD	333.6	SD in Log Scale	3.442
95% MLE (t) UCL	759.4	Mean in Original Scale	55.75
95% MLE (Tiku) UCL	977	SD in Original Scale	188
		95% Percentile Bootstrap UCL	115.9
		95% BCA Bootstrap UCL	165.5
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.347	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	632.6		
nu star	5.555		
A-D Test Statistic	0.213	Nonparametric Statistics	
5% A-D Critical Value	0.776	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.776	Mean	55.24
5% K-S Critical Value	0.312	SD	185.2
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	35
		95% KM (t) UCL	114.6
Assuming Gamma Distribution		95% KM (z) UCL	112.8
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	103.6
Minimum	1.00E-09	95% KM (bootstrap t) UCL	235.7
Maximum	1000	95% KM (BCA) UCL	159
Mean	135.1	95% KM (Percentile Bootstrap) UCL	127
Median	71.28	95% KM (Chebyshev) UCL	207.8
SD	196	97.5% KM (Chebyshev) UCL	273.8
k star	0.11	99% KM (Chebyshev) UCL	403.5
Theta star	1224		
Nu star	7.066	Potential UCLs to Use	
AppChi2	2.207	95% KM (t) UCL	114.6
95% Gamma Approximate UCL	432.6		
95% Adjusted Gamma UCL	462.5		
Note: DL/2 is not a recommended method.			

1,2-DICHLOROBENZENE

General Statistics			
Number of Valid Data	54	Number of Detected Data	15
Number of Distinct Detected Data	14	Number of Non-Detect Data	39
		Percent Non-Detects	72.22%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.8	Minimum Detected	0.588
Maximum Detected	29000	Maximum Detected	10.28
Mean of Detected	3993	Mean of Detected	5.968
SD of Detected	7339	SD of Detected	3.159
Minimum Non-Detect	5	Minimum Non-Detect	1.609
Maximum Non-Detect	500	Maximum Non-Detect	6.215
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	46
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	85.19%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.562	Lilliefors Test Statistic	0.887
5% Lilliefors Critical Value	0.881	5% Lilliefors Critical Value	0.881
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1127	Mean	2.905
SD	4177	SD	2.732
95% DL/2 (t) UCL	2079	95% H-Stat (DL/2) UCL	1600
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	11316	Mean in Log Scale	0.949
SD	8308	SD in Log Scale	4.314
95% MLE (t) UCL	13209	Mean in Original Scale	1113
95% MLE (Tiku) UCL	16035	SD in Original Scale	4181
		95% Percentile Bootstrap UCL	2130
		95% BCA Bootstrap UCL	2808
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.282	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	14152		
nu star	8.465		
A-D Test Statistic	0.548	Nonparametric Statistics	
5% A-D Critical Value	0.837	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.837	Mean	1112
5% K-S Critical Value	0.24	SD	4142
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	583.5
		95% KM (t) UCL	2088
Assuming Gamma Distribution		95% KM (z) UCL	2071
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2062
Minimum	1.00E-09	95% KM (bootstrap t) UCL	3820
Maximum	58204	95% KM (BCA) UCL	2269
Mean	8876	95% KM (Percentile Bootstrap) UCL	2155
Median	3164	95% KM (Chebyshev) UCL	3655
SD	13341	97.5% KM (Chebyshev) UCL	4755
k star	0.113	99% KM (Chebyshev) UCL	6917
Theta star	78491		
Nu star	12.21	Potential UCLs to Use	
AppChi2	5.368	95% KM (t) UCL	2088
95% Gamma Approximate UCL	20195		
95% Adjusted Gamma UCL	20676		

Note: DL/2 is not a recommended method.

1,2-DICHLOROETHANE

General Statistics			
Number of Valid Data	61	Number of Detected Data	2
Number of Distinct Detected Data	1	Number of Non-Detect Data	59
		Percent Non-Detects	96.72%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable 1,2-DICHLOROETHANE was not processed!

1,2-DICHLOROPROPANE

General Statistics

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Number of Valid Data	61	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	59
		Percent Non-Detects	96.72%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2	Minimum Detected	0.693
Maximum Detected	3	Maximum Detected	1.099
Mean of Detected	2.5	Mean of Detected	0.896
SD of Detected	0.707	SD of Detected	0.287
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	5000	Maximum Non-Detect	8.517

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	61
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	1	Lilliefors Test Statistic	1
5% Lilliefors Critical Value	N/A	5% Lilliefors Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	155.1	Mean	2.007
SD	421.1	SD	2.573
95% DL/2 (t) UCL	245.2	95% H-Stat (DL/2) UCL	764.3

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		

A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	2.053
5% K-S Critical Value	N/A	SD	0.223
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0724
		95% KM (t) UCL	2.174
Assuming Gamma Distribution		95% KM (z) UCL	2.172
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.683
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	3
Mean	N/A	95% KM (Percentile Bootstrap) UCL	3

Median	N/A	95% KM (Chebyshev) UCL	2.368
SD	N/A	97.5% KM (Chebyshev) UCL	2.505
k star	N/A	99% KM (Chebyshev) UCL	2.773
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	2.174
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	3
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

1,3-DICHLOROBENZENE

General Statistics			
Number of Valid Data	61	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	50
		Percent Non-Detects	81.97%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.78	Minimum Detected	-0.248
Maximum Detected	9500	Maximum Detected	9.159
Mean of Detected	1079	Mean of Detected	4.709
SD of Detected	2804	SD of Detected	2.571
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	13000	Maximum Non-Detect	9.473
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	61
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.42	Lilliefors Test Statistic	0.969
5% Lilliefors Critical Value	0.85	5% Lilliefors Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	456.8	Mean	2.849
SD	1529	SD	2.484
95% DL/2 (t) UCL	783.8	95% H-Stat (DL/2) UCL	814.6
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.935
		SD in Log Scale	3.815
		Mean in Original Scale	195.6
		SD in Original Scale	1218
		95% Percentile Bootstrap UCL	505.1
		95% BCA Bootstrap UCL	700.8
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.281	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3845		
nu star	6.175		
A-D Test Statistic	0.63	Nonparametric Statistics	
5% A-D Critical Value	0.82	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.82	Mean	203.7
5% K-S Critical Value	0.276	SD	1218
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	165.1
		95% KM (t) UCL	479.4
Assuming Gamma Distribution		95% KM (z) UCL	475.2
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	463.7
Minimum	0.78	95% KM (bootstrap t) UCL	2209
Maximum	9500	95% KM (BCA) UCL	565.9

Mean	1602	95% KM (Percentile Bootstrap) UCL	526
Median	1120	95% KM (Chebyshev) UCL	923.2
SD	1499	97.5% KM (Chebyshev) UCL	1235
k star	1.015	99% KM (Chebyshev) UCL	1846
Theta star	1579		
Nu star	123.8	Potential UCLs to Use	
AppChi2	99.13	95% KM (t) UCL	479.4
95% Gamma Approximate UCL	2002		
95% Adjusted Gamma UCL	2012		

Note: DL/2 is not a recommended method.

1,4-DICHLOROBENZENE

General Statistics			
Number of Valid Data	61	Number of Detected Data	22
Number of Distinct Detected Data	22	Number of Non-Detect Data	39
		Percent Non-Detects	63.93%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.9	Minimum Detected	1.361
Maximum Detected	72000	Maximum Detected	11.18
Mean of Detected	9159	Mean of Detected	7.236
SD of Detected	16031	SD of Detected	2.826
Minimum Non-Detect	5	Minimum Non-Detect	1.609
Maximum Non-Detect	500	Maximum Non-Detect	6.215
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	45
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	16
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	73.77%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.584	Lilliefors Test Statistic	0.9
5% Lilliefors Critical Value	0.911	5% Lilliefors Critical Value	0.911
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3319	Mean	3.714
SD	10465	SD	3.306
95% DL/2 (t) UCL	5557	95% H-Stat (DL/2) UCL	16873
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	2.969
		SD in Log Scale	4.163
		Mean in Original Scale	3310
		SD in Original Scale	10467
		95% Percentile Bootstrap UCL	5719
		95% BCA Bootstrap UCL	6591
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.337	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	27145		
nu star	14.85		
A-D Test Statistic	0.358	Nonparametric Statistics	
5% A-D Critical Value	0.836	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.836	Mean	3306
5% K-S Critical Value	0.2	SD	10382
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1361
		95% KM (t) UCL	5579
Assuming Gamma Distribution		95% KM (z) UCL	5544
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5543
Minimum	3.9	95% KM (bootstrap t) UCL	8963

Maximum	72000	95% KM (BCA) UCL	5684
Mean	9075	95% KM (Percentile Bootstrap) UCL	5653
Median	9137	95% KM (Chebyshev) UCL	9237
SD	9529	97.5% KM (Chebyshev) UCL	11803
k star	0.826	99% KM (Chebyshev) UCL	16844
Theta star	10985		
Nu star	100.8	Potential UCLs to Use	
AppChi2	78.63	95% KM (t) UCL	5579
95% Gamma Approximate UCL	11633		
95% Adjusted Gamma UCL	11703		

Note: DL/2 is not a recommended method.

2,4,6-TRICHLOROPHENOL

General Statistics

Number of Valid Data	25	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	24
		Percent Non-Detects	96.00%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable 2,4,6-TRICHLOROPHENOL was not processed!

2,4-DICHLOROPHENOL

General Statistics

Number of Valid Data	25	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	20
		Percent Non-Detects	80.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4	Minimum Detected	1.386
Maximum Detected	23	Maximum Detected	3.135
Mean of Detected	14.2	Mean of Detected	2.504
SD of Detected	7.19	SD of Detected	0.68
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	25
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.991	Shapiro Wilk Test Statistic	0.887
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	26.64	Mean	1.972
SD	98.73	SD	0.995
95% DL/2 (t) UCL	60.42	95% H-Stat (DL/2) UCL	18.49

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.559
		SD in Log Scale	0.775
		Mean in Original Scale	6.358
		SD in Original Scale	5.399
		95% Percentile Bootstrap UCL	8.175
		95% BCA Bootstrap UCL	8.577

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.533	Data appear Normal at 5% Significance Level	
Theta Star	9.262		
nu star	15.33		
A-D Test Statistic	0.302	Nonparametric Statistics	
5% A-D Critical Value	0.682	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.682	Mean	6.125
5% K-S Critical Value	0.359	SD	5.077
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.159
		95% KM (t) UCL	8.107
Assuming Gamma Distribution		95% KM (z) UCL	8.031
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	10.4
Minimum	2.18	95% KM (bootstrap t) UCL	7.63
Maximum	23	95% KM (BCA) UCL	18.2
Mean	9.933	95% KM (Percentile Bootstrap) UCL	15.76
Median	9.321	95% KM (Chebyshev) UCL	11.18
SD	5.461	97.5% KM (Chebyshev) UCL	13.36
k star	2.78	99% KM (Chebyshev) UCL	17.65
Theta star	3.573		
Nu star	139	Potential UCLs to Use	
AppChi2	112.8	95% KM (t) UCL	8.107
95% Gamma Approximate UCL	12.24	95% KM (Percentile Bootstrap) UCL	15.76
95% Adjusted Gamma UCL	12.42		

Note: DL/2 is not a recommended method.

2-CHLOROPHENOL

General Statistics			
Number of Valid Data	25	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	20
		Percent Non-Detects	80.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	180	Maximum Detected	5.193
Mean of Detected	50.4	Mean of Detected	2.71
SD of Detected	74.29	SD of Detected	2.035
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	25
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.741	Shapiro Wilk Test Statistic	0.972
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762

Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	33.88	Mean	2.014
SD	103.4	SD	1.287
95% DL/2 (t) UCL	69.26	95% H-Stat (DL/2) UCL	41.61
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.998
		SD in Log Scale	1.766
		Mean in Original Scale	13.2
		SD in Original Scale	36.03
		95% Percentile Bootstrap UCL	26.14
		95% BCA Bootstrap UCL	38.94
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.342	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	147.4		
nu star	3.42		
A-D Test Statistic	0.227	Nonparametric Statistics	
5% A-D Critical Value	0.71	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.71	Mean	12.48
5% K-S Critical Value	0.371	SD	36.05
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	8.287
		95% KM (t) UCL	26.66
Assuming Gamma Distribution		95% KM (z) UCL	26.11
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	25.71
Minimum	1.00E-09	95% KM (bootstrap t) UCL	49.9
Maximum	180	95% KM (BCA) UCL	180
Mean	35.64	95% KM (Percentile Bootstrap) UCL	40.08
Median	27.25	95% KM (Chebyshev) UCL	48.6
SD	39.78	97.5% KM (Chebyshev) UCL	64.23
k star	0.142	99% KM (Chebyshev) UCL	94.94
Theta star	251.2		
Nu star	7.094	Potential UCLs to Use	
AppChi2	2.222	95% KM (t) UCL	26.66
95% Gamma Approximate UCL	113.8		
95% Adjusted Gamma UCL	123.9		

Note: DL/2 is not a recommended method.

2-METHYLNAPHTHALENE

General Statistics			
Number of Valid Data	28	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	23
		Percent Non-Detects	82.14%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	24	Maximum Detected	3.178
Mean of Detected	7.6	Mean of Detected	1.454
SD of Detected	9.397	SD of Detected	1.205
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	28
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.748	Shapiro Wilk Test Statistic	0.974
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	23.2	Mean	1.756
SD	93.52	SD	0.992
95% DL/2 (t) UCL	53.3	95% H-Stat (DL/2) UCL	16.44
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.076
		SD in Log Scale	0.894
		Mean in Original Scale	4.362
		SD in Original Scale	4.75
		95% Percentile Bootstrap UCL	6.003
		95% BCA Bootstrap UCL	6.412
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.536	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	14.19		
nu star	5.355		
A-D Test Statistic	0.323	Nonparametric Statistics	
5% A-D Critical Value	0.691	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.691	Mean	4.259
5% K-S Critical Value	0.364	SD	4.368
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.388
		95% KM (t) UCL	6.623
Assuming Gamma Distribution		95% KM (z) UCL	6.542
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.821
Minimum	0.124	95% KM (bootstrap t) UCL	7.205
Maximum	24	95% KM (BCA) UCL	6.821
Mean	6.852	95% KM (Percentile Bootstrap) UCL	6.667
Median	6.97	95% KM (Chebyshev) UCL	10.31
SD	4.613	97.5% KM (Chebyshev) UCL	12.92
k star	1.596	99% KM (Chebyshev) UCL	18.07
Theta star	4.293		
Nu star	89.38	Potential UCLs to Use	
AppChi2	68.58	95% KM (t) UCL	6.623
95% Gamma Approximate UCL	8.93		
95% Adjusted Gamma UCL	9.079		

Note: DL/2 is not a recommended method.

2-NITROPHENOL

General Statistics			
Number of Valid Data	25	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	24
		Percent Non-Detects	96.00%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable 2-NITROPHENOL was not processed!

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

4-CHLORO-3-METHYLPHENOL

General Statistics			
Number of Valid Data	25	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	23
		Percent Non-Detects	92.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3	Minimum Detected	1.099
Maximum Detected	4	Maximum Detected	1.386
Mean of Detected	3.5	Mean of Detected	1.242
SD of Detected	0.707	SD of Detected	0.203
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	25
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	24.7	Mean	1.768
SD	99.02	SD	0.933
95% DL/2 (t) UCL	58.58	95% H-Stat (DL/2) UCL	15.98
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	3.5
5% K-S Critical Value	N/A	SD	0.5
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.5
		95% KM (t) UCL	4.355
Assuming Gamma Distribution		95% KM (z) UCL	4.322
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.685

Minimum	N/A	95% KM (bootstrap t) UCL	4.25
Maximum	N/A	95% KM (BCA) UCL	4
Mean	N/A	95% KM (Percentile Bootstrap) UCL	4
Median	N/A	95% KM (Chebyshev) UCL	5.679
SD	N/A	97.5% KM (Chebyshev) UCL	6.622
k star	N/A	99% KM (Chebyshev) UCL	8.475
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	4.355
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	4
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

4-METHYLPHENOL

General Statistics

Number of Valid Data	25	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	17
		Percent Non-Detects	68.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	6	Minimum Detected	1.792
Maximum Detected	500	Maximum Detected	6.215
Mean of Detected	128.8	Mean of Detected	3.861
SD of Detected	173.4	SD of Detected	1.661
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	25
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.769	Shapiro Wilk Test Statistic	0.938
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	64.42	Mean	2.518
SD	142.8	SD	1.587
95% DL/2 (t) UCL	113.3	95% H-Stat (DL/2) UCL	84.02

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	2.321
		SD in Log Scale	1.697
		Mean in Original Scale	46.78
		SD in Original Scale	110
		95% Percentile Bootstrap UCL	86.18
		95% BCA Bootstrap UCL	106.4

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.469	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	274.5		
nu star	7.503		

A-D Test Statistic	0.292	Nonparametric Statistics	
5% A-D Critical Value	0.754	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.754	Mean	47.25
5% K-S Critical Value	0.307	SD	110
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	24
		95% KM (t) UCL	88.3
Assuming Gamma Distribution		95% KM (z) UCL	86.72
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	86.52
Minimum	6	95% KM (bootstrap t) UCL	168.4
Maximum	500	95% KM (BCA) UCL	103.3
Mean	119	95% KM (Percentile Bootstrap) UCL	93.17
Median	115.6	95% KM (Chebyshev) UCL	151.8
SD	95.11	97.5% KM (Chebyshev) UCL	197.1
k star	1.489	99% KM (Chebyshev) UCL	286
Theta star	79.9		
Nu star	74.47	Potential UCLs to Use	
AppChi2	55.6	95% KM (t) UCL	88.3
95% Gamma Approximate UCL	159.4		
95% Adjusted Gamma UCL	162.7		

Note: DL/2 is not a recommended method.

4-NITROPHENOL

General Statistics

Number of Valid Data	25	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	24
		Percent Non-Detects	96.00%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable 4-NITROPHENOL was not processed!

ACETONE

General Statistics

Number of Valid Data	28	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	20
		Percent Non-Detects	71.43%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	8	Minimum Detected	2.079
Maximum Detected	2800	Maximum Detected	7.937
Mean of Detected	526.4	Mean of Detected	4.85
SD of Detected	968.2	SD of Detected	1.841
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	10000	Maximum Non-Detect	9.21

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	28
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic	0.608	Shapiro Wilk Test Statistic	0.965
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	580.8	Mean	3.976
SD	1189	SD	2.441
95% DL/2 (t) UCL	963.5	95% H-Stat (DL/2) UCL	13242
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	2.698
		SD in Log Scale	1.944
		Mean in Original Scale	157.6
		SD in Original Scale	547.2
		95% Percentile Bootstrap UCL	348.9
		95% BCA Bootstrap UCL	459.4
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.368	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1431		
nu star	5.886		
A-D Test Statistic	0.591	Nonparametric Statistics	
5% A-D Critical Value	0.77	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.77	Mean	181.9
5% K-S Critical Value	0.311	SD	567.3
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	122
		95% KM (t) UCL	389.7
Assuming Gamma Distribution		95% KM (z) UCL	382.5
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	367.9
Minimum	1.00E-09	95% KM (bootstrap t) UCL	2005
Maximum	7838	95% KM (BCA) UCL	465.3
Mean	1757	95% KM (Percentile Bootstrap) UCL	410.6
Median	924	95% KM (Chebyshev) UCL	713.6
SD	1966	97.5% KM (Chebyshev) UCL	943.7
k star	0.201	99% KM (Chebyshev) UCL	1396
Theta star	8751		
Nu star	11.24	Potential UCLs to Use	
AppChi2	4.733	95% KM (t) UCL	389.7
95% Gamma Approximate UCL	4174		
95% Adjusted Gamma UCL	4416		

Note: DL/2 is not a recommended method.

ALUMINUM

General Statistics			
Number of Valid Data	56	Number of Detected Data	31
Number of Distinct Detected Data	31	Number of Non-Detect Data	25
		Percent Non-Detects	44.64%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.44	Minimum Detected	-0.821
Maximum Detected	287	Maximum Detected	5.659
Mean of Detected	29.96	Mean of Detected	2.145
SD of Detected	57.74	SD of Detected	1.711
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	1.01	Maximum Non-Detect	0.00995
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	30
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	26
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	53.57%

UCL Statistics

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.541	Lilliefors Test Statistic	0.975
5% Lilliefors Critical Value	0.929	5% Lilliefors Critical Value	0.929
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	16.63	Mean	-0.253
SD	45.2	SD	3.09
95% DL/2 (t) UCL	26.73	95% H-Stat (DL/2) UCL	238.2
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.283
		SD in Log Scale	2.457
		Mean in Original Scale	16.65
		SD in Original Scale	45.19
		95% Percentile Bootstrap UCL	27.47
		95% BCA Bootstrap UCL	33.18
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.478	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	62.7		
nu star	29.62		
A-D Test Statistic	0.747	Nonparametric Statistics	
5% A-D Critical Value	0.809	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.809	Mean	16.78
5% K-S Critical Value	0.167	SD	44.74
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	6.077
		95% KM (t) UCL	26.95
Assuming Gamma Distribution		95% KM (z) UCL	26.78
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	26.83
Minimum	0.44	95% KM (bootstrap t) UCL	40.11
Maximum	287	95% KM (BCA) UCL	28.92
Mean	22.68	95% KM (Percentile Bootstrap) UCL	27.18
Median	12	95% KM (Chebyshev) UCL	43.27
SD	43.67	97.5% KM (Chebyshev) UCL	54.74
k star	0.674	99% KM (Chebyshev) UCL	77.25
Theta star	33.66		
Nu star	75.48	Potential UCLs to Use	
AppChi2	56.47	95% KM (BCA) UCL	28.92
95% Gamma Approximate UCL	30.32		
95% Adjusted Gamma UCL	30.55		
Note: DL/2 is not a recommended method.			

ARSENIC

General Statistics			
Number of Valid Data	56	Number of Detected Data	33
Number of Distinct Detected Data	31	Number of Non-Detect Data	23
		Percent Non-Detects	41.07%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.001	Minimum Detected	-6.908
Maximum Detected	0.956	Maximum Detected	-0.045
Mean of Detected	0.0687	Mean of Detected	-4.051
SD of Detected	0.177	SD of Detected	1.468
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	0.0274	Maximum Non-Detect	-3.597
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	47
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	83.93%

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.407	Lilliefors Test Statistic	0.93
5% Lilliefors Critical Value	0.931	5% Lilliefors Critical Value	0.931
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0417	Mean	-5.055
SD	0.139	SD	1.808
95% DL/2 (t) UCL	0.0726	95% H-Stat (DL/2) UCL	0.0401
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.293
		SD in Log Scale	1.968
		Mean in Original Scale	0.041
		SD in Original Scale	0.139
		95% Percentile Bootstrap UCL	0.0743
		95% BCA Bootstrap UCL	0.0905
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.445	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.154		
nu star	29.38		
A-D Test Statistic	3.376	Nonparametric Statistics	
5% A-D Critical Value	0.818	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.818	Mean	0.0413
5% K-S Critical Value	0.163	SD	0.137
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0187
		95% KM (t) UCL	0.0725
Assuming Gamma Distribution		95% KM (z) UCL	0.072
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0719
Minimum	0.001	95% KM (bootstrap t) UCL	0.125
Maximum	0.956	95% KM (BCA) UCL	0.0754
Mean	0.0665	95% KM (Percentile Bootstrap) UCL	0.072
Median	0.0549	95% KM (Chebyshev) UCL	0.123
SD	0.135	97.5% KM (Chebyshev) UCL	0.158
k star	0.711	99% KM (Chebyshev) UCL	0.227
Theta star	0.0935		
Nu star	79.66	Potential UCLs to Use	
AppChi2	60.09	95% KM (Chebyshev) UCL	0.123
95% Gamma Approximate UCL	0.0881		
95% Adjusted Gamma UCL	0.0888		
Note: DL/2 is not a recommended method.			

BARIUM

General Statistics			
Number of Valid Data	56	Number of Detected Data	53
Number of Distinct Detected Data	49	Number of Non-Detect Data	3
		Percent Non-Detects	5.36%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0121	Minimum Detected	-4.415
Maximum Detected	10.9	Maximum Detected	2.389
Mean of Detected	0.472	Mean of Detected	-1.827
SD of Detected	1.503	SD of Detected	1.269
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.194	Maximum Non-Detect	-1.64
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	30
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	26
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	53.57%

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.393	Lilliefors Test Statistic	0.0802
5% Lilliefors Critical Value	0.122	5% Lilliefors Critical Value	0.122
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.45	Mean	-1.916
SD	1.465	SD	1.325
95% DL/2 (t) UCL	0.777	95% H-Stat (DL/2) UCL	0.492
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.921
		SD in Log Scale	1.32
		Mean in Original Scale	0.449
		SD in Original Scale	1.465
		95% Percentile Bootstrap UCL	0.821
		95% BCA Bootstrap UCL	1.065
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.557	Data appear Lognormal at 5% Significance Level	
Theta Star	0.848		
nu star	59.05		
A-D Test Statistic	3.489	Nonparametric Statistics	
5% A-D Critical Value	0.808	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.808	Mean	0.45
5% K-S Critical Value	0.128	SD	1.452
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.196
		95% KM (t) UCL	0.777
Assuming Gamma Distribution		95% KM (z) UCL	0.772
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.777
Minimum	1.00E-09	95% KM (bootstrap t) UCL	1.883
Maximum	10.9	95% KM (BCA) UCL	0.839
Mean	0.447	95% KM (Percentile Bootstrap) UCL	0.827
Median	0.162	95% KM (Chebyshev) UCL	1.303
SD	1.466	97.5% KM (Chebyshev) UCL	1.673
k star	0.327	99% KM (Chebyshev) UCL	2.398
Theta star	1.365		
Nu star	36.66	Potential UCLs to Use	
AppChi2	23.8	95% KM (Chebyshev) UCL	1.303
95% Gamma Approximate UCL	0.688		
95% Adjusted Gamma UCL	0.696		
Note: DL/2 is not a recommended method.			

BENZENE

General Statistics			
Number of Valid Data	61	Number of Detected Data	46
Number of Distinct Detected Data	39	Number of Non-Detect Data	15
		Percent Non-Detects	24.59%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.7	Minimum Detected	-0.357
Maximum Detected	62000	Maximum Detected	11.03
Mean of Detected	7591	Mean of Detected	5.441
SD of Detected	16518	SD of Detected	3.559
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	5	Maximum Non-Detect	1.609
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	26
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	35

Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	42.62%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.514	Lilliefors Test Statistic	0.918
5% Lilliefors Critical Value	0.945	5% Lilliefors Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5724	Mean	4.091
SD	14679	SD	3.916
95% DL/2 (t) UCL	8865	95% H-Stat (DL/2) UCL	841362
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	3.715
		SD in Log Scale	4.453
		Mean in Original Scale	5724
		SD in Original Scale	14679
		95% Percentile Bootstrap UCL	9033
		95% BCA Bootstrap UCL	9885
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.21	Data do not follow a Discernable Distribution (0.05)	
Theta Star	36144		
nu star	19.32		
A-D Test Statistic	1.526	Nonparametric Statistics	
5% A-D Critical Value	0.902	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.902	Mean	5724
5% K-S Critical Value	0.144	SD	14559
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1885
		95% KM (t) UCL	8873
Assuming Gamma Distribution		95% KM (z) UCL	8824
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8864
Minimum	1.00E-09	95% KM (bootstrap t) UCL	10200
Maximum	62000	95% KM (BCA) UCL	8898
Mean	5724	95% KM (Percentile Bootstrap) UCL	8926
Median	33	95% KM (Chebyshev) UCL	13939
SD	14680	97.5% KM (Chebyshev) UCL	17494
k star	0.0925	99% KM (Chebyshev) UCL	24476
Theta star	61886		
Nu star	11.28	Potential UCLs to Use	
AppChi2	4.76	97.5% KM (Chebyshev) UCL	17494
95% Gamma Approximate UCL	13571		
95% Adjusted Gamma UCL	13870		

Note: DL/2 is not a recommended method.

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Data	27	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	26
		Percent Non-Detects	96.30%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BENZO(B)FLUORANTHENE was not processed!

BENZO(G,H,I)PERYLENE

General Statistics			
Number of Valid Data	27	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	26
		Percent Non-Detects	96.30%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BENZO(G,H,I)PERYLENE was not processed!

BENZO(K)FLUORANTHENE

General Statistics			
Number of Valid Data	27	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	26
		Percent Non-Detects	96.30%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BENZO(K)FLUORANTHENE was not processed!

BERYLLIUM

General Statistics			
Number of Valid Data	57	Number of Detected Data	19
Number of Distinct Detected Data	14	Number of Non-Detect Data	38
		Percent Non-Detects	66.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.001	Minimum Detected	-6.908
Maximum Detected	0.031	Maximum Detected	-3.474
Mean of Detected	0.00814	Mean of Detected	-5.419
SD of Detected	0.0101	SD of Detected	1.071
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	0.0346	Maximum Non-Detect	-3.364

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	57
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.666	Lilliefors Test Statistic	0.845
5% Lilliefors Critical Value	0.901	5% Lilliefors Critical Value	0.901
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00476	Mean	-6.151
SD	0.00711	SD	1.24
95% DL/2 (t) UCL	0.00634	95% H-Stat (DL/2) UCL	0.0102
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.875
		SD in Log Scale	1.385
		Mean in Original Scale	0.00316
		SD in Original Scale	0.00674
		95% Percentile Bootstrap UCL	0.00472
		95% BCA Bootstrap UCL	0.00523

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.839	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0097		
nu star	31.88		
A-D Test Statistic	1.984	Nonparametric Statistics	
5% A-D Critical Value	0.771	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.771	Mean	0.00368
5% K-S Critical Value	0.205	SD	0.00666
Data not Gamma Distributed at 5% Significance Level		SE of Mean	9.29E-04
		95% KM (t) UCL	0.00523
Assuming Gamma Distribution		95% KM (z) UCL	0.00521
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00512
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.00599
Maximum	0.032	95% KM (BCA) UCL	0.00556
Mean	0.0099	95% KM (Percentile Bootstrap) UCL	0.00537
Median	0.00751	95% KM (Chebyshev) UCL	0.00773
SD	0.00857	97.5% KM (Chebyshev) UCL	0.00948
k star	0.438	99% KM (Chebyshev) UCL	0.0129
Theta star	0.0226		
Nu star	49.98	Potential UCLs to Use	
AppChi2	34.75	95% KM (BCA) UCL	0.00556
95% Gamma Approximate UCL	0.0142		
95% Adjusted Gamma UCL	0.0144		

Note: DL/2 is not a recommended method.

BIS(2-ETHYLHEXYL)PHTHALATE

General Statistics			
Number of Valid Data	27	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	26
		Percent Non-Detects	96.30%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BIS(2-ETHYLHEXYL)PHTHALATE was not processed!

CARBON DISULFIDE

General Statistics			
Number of Valid Data	28	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	21
		Percent Non-Detects	75.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	250	Maximum Detected	5.521
Mean of Detected	81.57	Mean of Detected	3.27
SD of Detected	100.5	SD of Detected	2.045
Minimum Non-Detect	5	Minimum Non-Detect	1.609
Maximum Non-Detect	5000	Maximum Non-Detect	8.517
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	28
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.773	Shapiro Wilk Test Statistic	0.9
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	226.5	Mean	2.909
SD	550.9	SD	2.395
95% DL/2 (t) UCL	403.8	95% H-Stat (DL/2) UCL	2902
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.47
		SD in Log Scale	1.771
		Mean in Original Scale	23.44
		SD in Original Scale	58.5
		95% Percentile Bootstrap UCL	42.96
		95% BCA Bootstrap UCL	51.28
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.411	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	198.4		
nu star	5.756		
A-D Test Statistic	0.343	Nonparametric Statistics	
5% A-D Critical Value	0.748	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.748	Mean	27.42
5% K-S Critical Value	0.326	SD	63.44
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	14.48
		95% KM (t) UCL	52.09
Assuming Gamma Distribution		95% KM (z) UCL	51.24
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	50.95
Minimum	1.00E-09	95% KM (bootstrap t) UCL	98.72
Maximum	250	95% KM (BCA) UCL	71.33
Mean	60.64	95% KM (Percentile Bootstrap) UCL	62.8
Median	54.02	95% KM (Chebyshev) UCL	90.55
SD	56.03	97.5% KM (Chebyshev) UCL	117.9
k star	0.241	99% KM (Chebyshev) UCL	171.5
Theta star	252.1		
Nu star	13.47	Potential UCLs to Use	
AppChi2	6.21	95% KM (t) UCL	52.09
95% Gamma Approximate UCL	131.5		
95% Adjusted Gamma UCL	138.3		
Note: DL/2 is not a recommended method.			

CHLOROBENZENE

General Statistics			
Number of Valid Data	61	Number of Detected Data	25
Number of Distinct Detected Data	22	Number of Non-Detect Data	36
		Percent Non-Detects	59.02%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	87000	Maximum Detected	11.37
Mean of Detected	10903	Mean of Detected	6.09
SD of Detected	22925	SD of Detected	3.463
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	5000	Maximum Non-Detect	8.517
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	52

For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	85.25%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.529	Lilliefors Test Statistic	0.918
5% Lilliefors Critical Value	0.918	5% Lilliefors Critical Value	0.918
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4567	Mean	3.444
SD	15450	SD	3.68
95% DL/2 (t) UCL	7872	95% H-Stat (DL/2) UCL	169626
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.932
		SD in Log Scale	5.339
		Mean in Original Scale	4469
		SD in Original Scale	15474
		95% Percentile Bootstrap UCL	7882
		95% BCA Bootstrap UCL	9602
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.225	Data do not follow a Discernable Distribution (0.05)	
Theta Star	48481		
nu star	11.24		
A-D Test Statistic	0.942	Nonparametric Statistics	
5% A-D Critical Value	0.884	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.884	Mean	4475
5% K-S Critical Value	0.192	SD	15346
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2005
		95% KM (t) UCL	7825
Assuming Gamma Distribution		95% KM (z) UCL	7773
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7782
Minimum	1	95% KM (bootstrap t) UCL	13520
Maximum	87000	95% KM (BCA) UCL	7590
Mean	11632	95% KM (Percentile Bootstrap) UCL	8113
Median	4529	95% KM (Chebyshev) UCL	13216
SD	17711	97.5% KM (Chebyshev) UCL	16998
k star	0.4	99% KM (Chebyshev) UCL	24428
Theta star	29097		
Nu star	48.77	Potential UCLs to Use	
AppChi2	33.74	97.5% KM (Chebyshev) UCL	16998
95% Gamma Approximate UCL	16815		
95% Adjusted Gamma UCL	16967		
Note: DL/2 is not a recommended method.			

CHLOROFORM

General Statistics			
Number of Valid Data	61	Number of Detected Data	6
Number of Distinct Detected Data	4	Number of Non-Detect Data	55
		Percent Non-Detects	90.16%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	52	Maximum Detected	3.951
Mean of Detected	10.33	Mean of Detected	1.073
SD of Detected	20.45	SD of Detected	1.539
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	5000	Maximum Non-Detect	8.517

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	61
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.547	Lilliefors Test Statistic	0.774
5% Lilliefors Critical Value	0.788	5% Lilliefors Critical Value	0.788
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	153.9	Mean	1.985
SD	421.3	SD	2.563
95% DL/2 (t) UCL	244.1	95% H-Stat (DL/2) UCL	785.8
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.382
		SD in Log Scale	2.053
		Mean in Original Scale	1.228
		SD in Original Scale	6.654
		95% Percentile Bootstrap UCL	2.898
		95% BCA Bootstrap UCL	3.834
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.362	Data do not follow a Discernable Distribution (0.05)	
Theta Star	28.51		
nu star	4.349		
A-D Test Statistic	0.98	Nonparametric Statistics	
5% A-D Critical Value	0.736	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.736	Mean	2.419
5% K-S Critical Value	0.349	SD	7.686
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.29
		95% KM (t) UCL	4.574
Assuming Gamma Distribution		95% KM (z) UCL	4.54
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.417
Minimum	1	95% KM (bootstrap t) UCL	17.53
Maximum	52	95% KM (BCA) UCL	5.658
Mean	17.79	95% KM (Percentile Bootstrap) UCL	5.062
Median	14.8	95% KM (Chebyshev) UCL	8.042
SD	11.12	97.5% KM (Chebyshev) UCL	10.47
k star	2.17	99% KM (Chebyshev) UCL	15.25
Theta star	8.195		
Nu star	264.8	Potential UCLs to Use	
AppChi2	228.1	95% KM (Chebyshev) UCL	8.042
95% Gamma Approximate UCL	20.65		
95% Adjusted Gamma UCL	20.72		
Note: DL/2 is not a recommended method.			

CHROMIUM

General Statistics			
Number of Valid Data	56	Number of Detected Data	18
Number of Distinct Detected Data	18	Number of Non-Detect Data	38
		Percent Non-Detects	67.86%

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0044	Minimum Detected	-5.426
Maximum Detected	2.7	Maximum Detected	0.993
Mean of Detected	0.339	Mean of Detected	-2.722
SD of Detected	0.762	SD of Detected	1.817
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.117	Maximum Non-Detect	-2.146
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	50
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	89.29%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.471	Lilliefors Test Statistic	0.95
5% Lilliefors Critical Value	0.897	5% Lilliefors Critical Value	0.897
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.119	Mean	-4.246
SD	0.451	SD	1.809
95% DL/2 (t) UCL	0.219	95% H-Stat (DL/2) UCL	0.0859
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.941
		SD in Log Scale	2.688
		Mean in Original Scale	0.11
		SD in Original Scale	0.453
		95% Percentile Bootstrap UCL	0.222
		95% BCA Bootstrap UCL	0.271
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.371	Data appear Lognormal at 5% Significance Level	
Theta Star	0.913		
nu star	13.37		
A-D Test Statistic	1.368	Nonparametric Statistics	
5% A-D Critical Value	0.821	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.821	Mean	0.113
5% K-S Critical Value	0.218	SD	0.448
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0616
		95% KM (t) UCL	0.216
Assuming Gamma Distribution		95% KM (z) UCL	0.214
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.213
Minimum	0.0044	95% KM (bootstrap t) UCL	0.851
Maximum	2.7	95% KM (BCA) UCL	0.216
Mean	0.338	95% KM (Percentile Bootstrap) UCL	0.223
Median	0.333	95% KM (Chebyshev) UCL	0.382
SD	0.424	97.5% KM (Chebyshev) UCL	0.498
k star	1.035	99% KM (Chebyshev) UCL	0.726
Theta star	0.327		
Nu star	115.9	Potential UCLs to Use	
AppChi2	92.02	95% KM (Chebyshev) UCL	0.382
95% Gamma Approximate UCL	0.426		
95% Adjusted Gamma UCL	0.428		
Note: DL/2 is not a recommended method.			

CHRYSENE

General Statistics			
Number of Valid Data	27	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	25
		Percent Non-Detects	92.59%

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2	Minimum Detected	0.693
Maximum Detected	4	Maximum Detected	1.386
Mean of Detected	3	Mean of Detected	1.04
SD of Detected	1.414	SD of Detected	0.49
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	27
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	23.22	Mean	1.745
SD	95.29	SD	0.912
95% DL/2 (t) UCL	54.5	95% H-Stat (DL/2) UCL	14.94
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	3
5% K-S Critical Value	N/A	SD	1
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1
		95% KM (t) UCL	4.706
Assuming Gamma Distribution		95% KM (z) UCL	4.645
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.367
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	4
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	7.359
SD	N/A	97.5% KM (Chebyshev) UCL	9.245
k star	N/A	99% KM (Chebyshev) UCL	12.95

Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	4.706
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	N/A
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

COBALT

General Statistics			
Number of Valid Data	56	Number of Detected Data	12
Number of Distinct Detected Data	12	Number of Non-Detect Data	44
		Percent Non-Detects	78.57%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0034	Minimum Detected	-5.684
Maximum Detected	0.367	Maximum Detected	-1.002
Mean of Detected	0.0636	Mean of Detected	-3.519
SD of Detected	0.0999	SD of Detected	1.299
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.09	Maximum Non-Detect	-2.408
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	55
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	98.21%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.584	Lilliefors Test Statistic	0.971
5% Lilliefors Critical Value	0.859	5% Lilliefors Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0195	Mean	-5.158
SD	0.0512	SD	1.446
95% DL/2 (t) UCL	0.031	95% H-Stat (DL/2) UCL	0.0193
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.718
		SD in Log Scale	2.2
		Mean in Original Scale	0.0145
		SD in Original Scale	0.0516
		95% Percentile Bootstrap UCL	0.0274
		95% BCA Bootstrap UCL	0.0342
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.64	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0993		
nu star	15.37		
A-D Test Statistic	0.464	Nonparametric Statistics	
5% A-D Critical Value	0.765	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.765	Mean	0.0169
5% K-S Critical Value	0.255	SD	0.0507
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00711
		95% KM (t) UCL	0.0288
Assuming Gamma Distribution		95% KM (z) UCL	0.0286
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0276
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0486
Maximum	0.675	95% KM (BCA) UCL	0.0374
Mean	0.21	95% KM (Percentile Bootstrap) UCL	0.0321
Median	0.195	95% KM (Chebyshev) UCL	0.0478

SD	0.189	97.5% KM (Chebyshev) UCL	0.0613
k star	0.413	99% KM (Chebyshev) UCL	0.0876
Theta star	0.509		
Nu star	46.25	Potential UCLs to Use	
AppChi2	31.64	95% KM (t) UCL	0.0288
95% Gamma Approximate UCL	0.307		
95% Adjusted Gamma UCL	0.31		

Note: DL/2 is not a recommended method.

COPPER

General Statistics			
Number of Valid Data	56	Number of Detected Data	24
Number of Distinct Detected Data	24	Number of Non-Detect Data	32
		Percent Non-Detects	57.14%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0021	Minimum Detected	-6.166
Maximum Detected	0.651	Maximum Detected	-0.429
Mean of Detected	0.119	Mean of Detected	-3.182
SD of Detected	0.174	SD of Detected	1.604
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.06	Maximum Non-Detect	-2.813
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	46
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	82.14%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.693	Lilliefors Test Statistic	0.966
5% Lilliefors Critical Value	0.916	5% Lilliefors Critical Value	0.916
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0553	Mean	-4.456
SD	0.125	SD	1.741
95% DL/2 (t) UCL	0.0833	95% H-Stat (DL/2) UCL	0.0818
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.302
		SD in Log Scale	2.282
		Mean in Original Scale	0.0519
		SD in Original Scale	0.127
		95% Percentile Bootstrap UCL	0.0819
		95% BCA Bootstrap UCL	0.0898
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.544	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.218		
nu star	26.09		
A-D Test Statistic	0.677	Nonparametric Statistics	
5% A-D Critical Value	0.798	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.798	Mean	0.053
5% K-S Critical Value	0.187	SD	0.125
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0171
		95% KM (t) UCL	0.0816
Assuming Gamma Distribution		95% KM (z) UCL	0.0811
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0806
Minimum	0.0021	95% KM (bootstrap t) UCL	0.0966
Maximum	0.651	95% KM (BCA) UCL	0.0866
Mean	0.117	95% KM (Percentile Bootstrap) UCL	0.0821

Median	0.108	95% KM (Chebyshev) UCL	0.127
SD	0.113	97.5% KM (Chebyshev) UCL	0.16
k star	1.183	99% KM (Chebyshev) UCL	0.223
Theta star	0.099		
Nu star	132.5	Potential UCLs to Use	
AppChi2	106.9	95% KM (t) UCL	0.0816
95% Gamma Approximate UCL	0.145		
95% Adjusted Gamma UCL	0.146		

Note: DL/2 is not a recommended method.

CYANIDE

General Statistics

Number of Valid Data	28	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	18
		Percent Non-Detects	64.29%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.01	Minimum Detected	-4.605
Maximum Detected	0.643	Maximum Detected	-0.442
Mean of Detected	0.124	Mean of Detected	-2.79
SD of Detected	0.191	SD of Detected	1.172
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.604	Shapiro Wilk Test Statistic	0.951
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0476	Mean	-4.402
SD	0.125	SD	1.398
95% DL/2 (t) UCL	0.0878	95% H-Stat (DL/2) UCL	0.0457

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.352
		SD in Log Scale	2.396
		Mean in Original Scale	0.046
		SD in Original Scale	0.125
		95% Percentile Bootstrap UCL	0.0887
		95% BCA Bootstrap UCL	0.114

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	0.654	Data appear Gamma Distributed at 5% Significance Level
Theta Star	0.19	
nu star	13.07	

A-D Test Statistic	0.704	Nonparametric Statistics	
5% A-D Critical Value	0.754	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.754	Mean	0.0508
5% K-S Critical Value	0.275	SD	0.122
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0242
		95% KM (t) UCL	0.092
Assuming Gamma Distribution		95% KM (z) UCL	0.0906
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0848
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.191
Maximum	1.029	95% KM (BCA) UCL	0.113
Mean	0.3	95% KM (Percentile Bootstrap) UCL	0.101
Median	0.157	95% KM (Chebyshev) UCL	0.156
SD	0.323	97.5% KM (Chebyshev) UCL	0.202

k star	0.266	99% KM (Chebyshev) UCL	0.292
Theta star	1.128		
Nu star	14.88	Potential UCLs to Use	
AppChi2	7.18	95% KM (t) UCL	0.092
95% Gamma Approximate UCL	0.621		
95% Adjusted Gamma UCL	0.651		

Note: DL/2 is not a recommended method.

DIBENZOFURAN

General Statistics

Number of Valid Data	27	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	25
		Percent Non-Detects	92.59%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2	Minimum Detected	0.693
Maximum Detected	5	Maximum Detected	1.609
Mean of Detected	3.5	Mean of Detected	1.151
SD of Detected	2.121	SD of Detected	0.648
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	27
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	23.28	Mean	1.757
SD	95.28	SD	0.909
95% DL/2 (t) UCL	54.55	95% H-Stat (DL/2) UCL	14.9

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)
Theta Star	N/A	
nu star	N/A	

A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	3.5
5% K-S Critical Value	N/A	SD	1.5
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.5
		95% KM (t) UCL	6.058
Assuming Gamma Distribution		95% KM (z) UCL	5.967
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7.051
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	5
Median	N/A	95% KM (Chebyshev) UCL	10.04
SD	N/A	97.5% KM (Chebyshev) UCL	12.87
k star	N/A	99% KM (Chebyshev) UCL	18.42
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	6.058
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	5
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

HEXACHLOROBENZENE

General Statistics			
Number of Valid Data	27	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	26
		Percent Non-Detects	96.30%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable HEXACHLOROBENZENE was not processed!

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	27	Number of Detected Data	2
Number of Distinct Detected Data	1	Number of Non-Detect Data	25
		Percent Non-Detects	92.59%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable INDENO(1,2,3-CD)PYRENE was not processed!

IRON

General Statistics			
Number of Valid Data	55	Number of Detected Data	36
Number of Distinct Detected Data	35	Number of Non-Detect Data	19
		Percent Non-Detects	34.55%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0564	Minimum Detected	-2.875
Maximum Detected	621	Maximum Detected	6.431
Mean of Detected	51.98	Mean of Detected	2.415
SD of Detected	107.9	SD of Detected	2.207
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Maximum Non-Detect	20.5	Maximum Non-Detect	3.02
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	37
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	18
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	67.27%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.481	Lilliefors Test Statistic	0.949
5% Lilliefors Critical Value	0.935	5% Lilliefors Critical Value	0.935
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	34.32	Mean	0.571
SD	90.28	SD	3.348
95% DL/2 (t) UCL	54.7	95% H-Stat (DL/2) UCL	1341
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.844
		SD in Log Scale	2.833
		Mean in Original Scale	34.07
		SD in Original Scale	90.36
		95% Percentile Bootstrap UCL	57.35
		95% BCA Bootstrap UCL	70.74
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.408	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	127.5		
nu star	29.35		
A-D Test Statistic	0.365	Nonparametric Statistics	
5% A-D Critical Value	0.829	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.829	Mean	34.11
5% K-S Critical Value	0.157	SD	89.53
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	12.24
		95% KM (t) UCL	54.6
Assuming Gamma Distribution		95% KM (z) UCL	54.25
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	54.45
Minimum	1.00E-09	95% KM (bootstrap t) UCL	80.18
Maximum	621	95% KM (BCA) UCL	61.49
Mean	34.91	95% KM (Percentile Bootstrap) UCL	56.44
Median	5.35	95% KM (Chebyshev) UCL	87.47
SD	90.14	97.5% KM (Chebyshev) UCL	110.6
k star	0.109	99% KM (Chebyshev) UCL	155.9
Theta star	318.9		
Nu star	12.04	Potential UCLs to Use	
AppChi2	5.255	95% KM (BCA) UCL	61.49
95% Gamma Approximate UCL	80		
95% Adjusted Gamma UCL	81.88		
Note: DL/2 is not a recommended method.			

LEAD

General Statistics			
Number of Valid Data	58	Number of Detected Data	26
Number of Distinct Detected Data	24	Number of Non-Detect Data	32
		Percent Non-Detects	55.17%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0017	Minimum Detected	-6.377
Maximum Detected	0.488	Maximum Detected	-0.717
Mean of Detected	0.059	Mean of Detected	-4.035
SD of Detected	0.112	SD of Detected	1.5

Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	0.1	Maximum Non-Detect	-2.303
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	53
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.38%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.553	Lilliefors Test Statistic	0.936
5% Lilliefors Critical Value	0.92	5% Lilliefors Critical Value	0.92
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0292	Mean	-5.089
SD	0.0794	SD	1.641
95% DL/2 (t) UCL	0.0466	95% H-Stat (DL/2) UCL	0.0302
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.713
		SD in Log Scale	2.089
		Mean in Original Scale	0.0275
		SD in Original Scale	0.0797
		95% Percentile Bootstrap UCL	0.0454
		95% BCA Bootstrap UCL	0.0545
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.489	Data appear Lognormal at 5% Significance Level	
Theta Star	0.121		
nu star	25.42		
A-D Test Statistic	1.968	Nonparametric Statistics	
5% A-D Critical Value	0.806	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.806	Mean	0.0282
5% K-S Critical Value	0.181	SD	0.0788
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0106
		95% KM (t) UCL	0.0458
Assuming Gamma Distribution		95% KM (z) UCL	0.0456
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0454
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0637
Maximum	0.488	95% KM (BCA) UCL	0.0479
Mean	0.0598	95% KM (Percentile Bootstrap) UCL	0.0455
Median	0.0464	95% KM (Chebyshev) UCL	0.0742
SD	0.0766	97.5% KM (Chebyshev) UCL	0.0941
k star	0.65	99% KM (Chebyshev) UCL	0.133
Theta star	0.092		
Nu star	75.35	Potential UCLs to Use	
AppChi2	56.36	95% KM (Chebyshev) UCL	0.0742
95% Gamma Approximate UCL	0.0799		
95% Adjusted Gamma UCL	0.0805		
Note: DL/2 is not a recommended method.			

MANGANESE

General Statistics			
Number of Valid Data	55	Number of Detected Data	41
Number of Distinct Detected Data	39	Number of Non-Detect Data	14
		Percent Non-Detects	25.45%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0032	Minimum Detected	-5.745
Maximum Detected	20.4	Maximum Detected	3.016
Mean of Detected	1.491	Mean of Detected	-0.947

SD of Detected	3.33	SD of Detected	1.862
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	1.94	Maximum Non-Detect	0.663
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	48
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	87.27%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.447	Lilliefors Test Statistic	0.978
5% Lilliefors Critical Value	0.941	5% Lilliefors Critical Value	0.941
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.135	Mean	-1.837
SD	2.934	SD	2.421
95% DL/2 (t) UCL	1.797	95% H-Stat (DL/2) UCL	5.743
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.834
		SD in Log Scale	2.256
		Mean in Original Scale	1.116
		SD in Original Scale	2.938
		95% Percentile Bootstrap UCL	1.845
		95% BCA Bootstrap UCL	2.167
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.457	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.264		
nu star	37.46		
A-D Test Statistic	0.762	Nonparametric Statistics	
5% A-D Critical Value	0.819	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.819	Mean	1.121
5% K-S Critical Value	0.146	SD	2.911
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.397
		95% KM (t) UCL	1.786
Assuming Gamma Distribution		95% KM (z) UCL	1.775
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.782
Minimum	1.00E-09	95% KM (bootstrap t) UCL	2.785
Maximum	20.4	95% KM (BCA) UCL	1.852
Mean	1.137	95% KM (Percentile Bootstrap) UCL	1.824
Median	0.217	95% KM (Chebyshev) UCL	2.854
SD	2.936	97.5% KM (Chebyshev) UCL	3.603
k star	0.147	99% KM (Chebyshev) UCL	5.076
Theta star	7.724		
Nu star	16.19	Potential UCLs to Use	
AppChi2	8.1	95% KM (Chebyshev) UCL	2.854
95% Gamma Approximate UCL	2.274		
95% Adjusted Gamma UCL	2.318		
Note: DL/2 is not a recommended method.			

MERCURY

General Statistics			
Number of Valid Data	62	Number of Detected Data	28
Number of Distinct Detected Data	25	Number of Non-Detect Data	34
		Percent Non-Detects	54.84%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.70E-04	Minimum Detected	-8.217
Maximum Detected	0.166	Maximum Detected	-1.796

Mean of Detected	0.0129	Mean of Detected	-6.147
SD of Detected	0.0368	SD of Detected	1.719
Minimum Non-Detect	2.00E-04	Minimum Non-Detect	-8.517
Maximum Non-Detect	0.004	Maximum Non-Detect	-5.521
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	52
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	83.87%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.366	Lilliefors Test Statistic	0.886
5% Lilliefors Critical Value	0.924	5% Lilliefors Critical Value	0.924
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00596	Mean	-7.705
SD	0.0253	SD	1.905
95% DL/2 (t) UCL	0.0113	95% H-Stat (DL/2) UCL	0.00388
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-8.68
		SD in Log Scale	2.869
		Mean in Original Scale	0.00588
		SD in Original Scale	0.0253
		95% Percentile Bootstrap UCL	0.0118
		95% BCA Bootstrap UCL	0.014
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.354	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0366		
nu star	19.84		
A-D Test Statistic	2.918	Nonparametric Statistics	
5% A-D Critical Value	0.839	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.839	Mean	0.006
5% K-S Critical Value	0.178	SD	0.0251
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.00325
		95% KM (t) UCL	0.0114
Assuming Gamma Distribution		95% KM (z) UCL	0.0113
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0113
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0527
Maximum	0.166	95% KM (BCA) UCL	0.0121
Mean	0.0199	95% KM (Percentile Bootstrap) UCL	0.0123
Median	0.0029	95% KM (Chebyshev) UCL	0.0202
SD	0.0345	97.5% KM (Chebyshev) UCL	0.0263
k star	0.173	99% KM (Chebyshev) UCL	0.0383
Theta star	0.115		
Nu star	21.4	Potential UCLs to Use	
AppChi2	11.89	95% KM (Chebyshev) UCL	0.0202
95% Gamma Approximate UCL	0.0357		
95% Adjusted Gamma UCL	0.0363		
Note: DL/2 is not a recommended method.			

METHYLENE CHLORIDE

General Statistics			
Number of Valid Data	61	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	57
		Percent Non-Detects	93.44%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	2	Minimum Detected	0.693

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Maximum Detected	1300	Maximum Detected	7.17
Mean of Detected	393	Mean of Detected	4.415
SD of Detected	608	SD of Detected	2.704
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	5000	Maximum Non-Detect	8.517

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	61
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.725	Lilliefors Test Statistic	0.918
5% Lilliefors Critical Value	0.748	5% Lilliefors Critical Value	0.748
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	171	Mean	2.052
SD	443.4	SD	2.633
95% DL/2 (t) UCL	265.9	95% H-Stat (DL/2) UCL	859.9
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.533
		SD in Log Scale	4.792
		Mean in Original Scale	25.83
		SD in Original Scale	167.6
		95% Percentile Bootstrap UCL	68.42
		95% BCA Bootstrap UCL	92.63
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.271	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1448		
nu star	2.172		
A-D Test Statistic	0.293	Nonparametric Statistics	
5% A-D Critical Value	0.69	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.69	Mean	30.11
5% K-S Critical Value	0.413	SD	171.7
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	26.31
		95% KM (t) UCL	74.05
Assuming Gamma Distribution		95% KM (z) UCL	73.38
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	108.2
Minimum	1.00E-09	95% KM (bootstrap t) UCL	167.5
Maximum	1300	95% KM (BCA) UCL	N/A
Mean	177.1	95% KM (Percentile Bootstrap) UCL	1300
Median	1.00E-09	95% KM (Chebyshev) UCL	144.8
SD	256	97.5% KM (Chebyshev) UCL	194.4
k star	0.0698	99% KM (Chebyshev) UCL	291.9
Theta star	2537		
Nu star	8.519	Potential UCLs to Use	
AppChi2	3.039	95% KM (t) UCL	74.05
95% Gamma Approximate UCL	496.5		
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

NAPHTHALENE

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics			
Number of Valid Data	32	Number of Detected Data	17
Number of Distinct Detected Data	14	Number of Non-Detect Data	15
		Percent Non-Detects	46.88%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.1	Minimum Detected	0.0953
Maximum Detected	230	Maximum Detected	5.438
Mean of Detected	42.64	Mean of Detected	2.55
SD of Detected	65.16	SD of Detected	1.679
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	25	Maximum Non-Detect	3.219
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	26
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	81.25%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.69	Shapiro Wilk Test Statistic	0.933
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	25.08	Mean	2.044
SD	50.54	SD	1.436
95% DL/2 (t) UCL	40.23	95% H-Stat (DL/2) UCL	44.47
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.674
		SD in Log Scale	1.754
		Mean in Original Scale	24.3
		SD in Original Scale	50.89
		95% Percentile Bootstrap UCL	39.68
		95% BCA Bootstrap UCL	46.35
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.471	Data appear Lognormal at 5% Significance Level	
Theta Star	90.55		
nu star	16.01		
A-D Test Statistic	0.867	Nonparametric Statistics	
5% A-D Critical Value	0.796	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.796	Mean	24.32
5% K-S Critical Value	0.221	SD	50.07
Data not Gamma Distributed at 5% Significance Level		SE of Mean	9.137
		95% KM (t) UCL	39.81
Assuming Gamma Distribution		95% KM (z) UCL	39.35
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	39.53
Minimum	1.1	95% KM (bootstrap t) UCL	53.34
Maximum	230	95% KM (BCA) UCL	42.63
Mean	42.62	95% KM (Percentile Bootstrap) UCL	38.84
Median	42.51	95% KM (Chebyshev) UCL	64.14
SD	46.81	97.5% KM (Chebyshev) UCL	81.38
k star	0.848	99% KM (Chebyshev) UCL	115.2
Theta star	50.24		
Nu star	54.3	Potential UCLs to Use	
AppChi2	38.37	99% KM (Chebyshev) UCL	115.2
95% Gamma Approximate UCL	60.32		
95% Adjusted Gamma UCL	61.47		

Note: DL/2 is not a recommended method.

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

NICKEL

General Statistics			
Number of Valid Data	56	Number of Detected Data	19
Number of Distinct Detected Data	18	Number of Non-Detect Data	37
		Percent Non-Detects	66.07%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0105	Minimum Detected	-4.556
Maximum Detected	1.73	Maximum Detected	0.548
Mean of Detected	0.219	Mean of Detected	-2.612
SD of Detected	0.427	SD of Detected	1.445
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.411	Maximum Non-Detect	-0.889
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	54
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	96.43%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.515	Lilliefors Test Statistic	0.943
5% Lilliefors Critical Value	0.901	5% Lilliefors Critical Value	0.901
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0963	Mean	-3.679
SD	0.263	SD	1.515
95% DL/2 (t) UCL	0.155	95% H-Stat (DL/2) UCL	0.0868
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.912
		SD in Log Scale	2.092
		Mean in Original Scale	0.0768
		SD in Original Scale	0.265
		95% Percentile Bootstrap UCL	0.141
		95% BCA Bootstrap UCL	0.175
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.514	Data appear Lognormal at 5% Significance Level	
Theta Star	0.426		
nu star	19.55		
A-D Test Statistic	1.133	Nonparametric Statistics	
5% A-D Critical Value	0.796	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.796	Mean	0.0844
5% K-S Critical Value	0.209	SD	0.261
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.036
		95% KM (t) UCL	0.145
Assuming Gamma Distribution		95% KM (z) UCL	0.144
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.143
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.337
Maximum	1.73	95% KM (BCA) UCL	0.149
Mean	0.25	95% KM (Percentile Bootstrap) UCL	0.151
Median	0.166	95% KM (Chebyshev) UCL	0.241
SD	0.305	97.5% KM (Chebyshev) UCL	0.309
k star	0.343	99% KM (Chebyshev) UCL	0.442
Theta star	0.729		
Nu star	38.45	Potential UCLs to Use	
AppChi2	25.25	95% KM (BCA) UCL	0.149
95% Gamma Approximate UCL	0.381		
95% Adjusted Gamma UCL	0.385		
Note: DL/2 is not a recommended method.			

PHENANTHRENE

General Statistics			
Number of Valid Data	28	Number of Detected Data	8
Number of Distinct Detected Data	5	Number of Non-Detect Data	20
		Percent Non-Detects	71.43%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2	Minimum Detected	0.693
Maximum Detected	75	Maximum Detected	4.317
Mean of Detected	14.25	Mean of Detected	1.79
SD of Detected	25.04	SD of Detected	1.244
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	11	Maximum Non-Detect	2.398

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	26
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	92.86%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.561	Shapiro Wilk Test Statistic	0.847
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	7.661	Mean	1.664
SD	13.44	SD	0.639
95% DL/2 (t) UCL	11.99	95% H-Stat (DL/2) UCL	10.29
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.407
		SD in Log Scale	0.975
		Mean in Original Scale	7.458
		SD in Original Scale	13.83
		95% Percentile Bootstrap UCL	12.34
		95% BCA Bootstrap UCL	15.49
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.519	Data appear Lognormal at 5% Significance Level	
Theta Star	27.45		
nu star	8.307		
A-D Test Statistic	0.941	Nonparametric Statistics	
5% A-D Critical Value	0.749	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.749	Mean	6.69
5% K-S Critical Value	0.305	SD	13.48
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2.789
		95% KM (t) UCL	11.44
Assuming Gamma Distribution		95% KM (z) UCL	11.28
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	11.26
Minimum	1.00E-09	95% KM (bootstrap t) UCL	20.61
Maximum	75	95% KM (BCA) UCL	12.29
Mean	12.66	95% KM (Percentile Bootstrap) UCL	11.64
Median	10.85	95% KM (Chebyshev) UCL	18.85
SD	14.46	97.5% KM (Chebyshev) UCL	24.11

k star	0.252	99% KM (Chebyshev) UCL	34.44
Theta star	50.25		
Nu star	14.11	Potential UCLs to Use	
AppChi2	6.648	95% KM (BCA) UCL	12.29
95% Gamma Approximate UCL	26.88		
95% Adjusted Gamma UCL	28.22		

Note: DL/2 is not a recommended method.

SELENIUM

General Statistics

Number of Valid Data	48	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	43
		Percent Non-Detects	89.58%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.002	Minimum Detected	-6.215
Maximum Detected	0.0218	Maximum Detected	-3.826
Mean of Detected	0.00898	Mean of Detected	-5.075
SD of Detected	0.00813	SD of Detected	0.981
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.0341	Maximum Non-Detect	-3.378

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	48
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.885	Shapiro Wilk Test Statistic	0.963
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00787	Mean	-5.185
SD	0.00466	SD	1.01
95% DL/2 (t) UCL	0.009	95% H-Stat (DL/2) UCL	0.0145

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-7.058
		SD in Log Scale	1.362
		Mean in Original Scale	0.00215
		SD in Original Scale	0.00378
		95% Percentile Bootstrap UCL	0.00311
		95% BCA Bootstrap UCL	0.00337

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.744	Data appear Normal at 5% Significance Level	
Theta Star	0.0121		
nu star	7.437		
A-D Test Statistic	0.24	Nonparametric Statistics	
5% A-D Critical Value	0.686	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.686	Mean	0.00337
5% K-S Critical Value	0.362	SD	0.0037
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	8.27E-04

		95% KM (t) UCL	0.00475
Assuming Gamma Distribution		95% KM (z) UCL	0.00473
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00449
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.00489
Maximum	0.102	95% KM (BCA) UCL	0.0122
Mean	0.0361	95% KM (Percentile Bootstrap) UCL	0.0118
Median	0.0317	95% KM (Chebyshev) UCL	0.00697
SD	0.0294	97.5% KM (Chebyshev) UCL	0.00853
k star	0.44	99% KM (Chebyshev) UCL	0.0116
Theta star	0.082		
Nu star	42.27	Potential UCLs to Use	
AppChi2	28.37	95% KM (t) UCL	0.00475
95% Gamma Approximate UCL	0.0538	95% KM (Percentile Bootstrap) UCL	0.0118
95% Adjusted Gamma UCL	0.0545		

Note: DL/2 is not a recommended method.

SILVER

General Statistics

Number of Valid Data	56	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	52
		Percent Non-Detects	92.86%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0036	Minimum Detected	-5.627
Maximum Detected	0.0354	Maximum Detected	-3.341
Mean of Detected	0.0142	Mean of Detected	-4.614
SD of Detected	0.0144	SD of Detected	0.962
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.0944	Maximum Non-Detect	-2.36

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	56
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.809	Lilliefors Test Statistic	0.974
5% Lilliefors Critical Value	0.748	5% Lilliefors Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00796	Mean	-5.597
SD	0.0116	SD	1.144
95% DL/2 (t) UCL	0.0106	95% H-Stat (DL/2) UCL	0.018

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-8.706
		SD in Log Scale	1.826
		Mean in Original Scale	0.00128
		SD in Original Scale	0.00496
		95% Percentile Bootstrap UCL	0.00248
		95% BCA Bootstrap UCL	0.00311

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	0.55	Data appear Normal at 5% Significance Level

Theta Star	0.0258		
nu star	4.402		
A-D Test Statistic	0.324	Nonparametric Statistics	
5% A-D Critical Value	0.662	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.662	Mean	0.00449
5% K-S Critical Value	0.399	SD	0.00458
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	7.53E-04
		95% KM (t) UCL	0.00575
Assuming Gamma Distribution		95% KM (z) UCL	0.00573
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00673
Minimum	3.55E-04	95% KM (bootstrap t) UCL	0.00673
Maximum	1.087	95% KM (BCA) UCL	0.0123
Mean	0.375	95% KM (Percentile Bootstrap) UCL	0.0127
Median	0.35	95% KM (Chebyshev) UCL	0.00778
SD	0.293	97.5% KM (Chebyshev) UCL	0.0092
k star	0.886	99% KM (Chebyshev) UCL	0.012
Theta star	0.423		
Nu star	99.18	Potential UCLs to Use	
AppChi2	77.2	95% KM (t) UCL	0.00575
95% Gamma Approximate UCL	0.481	95% KM (Percentile Bootstrap) UCL	0.0127
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

TETRACHLOROETHENE

General Statistics			
Number of Valid Data	61	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	60
		Percent Non-Detects	98.36%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable TETRACHLOROETHENE was not processed!

TOLUENE

General Statistics			
Number of Valid Data	61	Number of Detected Data	17
Number of Distinct Detected Data	15	Number of Non-Detect Data	44
		Percent Non-Detects	72.13%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.38	Minimum Detected	-0.968
Maximum Detected	80000	Maximum Detected	11.29
Mean of Detected	12191	Mean of Detected	4.105
SD of Detected	24424	SD of Detected	4.548
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	2500	Maximum Non-Detect	7.824
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	56
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.80%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.578	Lilliefors Test Statistic	0.844
5% Lilliefors Critical Value	0.892	5% Lilliefors Critical Value	0.892
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	

DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3451	Mean	2.289
SD	13752	SD	3.24
95% DL/2 (t) UCL	6392	95% H-Stat (DL/2) UCL	10543
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.131
		SD in Log Scale	4.239
		Mean in Original Scale	3399
		SD in Original Scale	13764
		95% Percentile Bootstrap UCL	6544
		95% BCA Bootstrap UCL	7888
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.159	Data do not follow a Discernable Distribution (0.05)	
Theta Star	76633		
nu star	5.409		
A-D Test Statistic	1.595	Nonparametric Statistics	
5% A-D Critical Value	0.903	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.903	Mean	3399
5% K-S Critical Value	0.233	SD	13650
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1802
		95% KM (t) UCL	6409
Assuming Gamma Distribution		95% KM (z) UCL	6362
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6343
Minimum	1.00E-09	95% KM (bootstrap t) UCL	12907
Maximum	397798	95% KM (BCA) UCL	6888
Mean	30997	95% KM (Percentile Bootstrap) UCL	6630
Median	3684	95% KM (Chebyshev) UCL	11252
SD	69565	97.5% KM (Chebyshev) UCL	14650
k star	0.0893	99% KM (Chebyshev) UCL	21324
Theta star	347218		
Nu star	10.89	Potential UCLs to Use	
AppChi2	4.506	97.5% KM (Chebyshev) UCL	14650
95% Gamma Approximate UCL	74918		
95% Adjusted Gamma UCL	76609		
Note: DL/2 is not a recommended method.			

VANADIUM

General Statistics			
Number of Valid Data	56	Number of Detected Data	39
Number of Distinct Detected Data	37	Number of Non-Detect Data	17
		Percent Non-Detects	30.36%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0042	Minimum Detected	-5.473
Maximum Detected	2.63	Maximum Detected	0.967
Mean of Detected	0.247	Mean of Detected	-2.794
SD of Detected	0.585	SD of Detected	1.59
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.231	Maximum Non-Detect	-1.465
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	47
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	83.93%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.43	Lilliefors Test Statistic	0.955
5% Lilliefors Critical Value	0.939	5% Lilliefors Critical Value	0.939
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.181	Mean	-3.297
SD	0.497	SD	1.722
95% DL/2 (t) UCL	0.292	95% H-Stat (DL/2) UCL	0.239
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-3.519
		SD in Log Scale	1.811
		Mean in Original Scale	0.175
		SD in Original Scale	0.498
		95% Percentile Bootstrap UCL	0.293
		95% BCA Bootstrap UCL	0.35
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.442	Data appear Lognormal at 5% Significance Level	
Theta Star	0.559		
nu star	34.5		
A-D Test Statistic	2.501	Nonparametric Statistics	
5% A-D Critical Value	0.822	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.822	Mean	0.176
5% K-S Critical Value	0.15	SD	0.494
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0668
		95% KM (t) UCL	0.288
Assuming Gamma Distribution		95% KM (z) UCL	0.286
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.288
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.56
Maximum	2.63	95% KM (BCA) UCL	0.299
Mean	0.196	95% KM (Percentile Bootstrap) UCL	0.293
Median	0.046	95% KM (Chebyshev) UCL	0.468
SD	0.494	97.5% KM (Chebyshev) UCL	0.594
k star	0.282	99% KM (Chebyshev) UCL	0.841
Theta star	0.695		
Nu star	31.6	Potential UCLs to Use	
AppChi2	19.76	97.5% KM (Chebyshev) UCL	0.594
95% Gamma Approximate UCL	0.314		
95% Adjusted Gamma UCL	0.318		

Note: DL/2 is not a recommended method.

XYLENES, TOTAL

General Statistics			
Number of Valid Data	61	Number of Detected Data	10
Number of Distinct Detected Data	9	Number of Non-Detect Data	51
		Percent Non-Detects	83.61%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.59	Minimum Detected	-0.528
Maximum Detected	43	Maximum Detected	3.761
Mean of Detected	14.36	Mean of Detected	1.76
SD of Detected	16.61	SD of Detected	1.611
Minimum Non-Detect	3	Minimum Non-Detect	1.099
Maximum Non-Detect	7500	Maximum Non-Detect	8.923
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	61
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.797	Lilliefors Test Statistic	0.919
5% Lilliefors Critical Value	0.842	5% Lilliefors Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	257.5	Mean	2.67
SD	667.4	SD	2.481
95% DL/2 (t) UCL	400.3	95% H-Stat (DL/2) UCL	1163
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.316
		SD in Log Scale	1.239
		Mean in Original Scale	3.596
		SD in Original Scale	8.109
		95% Percentile Bootstrap UCL	5.483
		95% BCA Bootstrap UCL	6.161
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.537	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	26.73		
nu star	10.74		
A-D Test Statistic	0.369	Nonparametric Statistics	
5% A-D Critical Value	0.763	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.763	Mean	4.422
5% K-S Critical Value	0.277	SD	9.752
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.637
		95% KM (t) UCL	7.157
Assuming Gamma Distribution		95% KM (z) UCL	7.114
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7.074
Minimum	0.59	95% KM (bootstrap t) UCL	8.882
Maximum	43	95% KM (BCA) UCL	8.024
Mean	14.59	95% KM (Percentile Bootstrap) UCL	7.579
Median	14.66	95% KM (Chebyshev) UCL	11.56
SD	6.441	97.5% KM (Chebyshev) UCL	14.64
k star	3.364	99% KM (Chebyshev) UCL	20.71
Theta star	4.337		
Nu star	410.4	Potential UCLs to Use	
AppChi2	364.4	95% KM (t) UCL	7.157
95% Gamma Approximate UCL	16.43		
95% Adjusted Gamma UCL	16.48		
Note: DL/2 is not a recommended method.			

ZINC

General Statistics			
Number of Valid Data	57	Number of Detected Data	42
Number of Distinct Detected Data	40	Number of Non-Detect Data	15
		Percent Non-Detects	26.32%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0034	Minimum Detected	-5.684
Maximum Detected	1.94	Maximum Detected	0.663
Mean of Detected	0.172	Mean of Detected	-3.038
SD of Detected	0.34	SD of Detected	1.662
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.155	Maximum Non-Detect	-1.864
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	47
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	82.46%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.522	Lilliefors Test Statistic	0.913
5% Lilliefors Critical Value	0.942	5% Lilliefors Critical Value	0.942

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.131	Mean	-3.57
SD	0.299	SD	1.85
95% DL/2 (t) UCL	0.197	95% H-Stat (DL/2) UCL	0.325
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-3.777
		SD in Log Scale	1.992
		Mean in Original Scale	0.128
		SD in Original Scale	0.3
		95% Percentile Bootstrap UCL	0.199
		95% BCA Bootstrap UCL	0.216
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.478	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.359		
nu star	40.17		
A-D Test Statistic	1.406	Nonparametric Statistics	
5% A-D Critical Value	0.814	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.814	Mean	0.129
5% K-S Critical Value	0.144	SD	0.297
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0399
		95% KM (t) UCL	0.196
Assuming Gamma Distribution		95% KM (z) UCL	0.195
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.196
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.267
Maximum	1.94	95% KM (BCA) UCL	0.199
Mean	0.136	95% KM (Percentile Bootstrap) UCL	0.2
Median	0.0386	95% KM (Chebyshev) UCL	0.303
SD	0.299	97.5% KM (Chebyshev) UCL	0.378
k star	0.185	99% KM (Chebyshev) UCL	0.526
Theta star	0.735		
Nu star	21.04	Potential UCLs to Use	
AppChi2	11.62	97.5% KM (Chebyshev) UCL	0.378
95% Gamma Approximate UCL	0.246		
95% Adjusted Gamma UCL	0.25		

Note: DL/2 is not a recommended method.

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

INDENO(1,2,3-CD)PYRENE

General Statistics

Number of Valid Data	12	Number of Detected Data	11
Number of Distinct Detected Data	10	Number of Non-Detect Data	1
		Percent Non-Detects	8.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.057	Minimum Detected	-2.865
Maximum Detected	18	Maximum Detected	2.89
Mean of Detected	3.962	Mean of Detected	0.525
SD of Detected	5.18	SD of Detected	1.622
Minimum Non-Detect	9.1	Minimum Non-Detect	2.208
Maximum Non-Detect	9.1	Maximum Non-Detect	2.208

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.724	Shapiro Wilk Test Statistic	0.954
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.011	Mean	0.607
SD	4.941	SD	1.573
95% DL/2 (t) UCL	6.573	95% H-Stat (DL/2) UCL	44.49

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.505
		SD in Log Scale	1.548
		Mean in Original Scale	3.744
		SD in Original Scale	4.996
		95% Percentile Bootstrap UCL	6.232
		95% BCA Bootstrap UCL	7.196

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	0.576	Data appear Gamma Distributed at 5% Significance Level
Theta Star	6.883	
nu star	12.67	

		Nonparametric Statistics	
A-D Test Statistic	0.165		
5% A-D Critical Value	0.766	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.766	Mean	3.845
5% K-S Critical Value	0.266	SD	4.789
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.465
		95% KM (t) UCL	6.476
Assuming Gamma Distribution		95% KM (z) UCL	6.255
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.471
Minimum	0.057	95% KM (bootstrap t) UCL	9.483
Maximum	18	95% KM (BCA) UCL	6.395
Mean	3.933	95% KM (Percentile Bootstrap) UCL	6.508

Median	2.6	95% KM (Chebyshev) UCL	10.23
SD	4.94	97.5% KM (Chebyshev) UCL	12.99
k star	0.629	99% KM (Chebyshev) UCL	18.42
Theta star	6.255		
Nu star	15.09	Potential UCLs to Use Use	
AppChi2	7.325	95% KM (Chebyshev) UCL	10.23
95% Gamma Approximate UCL	8.104		
95% Adjusted Gamma UCL	9.11		

Note: DL/2 is not a recommended method.

1,2,4-TRICHLOROBENZENE

General Statistics

Number of Valid Data	12	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	4
		Percent Non-Detects	33.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.061	Minimum Detected	-2.797
Maximum Detected	13	Maximum Detected	2.565
Mean of Detected	2.801	Mean of Detected	-0.843
SD of Detected	4.845	SD of Detected	2.192
Minimum Non-Detect	0.4	Minimum Non-Detect	-0.916
Maximum Non-Detect	11	Maximum Non-Detect	2.398

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.67%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk Test Statistic	0.837
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.378	Mean	-0.81
SD	4.151	SD	1.946
95% DL/2 (t) UCL	4.53	95% H-Stat (DL/2) UCL	55.76

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.195
		SD in Log Scale	1.829
		Mean in Original Scale	1.918
		SD in Original Scale	4.079
		95% Percentile Bootstrap UCL	3.98
		95% BCA Bootstrap UCL	4.658

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	0.307	Data Follow Appr. Gamma Distribution at 5% Significance Level
Theta Star	9.125	
nu star	4.911	

A-D Test Statistic	0.798	Nonparametric Statistics	
5% A-D Critical Value	0.787	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.787	Mean	1.979
5% K-S Critical Value	0.315	SD	3.936
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	1.232
		95% KM (t) UCL	4.192
Assuming Gamma Distribution		95% KM (z) UCL	4.006
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.148
Minimum	0.061	95% KM (bootstrap t) UCL	20.93
Maximum	13	95% KM (BCA) UCL	4.177
Mean	2.843	95% KM (Percentile Bootstrap) UCL	4.049
Median	1.91	95% KM (Chebyshev) UCL	7.35
SD	3.868	97.5% KM (Chebyshev) UCL	9.675
k star	0.436	99% KM (Chebyshev) UCL	14.24
Theta star	6.523		
Nu star	10.46	Potential UCLs to Use Use	
AppChi2	4.232	95% KM (BCA) UCL	4.177
95% Gamma Approximate UCL	7.028		
95% Adjusted Gamma UCL	8.155		

Note: DL/2 is not a recommended method.

1,2-DICHLOROBENZENE

General Statistics			
Number of Valid Data	12	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	2
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.14	Minimum Detected	-1.966
Maximum Detected	420	Maximum Detected	6.04
Mean of Detected	49.89	Mean of Detected	0.971
SD of Detected	131.2	SD of Detected	2.565
Minimum Non-Detect	0.42	Minimum Non-Detect	-0.868
Maximum Non-Detect	11	Maximum Non-Detect	2.398
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	75.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.446	Shapiro Wilk Test Statistic	0.917
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	42.05	Mean	0.821
SD	120.1	SD	2.448
95% DL/2 (t) UCL	104.3	95% H-Stat (DL/2) UCL	1851
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.635
		SD in Log Scale	2.472
		Mean in Original Scale	41.65
		SD in Original Scale	120.3
		95% Percentile Bootstrap UCL	106.9
		95% BCA Bootstrap UCL	145.4

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.237	Data appear Lognormal at 5% Significance Level	
Theta Star	210.8		
nu star	4.733		
A-D Test Statistic	1.08	Nonparametric Statistics	
5% A-D Critical Value	0.837	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.837	Mean	41.67
5% K-S Critical Value	0.291	SD	115.1
Data not Gamma Distributed at 5% Significance Level		SE of Mean	35.03
		95% KM (t) UCL	104.6
Assuming Gamma Distribution		95% KM (z) UCL	99.29
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	104
Minimum	1.00E-09	95% KM (bootstrap t) UCL	1190
Maximum	420	95% KM (BCA) UCL	109.2
Mean	41.57	95% KM (Percentile Bootstrap) UCL	107.9
Median	1.1	95% KM (Chebyshev) UCL	194.4
SD	120.3	97.5% KM (Chebyshev) UCL	260.4
k star	0.148	99% KM (Chebyshev) UCL	390.2
Theta star	280		
Nu star	3.564	Potential UCLs to Use Use	
AppChi2	0.557	99% KM (Chebyshev) UCL	390.2
95% Gamma Approximate UCL	265.8		
95% Adjusted Gamma UCL	362.1		

Note: DL/2 is not a recommended method.

1,3-DICHLOROBENZENE

General Statistics			
Number of Valid Data	12	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	7
		Percent Non-Detects	58.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.064	Minimum Detected	-2.749
Maximum Detected	31	Maximum Detected	3.434
Mean of Detected	7.832	Mean of Detected	-0.392
SD of Detected	13.39	SD of Detected	2.918
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	11	Maximum Non-Detect	2.398
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.67%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.703	Shapiro Wilk Test Statistic	0.804
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.82	Mean	-0.834
SD	8.938	SD	2.029
95% DL/2 (t) UCL	8.454	95% H-Stat (DL/2) UCL	77.99
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.389
		SD in Log Scale	2.013
		Mean in Original Scale	3.345
		SD in Original Scale	8.992
		95% Percentile Bootstrap UCL	8.471
		95% BCA Bootstrap UCL	11.06
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.247	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	31.72		
nu star	2.469		
A-D Test Statistic	0.595	Nonparametric Statistics	
5% A-D Critical Value	0.745	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.745	Mean	3.379
5% K-S Critical Value	0.381	SD	8.625
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.793
		95% KM (t) UCL	8.395
Assuming Gamma Distribution		95% KM (z) UCL	7.973
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8.069
Minimum	0.064	95% KM (bootstrap t) UCL	694
Maximum	31	95% KM (BCA) UCL	9.825
Mean	8.13	95% KM (Percentile Bootstrap) UCL	9.104
Median	8.46	95% KM (Chebyshev) UCL	15.55
SD	8.253	97.5% KM (Chebyshev) UCL	20.82
k star	0.498	99% KM (Chebyshev) UCL	31.17
Theta star	16.31		
Nu star	11.96	Potential UCLs to Use Use	
AppChi2	5.203	95% KM (t) UCL	8.395
95% Gamma Approximate UCL	18.69		
95% Adjusted Gamma UCL	21.42		
Note: DL/2 is not a recommended method.			

1,4-DICHLOROBENZENE

General Statistics			
Number of Valid Data	12	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	2
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.14	Minimum Detected	-1.966
Maximum Detected	2600	Maximum Detected	7.863
Mean of Detected	311.4	Mean of Detected	0.594
SD of Detected	819.9	SD of Detected	3.476
Minimum Non-Detect	0.42	Minimum Non-Detect	-0.868
Maximum Non-Detect	11	Maximum Non-Detect	2.398
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	83.33%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	

Shapiro Wilk Test Statistic	0.455	Shapiro Wilk Test Statistic	0.683
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	259.9	Mean	0.507
SD	751.3	SD	3.227
95% DL/2 (t) UCL	649.4	95% H-Stat (DL/2) UCL	307612
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.367
		SD in Log Scale	3.193
		Mean in Original Scale	259.6
		SD in Original Scale	751.5
		95% Percentile Bootstrap UCL	650.4
		95% BCA Bootstrap UCL	909.4
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.171	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1818		
nu star	3.425		
A-D Test Statistic	1.994	Nonparametric Statistics	
5% A-D Critical Value	0.871	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.871	Mean	259.5
5% K-S Critical Value	0.296	SD	719.5
Data not Gamma Distributed at 5% Significance Level		SE of Mean	218.9
		95% KM (t) UCL	652.7
Assuming Gamma Distribution		95% KM (z) UCL	619.6
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	649.1
Minimum	0.14	95% KM (bootstrap t) UCL	567973
Maximum	2600	95% KM (BCA) UCL	692.8
Mean	311.3	95% KM (Percentile Bootstrap) UCL	650.5
Median	0.54	95% KM (Chebyshev) UCL	1214
SD	741.7	97.5% KM (Chebyshev) UCL	1627
k star	0.187	99% KM (Chebyshev) UCL	2438
Theta star	1666		
Nu star	4.486	Potential UCLs to Use Use	
AppChi2	0.922	99% KM (Chebyshev) UCL	2438
95% Gamma Approximate UCL	1514		
95% Adjusted Gamma UCL	1979		
Note: DL/2 is not a recommended method.			

2,3,7,8-TCDD Equivalent

General Statistics			
Number of Valid Observations	16	Number of Distinct Observations	16
Raw Statistics		Log-transformed Statistics	
Minimum	3.62	Minimum of Log Data	1.286
Maximum	2090	Maximum of Log Data	7.645
Mean	328.2	Mean of log Data	4.621
Median	107.8	SD of log Data	1.744
SD	551.3		
Coefficient of Variation	1.679		
Skewness	2.588		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Shapiro Wilk Test Statistic	0.62	Shapiro Wilk Test Statistic	0.957
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	569.8	95% H-UCL	2805
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1231
95% Adjusted-CLT UCL	650.2	97.5% Chebyshev (MVUE) UCL	1598
95% Modified-t UCL	584.7	99% Chebyshev (MVUE) UCL	2319
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.477	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	688.1		
nu star	15.27		
Approximate Chi Square Value (.05)	7.447	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	554.9
Adjusted Chi Square Value	6.832	95% Jackknife UCL	569.8
		95% Standard Bootstrap UCL	545.8
Anderson-Darling Test Statistic	0.56	95% Bootstrap-t UCL	901.2
Anderson-Darling 5% Critical Value	0.793	95% Hall's Bootstrap UCL	1368
Kolmogorov-Smirnov Test Statistic	0.211	95% Percentile Bootstrap UCL	573.8
Kolmogorov-Smirnov 5% Critical Value	0.227	95% BCA Bootstrap UCL	651.7
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	929
		97.5% Chebyshev(Mean, Sd) UCL	1189
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1699
95% Approximate Gamma UCL	672.9		
95% Adjusted Gamma UCL	733.4		
Potential UCL to Use		95% Approximate Gamma UCL	672.9

ACENAPHTHYLENE

General Statistics			
Number of Valid Data	12	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	7
		Percent Non-Detects	58.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.078	Minimum Detected	-2.551
Maximum Detected	0.42	Maximum Detected	-0.868
Mean of Detected	0.165	Mean of Detected	-2.029
SD of Detected	0.145	SD of Detected	0.697
Minimum Non-Detect	0.37	Minimum Non-Detect	-0.994
Maximum Non-Detect	12	Maximum Non-Detect	2.485
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.702	Shapiro Wilk Test Statistic	0.815
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.473	Mean	-0.965
SD	2.361	SD	1.656
95% DL/2 (t) UCL	2.697	95% H-Stat (DL/2) UCL	86.84
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.138
		SD in Log Scale	0.433
		Mean in Original Scale	0.133
		SD in Original Scale	0.0923
		95% Percentile Bootstrap UCL	0.182
		95% BCA Bootstrap UCL	0.211
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.064	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.155		
nu star	10.64		
A-D Test Statistic	0.656	Nonparametric Statistics	
5% A-D Critical Value	0.684	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.684	Mean	0.137
5% K-S Critical Value	0.36	SD	0.104
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0399
		95% KM (t) UCL	0.209
Assuming Gamma Distribution		95% KM (z) UCL	0.203
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.208
Minimum	0.078	95% KM (bootstrap t) UCL	0.605
Maximum	0.42	95% KM (BCA) UCL	0.208
Mean	0.167	95% KM (Percentile Bootstrap) UCL	0.204
Median	0.165	95% KM (Chebyshev) UCL	0.311
SD	0.0876	97.5% KM (Chebyshev) UCL	0.386
k star	4.084	99% KM (Chebyshev) UCL	0.534
Theta star	0.0409		
Nu star	98.02	Potential UCLs to Use Use	
AppChi2	76.18	95% KM (t) UCL	0.209
95% Gamma Approximate UCL	0.215		
95% Adjusted Gamma UCL	0.224		

Note: DL/2 is not a recommended method.

ALUMINUM

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	1350	Minimum of Log Data	7.208
Maximum	15600	Maximum of Log Data	9.655
Mean	6343	Mean of log Data	8.582
Median	5615	SD of log Data	0.642
SD	3857		
Coefficient of Variation	0.608		
Skewness	1.276		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.914	Shapiro Wilk Test Statistic	0.98
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8342	95% H-UCL	10297
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	11814
95% Adjusted-CLT UCL	8612	97.5% Chebyshev (MVUE) UCL	14144
95% Modified-t UCL	8411	99% Chebyshev (MVUE) UCL	18721
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.34	Data appear Normal at 5% Significance Level	
Theta Star	2710		
nu star	56.17		
Approximate Chi Square Value (.05)	39.94	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	8174
Adjusted Chi Square Value	37.86	95% Jackknife UCL	8342
		95% Standard Bootstrap UCL	8111
Anderson-Darling Test Statistic	0.133	95% Bootstrap-t UCL	9238
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	9884
Kolmogorov-Smirnov Test Statistic	0.107	95% Percentile Bootstrap UCL	8179
Kolmogorov-Smirnov 5% Critical Value	0.247	95% BCA Bootstrap UCL	8378
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	11196
		97.5% Chebyshev(Mean, Sd) UCL	13297
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	17422
95% Approximate Gamma UCL	8919		
95% Adjusted Gamma UCL	9409		
Potential UCL to Use		95% Student's-t UCL	8342

ARSENIC

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	5.2	Minimum of Log Data	1.649
Maximum	65.7	Maximum of Log Data	4.185
Mean	16.58	Mean of log Data	2.492
Median	12.15	SD of log Data	0.76
SD	17.15		
Coefficient of Variation	1.034		
Skewness	2.512		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.661	Shapiro Wilk Test Statistic	0.89
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	25.46	95% H-UCL	28.64
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	31.36
95% Adjusted-CLT UCL	28.55	97.5% Chebyshev (MVUE) UCL	38.15
95% Modified-t UCL	26.06	99% Chebyshev (MVUE) UCL	51.49
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.354	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	12.24		
nu star	32.51		
Approximate Chi Square Value (.05)	20.47	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	24.72

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Adjusted Chi Square Value	19.03	95% Jackknife UCL	25.46
		95% Standard Bootstrap UCL	24.23
Anderson-Darling Test Statistic	0.81	95% Bootstrap-t UCL	42.94
Anderson-Darling 5% Critical Value	0.744	95% Hall's Bootstrap UCL	64.08
Kolmogorov-Smirnov Test Statistic	0.232	95% Percentile Bootstrap UCL	25.25
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	29.52
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	38.15
		97.5% Chebyshev(Mean, Sd) UCL	47.49
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	65.82
95% Approximate Gamma UCL	26.32		
95% Adjusted Gamma UCL	28.32		
Potential UCL to Use		95% Approximate Gamma UCL	26.32

BARIUM

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	22.4	Minimum of Log Data	3.109
Maximum	557	Maximum of Log Data	6.323
Mean	150.7	Mean of log Data	4.526
Median	79.15	SD of log Data	0.963
SD	184.1		
Coefficient of Variation	1.222		
Skewness	1.948		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.622	Shapiro Wilk Test Statistic	0.894
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	246.1	95% H-UCL	336
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	319.8
95% Adjusted-CLT UCL	270	97.5% Chebyshev (MVUE) UCL	397.8
95% Modified-t UCL	251.1	99% Chebyshev (MVUE) UCL	551.1
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.926	Data appear Lognormal at 5% Significance Level	
Theta Star	162.7		
nu star	22.23		
Approximate Chi Square Value (.05)	12.51	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	238.1
Adjusted Chi Square Value	11.41	95% Jackknife UCL	246.1
		95% Standard Bootstrap UCL	235.5
Anderson-Darling Test Statistic	1.108	95% Bootstrap-t UCL	660.1
Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL	927.3
Kolmogorov-Smirnov Test Statistic	0.301	95% Percentile Bootstrap UCL	237.7
Kolmogorov-Smirnov 5% Critical Value	0.251	95% BCA Bootstrap UCL	271.1
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	382.3
		97.5% Chebyshev(Mean, Sd) UCL	482.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	679.4
95% Approximate Gamma UCL	267.7		
95% Adjusted Gamma UCL	293.5		
Potential UCL to Use		95% H-UCL	336

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

BENZENE

General Statistics			
Number of Valid Data	12	Number of Detected Data	7
Number of Distinct Detected Data	5	Number of Non-Detect Data	5
		Percent Non-Detects	41.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.002	Minimum Detected	-6.215
Maximum Detected	0.014	Maximum Detected	-4.269
Mean of Detected	0.00457	Mean of Detected	-5.649
SD of Detected	0.00431	SD of Detected	0.711
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	13	Maximum Non-Detect	2.565

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.673	Shapiro Wilk Test Statistic	0.832
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.546	Mean	-4.845
SD	1.875	SD	2.195
95% DL/2 (t) UCL	1.518	95% H-Stat (DL/2) UCL	16.68
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.714
		SD in Log Scale	0.545
		Mean in Original Scale	0.00394
		SD in Original Scale	0.0033
		95% Percentile Bootstrap UCL	0.00569
		95% BCA Bootstrap UCL	0.00668
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.277	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.00358		
nu star	17.88		
A-D Test Statistic	0.706	Nonparametric Statistics	
5% A-D Critical Value	0.715	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.715	Mean	0.004
5% K-S Critical Value	0.315	SD	0.00335
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00113
		95% KM (t) UCL	0.00603
Assuming Gamma Distribution		95% KM (z) UCL	0.00586
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.006
Minimum	0.002	95% KM (bootstrap t) UCL	0.00896

Maximum	0.014	95% KM (BCA) UCL	0.006
Mean	0.0046	95% KM (Percentile Bootstrap) UCL	0.00585
Median	0.00431	95% KM (Chebyshev) UCL	0.00892
SD	0.0032	97.5% KM (Chebyshev) UCL	0.0111
k star	2.6	99% KM (Chebyshev) UCL	0.0152
Theta star	0.00177		
Nu star	62.4	Potential UCLs to Use Use	
AppChi2	45.23	95% KM (t) UCL	0.00603
95% Gamma Approximate UCL	0.00635		
95% Adjusted Gamma UCL	0.00668		

Note: DL/2 is not a recommended method.

BENZO(A)ANTHRACENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	0.12	Minimum of Log Data	-2.12
Maximum	16	Maximum of Log Data	2.773
Mean	4.507	Mean of log Data	0.777
Median	2.45	SD of log Data	1.426
SD	5.28		
Coefficient of Variation	1.172		
Skewness	1.561		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.767	Shapiro Wilk Test Statistic	0.962
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.244	95% H-UCL	30.09
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	15.46
95% Adjusted-CLT UCL	7.748	97.5% Chebyshev (MVUE) UCL	19.89
95% Modified-t UCL	7.358	99% Chebyshev (MVUE) UCL	28.6
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.666	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	6.772		
nu star	15.97		
Approximate Chi Square Value (.05)	7.943	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	7.014
Adjusted Chi Square Value	7.094	95% Jackknife UCL	7.244
		95% Standard Bootstrap UCL	6.886
Anderson-Darling Test Statistic	0.237	95% Bootstrap-t UCL	10.56
Anderson-Darling 5% Critical Value	0.763	95% Hall's Bootstrap UCL	18.57
Kolmogorov-Smirnov Test Statistic	0.135	95% Percentile Bootstrap UCL	7.075
Kolmogorov-Smirnov 5% Critical Value	0.254	95% BCA Bootstrap UCL	7.7
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	11.15
		97.5% Chebyshev(Mean, Sd) UCL	14.03
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	19.67
95% Approximate Gamma UCL	9.063		
95% Adjusted Gamma UCL	10.15		
Potential UCL to Use		95% Approximate Gamma UCL	9.063

BENZO(A)PYRENE

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics			
Number of Valid Data	12	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	1
		Percent Non-Detects	8.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	18	Maximum Detected	2.89
Mean of Detected	4.782	Mean of Detected	0.8
SD of Detected	5.715	SD of Detected	1.483
Minimum Non-Detect	9.1	Minimum Non-Detect	2.208
Maximum Non-Detect	9.1	Maximum Non-Detect	2.208
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.778	Shapiro Wilk Test Statistic	0.969
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.763	Mean	0.859
SD	5.45	SD	1.429
95% DL/2 (t) UCL	7.588	95% H-Stat (DL/2) UCL	29.71
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.766
		SD in Log Scale	1.419
		Mean in Original Scale	4.507
		SD in Original Scale	5.532
		95% Percentile Bootstrap UCL	7.049
		95% BCA Bootstrap UCL	7.879
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.627	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	7.63		
nu star	13.79		
A-D Test Statistic	0.177	Nonparametric Statistics	
5% A-D Critical Value	0.761	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.761	Mean	4.583
5% K-S Critical Value	0.265	SD	5.288
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.611
		95% KM (t) UCL	7.476
Assuming Gamma Distribution		95% KM (z) UCL	7.233
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7.469
Minimum	0.12	95% KM (bootstrap t) UCL	10.99
Maximum	18	95% KM (BCA) UCL	7.394
Mean	4.674	95% KM (Percentile Bootstrap) UCL	7.393
Median	2.896	95% KM (Chebyshev) UCL	11.6
SD	5.462	97.5% KM (Chebyshev) UCL	14.64
k star	0.683	99% KM (Chebyshev) UCL	20.61
Theta star	6.841		
Nu star	16.4	Potential UCLs to Use Use	
AppChi2	8.244	95% KM (Chebyshev) UCL	11.6
95% Gamma Approximate UCL	9.298		
95% Adjusted Gamma UCL	10.39		

Note: DL/2 is not a recommended method.

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	0.19	Minimum of Log Data	-1.661
Maximum	23	Maximum of Log Data	3.135
Mean	6.488	Mean of log Data	1.227
Median	3.8	SD of log Data	1.343
SD	7.145		
Coefficient of Variation	1.101		
Skewness	1.572		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.797	Shapiro Wilk Test Statistic	0.964
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	10.19	95% H-UCL	35.73
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	21.17
95% Adjusted-CLT UCL	10.88	97.5% Chebyshev (MVUE) UCL	27.11
95% Modified-t UCL	10.35	99% Chebyshev (MVUE) UCL	38.78
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.736	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	8.812		
nu star	17.67		
Approximate Chi Square Value (.05)	9.154	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	9.881
Adjusted Chi Square Value	8.234	95% Jackknife UCL	10.19
		95% Standard Bootstrap UCL	9.746
Anderson-Darling Test Statistic	0.19	95% Bootstrap-t UCL	13.6
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	28.18
Kolmogorov-Smirnov Test Statistic	0.119	95% Percentile Bootstrap UCL	10.15
Kolmogorov-Smirnov 5% Critical Value	0.253	95% BCA Bootstrap UCL	10.55
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.48
		97.5% Chebyshev(Mean, Sd) UCL	19.37
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	27.01
95% Approximate Gamma UCL	12.53		
95% Adjusted Gamma UCL	13.93		
Potential UCL to Use		95% Approximate Gamma UCL	12.53

BENZO(G,H,I)PERYLENE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	0.063	Minimum of Log Data	-2.765
Maximum	23	Maximum of Log Data	3.135
Mean	4.771	Mean of log Data	0.652
Median	2	SD of log Data	1.624
SD	6.636		
Coefficient of Variation	1.391		
Skewness	2.256		

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.702	Shapiro Wilk Test Statistic	0.965
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8.212	95% H-UCL	54.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	18.98
95% Adjusted-CLT UCL	9.256	97.5% Chebyshev (MVUE) UCL	24.65
95% Modified-t UCL	8.42	99% Chebyshev (MVUE) UCL	35.8
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.557	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	8.571		
nu star	13.36		
Approximate Chi Square Value (.05)	6.136	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	7.922
Adjusted Chi Square Value	5.406	95% Jackknife UCL	8.212
		95% Standard Bootstrap UCL	7.758
Anderson-Darling Test Statistic	0.227	95% Bootstrap-t UCL	13.41
Anderson-Darling 5% Critical Value	0.772	95% Hall's Bootstrap UCL	22.49
Kolmogorov-Smirnov Test Statistic	0.137	95% Percentile Bootstrap UCL	7.907
Kolmogorov-Smirnov 5% Critical Value	0.256	95% BCA Bootstrap UCL	8.737
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	13.12
		97.5% Chebyshev(Mean, Sd) UCL	16.74
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	23.83
95% Approximate Gamma UCL	10.39		
95% Adjusted Gamma UCL	11.79		
Potential UCL to Use		95% Approximate Gamma UCL	10.39

BENZO(K)FLUORANTHENE

General Statistics			
Number of Valid Data	12	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	1
		Percent Non-Detects	8.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.068	Minimum Detected	-2.688
Maximum Detected	7.6	Maximum Detected	2.028
Mean of Detected	2.379	Mean of Detected	0.197
SD of Detected	2.523	SD of Detected	1.406
Minimum Non-Detect	9.1	Minimum Non-Detect	2.208
Maximum Non-Detect	9.1	Maximum Non-Detect	2.208
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.829	Shapiro Wilk Test Statistic	0.96
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.56	Mean	0.307
SD	2.486	SD	1.394
95% DL/2 (t) UCL	3.849	95% H-Stat (DL/2) UCL	28.74

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.197
		SD in Log Scale	1.341
		Mean in Original Scale	2.282
		SD in Original Scale	2.429
		95% Percentile Bootstrap UCL	3.41
		95% BCA Bootstrap UCL	3.709

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.698	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.409		
nu star	15.35		
A-D Test Statistic	0.149	Nonparametric Statistics	
5% A-D Critical Value	0.757	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.757	Mean	2.379
5% K-S Critical Value	0.264	SD	2.406
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.761
		95% KM (t) UCL	3.745
Assuming Gamma Distribution		95% KM (z) UCL	3.63
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.751
Minimum	0.068	95% KM (bootstrap t) UCL	4.763
Maximum	7.6	95% KM (BCA) UCL	3.737
Mean	2.355	95% KM (Percentile Bootstrap) UCL	3.659
Median	1.647	95% KM (Chebyshev) UCL	5.695
SD	2.407	97.5% KM (Chebyshev) UCL	7.13
k star	0.765	99% KM (Chebyshev) UCL	9.948
Theta star	3.079		
Nu star	18.36	Potential UCLs to Use Use	
AppChi2	9.65	95% KM (Chebyshev) UCL	5.695
95% Gamma Approximate UCL	4.48		
95% Adjusted Gamma UCL	4.969		

Note: DL/2 is not a recommended method.

CHLOROBENZENE

General Statistics			
Number of Valid Data	12	Number of Detected Data	9
Number of Distinct Detected Data	7	Number of Non-Detect Data	3
		Percent Non-Detects	25.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.001	Minimum Detected	-6.908
Maximum Detected	150	Maximum Detected	5.011
Mean of Detected	16.67	Mean of Detected	-4.292
SD of Detected	50	SD of Detected	3.633
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	0.013	Maximum Non-Detect	-4.343
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	75.00%

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.39	Shapiro Wilk Test Statistic	0.655
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	12.51	Mean	-4.492
SD	43.3	SD	3.12
95% DL/2 (t) UCL	34.95	95% H-Stat (DL/2) UCL	1874
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.654
		SD in Log Scale	3.196
		Mean in Original Scale	12.51
		SD in Original Scale	43.3
		95% Percentile Bootstrap UCL	37.5
		95% BCA Bootstrap UCL	50
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.149	Data do not follow a Discernable Distribution (0.05)	
Theta Star	111.8		
nu star	2.684		
A-D Test Statistic	2.298	Nonparametric Statistics	
5% A-D Critical Value	0.876	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.876	Mean	12.51
5% K-S Critical Value	0.312	SD	41.46
Data not Gamma Distributed at 5% Significance Level		SE of Mean	12.69
		95% KM (t) UCL	35.3
Assuming Gamma Distribution		95% KM (z) UCL	33.38
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	34.95
Minimum	0.001	95% KM (bootstrap t) UCL	129160
Maximum	150	95% KM (BCA) UCL	37.5
Mean	16.63	95% KM (Percentile Bootstrap) UCL	37.5
Median	0.0105	95% KM (Chebyshev) UCL	67.83
SD	42.64	97.5% KM (Chebyshev) UCL	91.78
k star	0.164	99% KM (Chebyshev) UCL	138.8
Theta star	101.2		
Nu star	3.942	Potential UCLs to Use Use	
AppChi2	0.699	99% KM (Chebyshev) UCL	138.8
95% Gamma Approximate UCL	93.79		
95% Adjusted Gamma UCL	125.5		

Note: DL/2 is not a recommended method.

CHROMIUM

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	8.9	Minimum of Log Data	2.186
Maximum	29	Maximum of Log Data	3.367
Mean	15.87	Mean of log Data	2.707
Median	15.7	SD of log Data	0.354
SD	5.71		
Coefficient of Variation	0.36		
Skewness	0.899		

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.913	Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	18.83	95% H-UCL	19.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	23.01
95% Adjusted-CLT UCL	19.04	97.5% Chebyshev (MVUE) UCL	26.11
95% Modified-t UCL	18.9	99% Chebyshev (MVUE) UCL	32.19
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.709	Data appear Normal at 5% Significance Level	
Theta Star	2.365		
nu star	161		
Approximate Chi Square Value (.05)	132.7	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	18.58
Adjusted Chi Square Value	128.7	95% Jackknife UCL	18.83
		95% Standard Bootstrap UCL	18.42
Anderson-Darling Test Statistic	0.334	95% Bootstrap-t UCL	19.35
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	20
Kolmogorov-Smirnov Test Statistic	0.145	95% Percentile Bootstrap UCL	18.61
Kolmogorov-Smirnov 5% Critical Value	0.246	95% BCA Bootstrap UCL	18.89
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	23.05
		97.5% Chebyshev(Mean, Sd) UCL	26.16
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	32.27
95% Approximate Gamma UCL	19.26		
95% Adjusted Gamma UCL	19.84		
Potential UCL to Use		95% Student's-t UCL	18.83

DELTA-BHC

General Statistics			
Number of Valid Data	12	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	11
		Percent Non-Detects	91.67%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DELTA-BHC was not processed!

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	12	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	4
		Percent Non-Detects	33.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.085	Minimum Detected	-2.465
Maximum Detected	5.8	Maximum Detected	1.758
Mean of Detected	1.334	Mean of Detected	-0.387
SD of Detected	1.877	SD of Detected	1.248
Minimum Non-Detect	0.42	Minimum Non-Detect	-0.868

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Maximum Non-Detect	12	Maximum Non-Detect	2.485
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk Test Statistic	0.976
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.245	Mean	0.0293
SD	2.439	SD	1.444
95% DL/2 (t) UCL	3.509	95% H-Stat (DL/2) UCL	25.36
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.523
		SD in Log Scale	1.053
		Mean in Original Scale	1.054
		SD in Original Scale	1.557
		95% Percentile Bootstrap UCL	1.86
		95% BCA Bootstrap UCL	2.235
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.626	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.131		
nu star	10.02		
A-D Test Statistic	0.412	Nonparametric Statistics	
5% A-D Critical Value	0.741	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.741	Mean	1.217
5% K-S Critical Value	0.303	SD	1.689
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.602
		95% KM (t) UCL	2.299
Assuming Gamma Distribution		95% KM (z) UCL	2.208
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.307
Minimum	0.0122	95% KM (bootstrap t) UCL	5.122
Maximum	5.8	95% KM (BCA) UCL	2.259
Mean	1.241	95% KM (Percentile Bootstrap) UCL	2.284
Median	0.92	95% KM (Chebyshev) UCL	3.842
SD	1.547	97.5% KM (Chebyshev) UCL	4.978
k star	0.645	99% KM (Chebyshev) UCL	7.21
Theta star	1.924		
Nu star	15.48	Potential UCLs to Use Use	
AppChi2	7.594	95% KM (BCA) UCL	2.259
95% Gamma Approximate UCL	2.529		
95% Adjusted Gamma UCL	2.838		

Note: DL/2 is not a recommended method.

DIELDRIN

APPENDIX K, TABLE 1
RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics			
Number of Valid Data	12	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	11
		Percent Non-Detects	91.67%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DIELDRIN was not processed!

HEXACHLOROBENZENE

General Statistics			
Number of Valid Data	12	Number of Detected Data	6
Number of Distinct Detected Data	5	Number of Non-Detect Data	6
		Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.086	Minimum Detected	-2.453
Maximum Detected	28	Maximum Detected	3.332
Mean of Detected	5.298	Mean of Detected	-0.111
SD of Detected	11.14	SD of Detected	2.066
Minimum Non-Detect	0.37	Minimum Non-Detect	-0.994
Maximum Non-Detect	12	Maximum Non-Detect	2.485

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.67%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.541	Shapiro Wilk Test Statistic	0.904
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.036	Mean	-0.0428
SD	7.862	SD	1.851
95% DL/2 (t) UCL	8.112	95% H-Stat (DL/2) UCL	81.42
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.939
		SD in Log Scale	1.68
		Mean in Original Scale	2.745
		SD in Original Scale	7.967
		95% Percentile Bootstrap UCL	7.293
		95% BCA Bootstrap UCL	9.706
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.298	Data Follow Appr. Gamma Distribution at 5% Significance Level	

Theta Star	17.77		
nu star	3.578		
A-D Test Statistic	0.702	Nonparametric Statistics	
5% A-D Critical Value	0.755	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.755	Mean	2.804
5% K-S Critical Value	0.354	SD	7.614
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	2.41
		95% KM (t) UCL	7.132
Assuming Gamma Distribution		95% KM (z) UCL	6.768
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.932
Minimum	0.086	95% KM (bootstrap t) UCL	46.34
Maximum	28	95% KM (BCA) UCL	7.728
Mean	4.605	95% KM (Percentile Bootstrap) UCL	7.429
Median	1.135	95% KM (Chebyshev) UCL	13.31
SD	7.946	97.5% KM (Chebyshev) UCL	17.85
k star	0.437	99% KM (Chebyshev) UCL	26.78
Theta star	10.55		
Nu star	10.48	Potential UCLs to Use Use	
AppChi2	4.241	95% KM (t) UCL	7.132
95% Gamma Approximate UCL	11.37		
95% Adjusted Gamma UCL	13.19		

Note: DL/2 is not a recommended method.

HEXACHLOROBUTADIENE

General Statistics			
Number of Valid Data	12	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	10
		Percent Non-Detects	83.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	1.8	Maximum Detected	0.588
Mean of Detected	0.96	Mean of Detected	-0.766
SD of Detected	1.188	SD of Detected	1.915
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	12	Maximum Non-Detect	2.485
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A

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Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.613	Mean	-0.657
SD	2.321	SD	1.553
95% DL/2 (t) UCL	2.816	95% H-Stat (DL/2) UCL	14.89
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.356	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.307
5% K-S Critical Value	N/A	SD	0.528
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.249
		95% KM (t) UCL	0.754
Assuming Gamma Distribution		95% KM (z) UCL	0.716
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.444
Minimum	N/A	95% KM (bootstrap t) UCL	0.384
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	1.8
Median	N/A	95% KM (Chebyshev) UCL	1.392
SD	N/A	97.5% KM (Chebyshev) UCL	1.861
k star	N/A	99% KM (Chebyshev) UCL	2.783
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use Use	
AppChi2	N/A	97.5% KM (Chebyshev) UCL	1.861
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

HIGHLY CHLORINATED

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.034	Minimum of Log Data	-3.381
Maximum	3.1	Maximum of Log Data	1.131
Mean	1.161	Mean of log Data	-0.623
Median	0.65	SD of log Data	1.562
SD	1.314		
Coefficient of Variation	1.132		
Skewness	1.085		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

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RAGS 3.1 - GENERAL PLANT AREA - SURFACE SOIL
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It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.76	Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2.126	95% H-UCL	56.01
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	4.792
95% Adjusted-CLT UCL	2.195	97.5% Chebyshev (MVUE) UCL	6.273
95% Modified-t UCL	2.16	99% Chebyshev (MVUE) UCL	9.181
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.537	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.163		
nu star	7.512		
Approximate Chi Square Value (.05)	2.456	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	1.978
Adjusted Chi Square Value	1.675	95% Jackknife UCL	2.126
		95% Standard Bootstrap UCL	1.909
Anderson-Darling Test Statistic	0.341	95% Bootstrap-t UCL	4.779
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	8.895
Kolmogorov-Smirnov Test Statistic	0.196	95% Percentile Bootstrap UCL	1.954
Kolmogorov-Smirnov 5% Critical Value	0.322	95% BCA Bootstrap UCL	2.004
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.326
		97.5% Chebyshev(Mean, Sd) UCL	4.262
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.103
95% Approximate Gamma UCL	3.55		
95% Adjusted Gamma UCL	5.205		
Potential UCL to Use		95% Approximate Gamma UCL	3.55
Recommended UCL exceeds the maximum observation			

IRON

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	8850	Minimum of Log Data	9.088
Maximum	45800	Maximum of Log Data	10.73
Mean	17108	Mean of log Data	9.625
Median	13850	SD of log Data	0.485
SD	10284		
Coefficient of Variation	0.601		
Skewness	2.193		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.753	Shapiro Wilk Test Statistic	0.91

Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	22439	95% H-UCL	23234
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	27369
95% Adjusted-CLT UCL	23999	97.5% Chebyshev (MVUE) UCL	31919
95% Modified-t UCL	22752	99% Chebyshev (MVUE) UCL	40857
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.252	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	5260		
nu star	78.05		
Approximate Chi Square Value (.05)	58.7	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	21990
Adjusted Chi Square Value	56.14	95% Jackknife UCL	22439
		95% Standard Bootstrap UCL	21748
Anderson-Darling Test Statistic	0.533	95% Bootstrap-t UCL	26815
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	41958
Kolmogorov-Smirnov Test Statistic	0.147	95% Percentile Bootstrap UCL	22202
Kolmogorov-Smirnov 5% Critical Value	0.246	95% BCA Bootstrap UCL	23805
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	30048
		97.5% Chebyshev(Mean, Sd) UCL	35647
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	46645
95% Approximate Gamma UCL	22748		
95% Adjusted Gamma UCL	23783		
Potential UCL to Use		95% Approximate Gamma UCL	22748

MANGANESE

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	154	Minimum of Log Data	5.037
Maximum	643	Maximum of Log Data	6.466
Mean	274.6	Mean of log Data	5.532
Median	235.5	SD of log Data	0.403
SD	133.9		
Coefficient of Variation	0.488		
Skewness	2.091		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.782	Shapiro Wilk Test Statistic	0.927
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	344	95% H-UCL	350.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	412.3
95% Adjusted-CLT UCL	363.1	97.5% Chebyshev (MVUE) UCL	473
95% Modified-t UCL	347.9	99% Chebyshev (MVUE) UCL	592.2
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.682	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	58.64		
nu star	112.4		
Approximate Chi Square Value (.05)	88.91	Nonparametric Statistics	

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Adjusted Level of Significance	0.029	95% CLT UCL	338.2
Adjusted Chi Square Value	85.73	95% Jackknife UCL	344
		95% Standard Bootstrap UCL	334.9
Anderson-Darling Test Statistic	0.472	95% Bootstrap-t UCL	403.3
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	608
Kolmogorov-Smirnov Test Statistic	0.181	95% Percentile Bootstrap UCL	334.8
Kolmogorov-Smirnov 5% Critical Value	0.246	95% BCA Bootstrap UCL	363.4
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	443.1
		97.5% Chebyshev(Mean, Sd) UCL	516
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	659.2
95% Approximate Gamma UCL	347.1		
95% Adjusted Gamma UCL	360		
Potential UCL to Use		95% Approximate Gamma UCL	347.1

MERCURY

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	0.43	Minimum of Log Data	-0.844
Maximum	2440	Maximum of Log Data	7.8
Mean	236.3	Mean of log Data	2.519
Median	6	SD of log Data	2.384
SD	697.2		
Coefficient of Variation	2.95		
Skewness	3.409		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.387	Shapiro Wilk Test Statistic	0.904
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	597.8	95% H-UCL	13824
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	482.5
95% Adjusted-CLT UCL	779	97.5% Chebyshev (MVUE) UCL	640.9
95% Modified-t UCL	630.8	99% Chebyshev (MVUE) UCL	952.1
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.237	Data appear Lognormal at 5% Significance Level	
Theta Star	996		
nu star	5.695		
Approximate Chi Square Value (.05)	1.486	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	567.4
Adjusted Chi Square Value	1.184	95% Jackknife UCL	597.8
		95% Standard Bootstrap UCL	553
Anderson-Darling Test Statistic	1.594	95% Bootstrap-t UCL	4321
Anderson-Darling 5% Critical Value	0.848	95% Hall's Bootstrap UCL	4312
Kolmogorov-Smirnov Test Statistic	0.352	95% Percentile Bootstrap UCL	624.7
Kolmogorov-Smirnov 5% Critical Value	0.269	95% BCA Bootstrap UCL	834.5
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1114
		97.5% Chebyshev(Mean, Sd) UCL	1493
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2239
95% Approximate Gamma UCL	905.7		
95% Adjusted Gamma UCL	1136		
Potential UCL to Use		99% Chebyshev (MVUE) UCL	952.1

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METHYL MERCURY

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

NICKEL

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12

Raw Statistics		Log-transformed Statistics	
Minimum	8.3	Minimum of Log Data	2.116
Maximum	4040	Maximum of Log Data	8.304
Mean	362.8	Mean of log Data	3.61
Median	26.4	SD of log Data	1.598
SD	1158		
Coefficient of Variation	3.192		
Skewness	3.463		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.339	Shapiro Wilk Test Statistic	0.692
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	963.2	95% H-UCL	953.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	349.3
95% Adjusted-CLT UCL	1270	97.5% Chebyshev (MVUE) UCL	453.3
95% Modified-t UCL	1019	99% Chebyshev (MVUE) UCL	657.5
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.282	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1288		
nu star	6.763		
Approximate Chi Square Value (.05)	2.041	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	912.7
Adjusted Chi Square Value	1.67	95% Jackknife UCL	963.2
		95% Standard Bootstrap UCL	889.2
Anderson-Darling Test Statistic	2.886	95% Bootstrap-t UCL	29813
Anderson-Darling 5% Critical Value	0.824	95% Hall's Bootstrap UCL	12086
Kolmogorov-Smirnov Test Statistic	0.491	95% Percentile Bootstrap UCL	1030
Kolmogorov-Smirnov 5% Critical Value	0.265	95% BCA Bootstrap UCL	1367
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1820
		97.5% Chebyshev(Mean, Sd) UCL	2451
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3689
95% Approximate Gamma UCL	1202		
95% Adjusted Gamma UCL	1469		

Potential UCL to Use		99% Chebyshev (Mean, Sd) UCL	3689

PHENANTHRENE

General Statistics			
Number of Valid Data	12	Number of Detected Data	11
Number of Distinct Detected Data	10	Number of Non-Detect Data	1
		Percent Non-Detects	8.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.2	Minimum Detected	-1.609
Maximum Detected	20	Maximum Detected	2.996
Mean of Detected	6.048	Mean of Detected	0.941
SD of Detected	7.35	SD of Detected	1.524
Minimum Non-Detect	12	Minimum Non-Detect	2.485
Maximum Non-Detect	12	Maximum Non-Detect	2.485
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.762	Shapiro Wilk Test Statistic	0.948
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.044	Mean	1.012
SD	7.008	SD	1.474
95% DL/2 (t) UCL	9.677	95% H-Stat (DL/2) UCL	77.46
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	7.018	Mean in Log Scale	0.89
SD	7.654	SD in Log Scale	1.464
95% MLE (t) UCL	10.99	Mean in Original Scale	5.66
95% MLE (Tiku) UCL	14.91	SD in Original Scale	7.136
		95% Percentile Bootstrap UCL	9.058
		95% BCA Bootstrap UCL	9.802
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.572	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	10.57		
nu star	12.59		
A-D Test Statistic	0.389	Nonparametric Statistics	
5% A-D Critical Value	0.766	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.766	Mean	5.706
5% K-S Critical Value	0.266	SD	6.82
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.07
		95% KM (t) UCL	9.423
Assuming Gamma Distribution		95% KM (z) UCL	9.111
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	9.411
Minimum	0.2	95% KM (bootstrap t) UCL	11.81
Maximum	20	95% KM (BCA) UCL	9.536
Mean	5.809	95% KM (Percentile Bootstrap) UCL	8.995
Median	2.638	95% KM (Chebyshev) UCL	14.73
SD	7.057	97.5% KM (Chebyshev) UCL	18.63
k star	0.617	99% KM (Chebyshev) UCL	26.3
Theta star	9.418		
Nu star	14.8	Potential UCLs to Use Use	
AppChi2	7.124	95% KM (Chebyshev) UCL	14.73

95% Gamma Approximate UCL	12.07
95% Adjusted Gamma UCL	13.59

Note: DL/2 is not a recommended method.

TOTAL PCBs

General Statistics

Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.034	Minimum of Log Data	-3.381
Maximum	3.1	Maximum of Log Data	1.131
Mean	1.161	Mean of log Data	-0.623
Median	0.65	SD of log Data	1.562
SD	1.314		
Coefficient of Variation	1.132		
Skewness	1.085		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.76	Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2.126	95% H-UCL	56.01
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	4.792
95% Adjusted-CLT UCL	2.195	97.5% Chebyshev (MVUE) UCL	6.273
95% Modified-t UCL	2.16	99% Chebyshev (MVUE) UCL	9.181
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.537	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.163		
nu star	7.512		
Approximate Chi Square Value (.05)	2.456	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	1.978
Adjusted Chi Square Value	1.675	95% Jackknife UCL	2.126
		95% Standard Bootstrap UCL	1.917
Anderson-Darling Test Statistic	0.341	95% Bootstrap-t UCL	4.82
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	8.901
Kolmogorov-Smirnov Test Statistic	0.196	95% Percentile Bootstrap UCL	1.956
Kolmogorov-Smirnov 5% Critical Value	0.322	95% BCA Bootstrap UCL	2
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.326
		97.5% Chebyshev(Mean, Sd) UCL	4.262
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.103
95% Approximate Gamma UCL	3.55		
95% Adjusted Gamma UCL	5.205		

Potential UCL to Use		95% Approximate Gamma UCL	3.55
Recommended UCL exceeds the maximum observation			

VANADIUM

General Statistics			
Number of Valid Observations	12	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	5.7	Minimum of Log Data	1.74
Maximum	31.6	Maximum of Log Data	3.453
Mean	18.55	Mean of log Data	2.821
Median	20.15	SD of log Data	0.502
SD	7.581		
Coefficient of Variation	0.409		
Skewness	-0.211		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.961	Shapiro Wilk Test Statistic	0.899
Shapiro Wilk Critical Value	0.859	Shapiro Wilk Critical Value	0.859
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	22.48	95% H-UCL	26.34
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	31
95% Adjusted-CLT UCL	22.01	97.5% Chebyshev (MVUE) UCL	36.27
95% Modified-t UCL	22.46	99% Chebyshev (MVUE) UCL	46.61
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.96	Data appear Normal at 5% Significance Level	
Theta Star	4.684		
nu star	95.04		
Approximate Chi Square Value (.05)	73.56	Nonparametric Statistics	
Adjusted Level of Significance	0.029	95% CLT UCL	22.15
Adjusted Chi Square Value	70.68	95% Jackknife UCL	22.48
		95% Standard Bootstrap UCL	22.07
Anderson-Darling Test Statistic	0.478	95% Bootstrap-t UCL	22.26
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	22.1
Kolmogorov-Smirnov Test Statistic	0.182	95% Percentile Bootstrap UCL	22.04
Kolmogorov-Smirnov 5% Critical Value	0.246	95% BCA Bootstrap UCL	22.02
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28.09
		97.5% Chebyshev(Mean, Sd) UCL	32.22
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	40.32
95% Approximate Gamma UCL	23.97		
95% Adjusted Gamma UCL	24.94		
Potential UCL to Use		95% Student's-t UCL	22.48

APPENDIX K, TABLE 2
RAGS 3.3 - GENERAL PLANT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ALUMINUM

General Statistics

Number of Valid Observations	14	Number of Distinct Observations	14

Raw Statistics		Log-transformed Statistics	
Minimum	1350	Minimum of Log Data	7.208
Maximum	15600	Maximum of Log Data	9.655
Mean	6912	Mean of log Data	8.673
Median	6205	SD of log Data	0.64
SD	3926		
Coefficient of Variation	0.568		
Skewness	0.839		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.953	Shapiro Wilk Test Statistic	0.972
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8770	95% H-UCL	10727
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	12540
95% Adjusted-CLT UCL	8889	97.5% Chebyshev (MVUE) UCL	14915
95% Modified-t UCL	8809	99% Chebyshev (MVUE) UCL	19579

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.511	Data appear Normal at 5% Significance Level	
Theta Star	2752		
nu star	70.32		
Approximate Chi Square Value (.05)	52.01	Nonparametric Statistics	
Adjusted Level of Significance	0.0312	95% CLT UCL	8638
Adjusted Chi Square Value	49.93	95% Jackknife UCL	8770
		95% Standard Bootstrap UCL	8627
Anderson-Darling Test Statistic	0.0875	95% Bootstrap-t UCL	9152
Anderson-Darling 5% Critical Value	0.742	95% Hall's Bootstrap UCL	9217
Kolmogorov-Smirnov Test Statistic	0.0721	95% Percentile Bootstrap UCL	8548
Kolmogorov-Smirnov 5% Critical Value	0.23	95% BCA Bootstrap UCL	8851
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	11486
		97.5% Chebyshev(Mean, Sd) UCL	13464
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	17352
95% Approximate Gamma UCL	9345		
95% Adjusted Gamma UCL	9735		

Potential UCL to Use		95% Student's-t UCL	8770

ARSENIC

General Statistics

Number of Valid Observations	14	Number of Distinct Observations	14

Raw Statistics		Log-transformed Statistics	
Minimum	5.2	Minimum of Log Data	1.649
Maximum	65.7	Maximum of Log Data	4.185
Mean	16.58	Mean of log Data	2.529

Median	12.15	SD of log Data	0.718
SD	15.92		
Coefficient of Variation	0.961		
Skewness	2.579		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.681	Shapiro Wilk Test Statistic	0.921
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	24.12	95% H-UCL	25.98
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	29.86
95% Adjusted-CLT UCL	26.71	97.5% Chebyshev (MVUE) UCL	35.91
95% Modified-t UCL	24.6	99% Chebyshev (MVUE) UCL	47.8
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.573	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	10.54		
nu star	44.03		
Approximate Chi Square Value (.05)	29.81	Nonparametric Statistics	
Adjusted Level of Significance	0.0312	95% CLT UCL	23.58
Adjusted Chi Square Value	28.27	95% Jackknife UCL	24.12
		95% Standard Bootstrap UCL	23.12
Anderson-Darling Test Statistic	0.683	95% Bootstrap-t UCL	32.98
Anderson-Darling 5% Critical Value	0.746	95% Hall's Bootstrap UCL	54.84
Kolmogorov-Smirnov Test Statistic	0.19	95% Percentile Bootstrap UCL	23.93
Kolmogorov-Smirnov 5% Critical Value	0.232	95% BCA Bootstrap UCL	27.18
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	35.13
		97.5% Chebyshev(Mean, Sd) UCL	43.16
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	58.93
95% Approximate Gamma UCL	24.48		
95% Adjusted Gamma UCL	25.82		
Potential UCL to Use		95% Approximate Gamma UCL	24.48

BARIUM

General Statistics			
Number of Valid Observations	14	Number of Distinct Observations	14
Raw Statistics		Log-transformed Statistics	
Minimum	22.4	Minimum of Log Data	3.109
Maximum	557	Maximum of Log Data	6.323
Mean	134.5	Mean of log Data	4.395
Median	75.4	SD of log Data	0.95
SD	174.3		
Coefficient of Variation	1.296		
Skewness	2.165		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.595	Shapiro Wilk Test Statistic	0.89
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	217	95% H-UCL	259.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	267.4
95% Adjusted-CLT UCL	239.9	97.5% Chebyshev (MVUE) UCL	330.4
95% Modified-t UCL	221.5	99% Chebyshev (MVUE) UCL	454.2
Gamma Distribution Test		Data Distribution	

APPENDIX K, TABLE 2
RAGS 3.3 - GENERAL PLANT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

k star (bias corrected)	0.93	Data appear Lognormal at 5% Significance Level	
Theta Star	144.6		
nu star	26.05		
Approximate Chi Square Value (.05)	15.42	Nonparametric Statistics	
Adjusted Level of Significance	0.0312	95% CLT UCL	211.1
Adjusted Chi Square Value	14.34	95% Jackknife UCL	217
		95% Standard Bootstrap UCL	207.2
Anderson-Darling Test Statistic	1.248	95% Bootstrap-t UCL	526.8
Anderson-Darling 5% Critical Value	0.758	95% Hall's Bootstrap UCL	738.7
Kolmogorov-Smirnov Test Statistic	0.277	95% Percentile Bootstrap UCL	209.7
Kolmogorov-Smirnov 5% Critical Value	0.235	95% BCA Bootstrap UCL	238.1
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	337.5
		97.5% Chebyshev(Mean, Sd) UCL	425.4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	597.9
95% Approximate Gamma UCL	227.3		
95% Adjusted Gamma UCL	244.3		
Potential UCL to Use		95% H-UCL	259.8

CHROMIUM

General Statistics			
Number of Valid Observations	14	Number of Distinct Observations	13
Raw Statistics		Log-transformed Statistics	
Minimum	8.9	Minimum of Log Data	2.186
Maximum	29	Maximum of Log Data	3.367
Mean	15.14	Mean of log Data	2.66
Median	13.85	SD of log Data	0.347
SD	5.567		
Coefficient of Variation	0.368		
Skewness	1.119		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.891	Shapiro Wilk Test Statistic	0.943
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	17.78	95% H-UCL	18.29
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	21.31
95% Adjusted-CLT UCL	18.07	97.5% Chebyshev (MVUE) UCL	23.98
95% Modified-t UCL	17.85	99% Chebyshev (MVUE) UCL	29.25
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	7.004	Data appear Normal at 5% Significance Level	
Theta Star	2.162		
nu star	196.1		
Approximate Chi Square Value (.05)	164.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0312	95% CLT UCL	17.59
Adjusted Chi Square Value	160.9	95% Jackknife UCL	17.78
		95% Standard Bootstrap UCL	17.5
Anderson-Darling Test Statistic	0.391	95% Bootstrap-t UCL	18.3
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	18.82
Kolmogorov-Smirnov Test Statistic	0.135	95% Percentile Bootstrap UCL	17.62
Kolmogorov-Smirnov 5% Critical Value	0.229	95% BCA Bootstrap UCL	17.89
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	21.63
		97.5% Chebyshev(Mean, Sd) UCL	24.43
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	29.95
95% Approximate Gamma UCL	18.03		
95% Adjusted Gamma UCL	18.46		
Potential UCL to Use		95% Student's-t UCL	17.78

APPENDIX K, TABLE 2
RAGS 3.3 - GENERAL PLANT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

IRON

General Statistics			
Number of Valid Observations	14	Number of Distinct Observations	14
Raw Statistics		Log-transformed Statistics	
Minimum	8850	Minimum of Log Data	9.088
Maximum	45800	Maximum of Log Data	10.73
Mean	16291	Mean of log Data	9.583
Median	13100	SD of log Data	0.463
SD	9710		
Coefficient of Variation	0.596		
Skewness	2.39		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.724	Shapiro Wilk Test Statistic	0.893
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	20887	95% H-UCL	20912
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	24885
95% Adjusted-CLT UCL	22332	97.5% Chebyshev (MVUE) UCL	28718
95% Modified-t UCL	21164	99% Chebyshev (MVUE) UCL	36248
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.576	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	4556		
nu star	100.1		
Approximate Chi Square Value (.05)	78.04	Nonparametric Statistics	
Adjusted Level of Significance	0.0312	95% CLT UCL	20560
Adjusted Chi Square Value	75.46	95% Jackknife UCL	20887
		95% Standard Bootstrap UCL	20372
Anderson-Darling Test Statistic	0.688	95% Bootstrap-t UCL	25133
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	37727
Kolmogorov-Smirnov Test Statistic	0.178	95% Percentile Bootstrap UCL	20679
Kolmogorov-Smirnov 5% Critical Value	0.23	95% BCA Bootstrap UCL	22367
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	27604
		97.5% Chebyshev(Mean, Sd) UCL	32498
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	42113
95% Approximate Gamma UCL	20902		
95% Adjusted Gamma UCL	21617		
Potential UCL to Use		95% Approximate Gamma UCL	20902

MANGANESE

General Statistics			
Number of Valid Observations	14	Number of Distinct Observations	13
Raw Statistics		Log-transformed Statistics	
Minimum	154	Minimum of Log Data	5.037
Maximum	643	Maximum of Log Data	6.466
Mean	269.4	Mean of log Data	5.514
Median	235.5	SD of log Data	0.401
SD	128.2		
Coefficient of Variation	0.476		
Skewness	2.03		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	

APPENDIX K, TABLE 2
RAGS 3.3 - GENERAL PLANT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Shapiro Wilk Test Statistic	0.792	Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	330.1	95% H-UCL	335.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	394.5
95% Adjusted-CLT UCL	345.7	97.5% Chebyshev (MVUE) UCL	449.5
95% Modified-t UCL	333.2	99% Chebyshev (MVUE) UCL	557.6
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.96	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	54.32		
nu star	138.9		
Approximate Chi Square Value (.05)	112.7	Nonparametric Statistics	
Adjusted Level of Significance	0.0312	95% CLT UCL	325.8
Adjusted Chi Square Value	109.5	95% Jackknife UCL	330.1
		95% Standard Bootstrap UCL	321.9
Anderson-Darling Test Statistic	0.465	95% Bootstrap-t UCL	365.7
Anderson-Darling 5% Critical Value	0.737	95% Hall's Bootstrap UCL	579.8
Kolmogorov-Smirnov Test Statistic	0.14	95% Percentile Bootstrap UCL	330.6
Kolmogorov-Smirnov 5% Critical Value	0.229	95% BCA Bootstrap UCL	351.2
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	418.8
		97.5% Chebyshev(Mean, Sd) UCL	483.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	610.4
95% Approximate Gamma UCL	332.2		
95% Adjusted Gamma UCL	341.7		
Potential UCL to Use		95% Approximate Gamma UCL	332.2

MERCURY

General Statistics			
Number of Valid Observations	23	Number of Distinct Observations	22
Raw Statistics		Log-transformed Statistics	
Minimum	0.43	Minimum of Log Data	-0.844
Maximum	2440	Maximum of Log Data	7.8
Mean	141.5	Mean of log Data	2.427
Median	9.3	SD of log Data	2.057
SD	505.2		
Coefficient of Variation	3.57		
Skewness	4.67		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.293	Shapiro Wilk Test Statistic	0.932
Shapiro Wilk Critical Value	0.914	Shapiro Wilk Critical Value	0.914
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	322.4	95% H-UCL	579.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	251.7
95% Adjusted-CLT UCL	424.4	97.5% Chebyshev (MVUE) UCL	328.4
95% Modified-t UCL	339.5	99% Chebyshev (MVUE) UCL	479.2
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.27	Data appear Lognormal at 5% Significance Level	
Theta Star	524.9		
nu star	12.4		
Approximate Chi Square Value (.05)	5.492	Nonparametric Statistics	
Adjusted Level of Significance	0.0389	95% CLT UCL	314.8
Adjusted Chi Square Value	5.162	95% Jackknife UCL	322.4
		95% Standard Bootstrap UCL	309.9

Anderson-Darling Test Statistic	2.7	95% Bootstrap-t UCL	1367
Anderson-Darling 5% Critical Value	0.859	95% Hall's Bootstrap UCL	1098
Kolmogorov-Smirnov Test Statistic	0.334	95% Percentile Bootstrap UCL	349.5
Kolmogorov-Smirnov 5% Critical Value	0.198	95% BCA Bootstrap UCL	463.8
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	600.7
		97.5% Chebyshev(Mean, Sd) UCL	799.4
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1190
95% Approximate Gamma UCL	319.5		
95% Adjusted Gamma UCL	340		
Potential UCL to Use		97.5% Chebyshev (MVUE) UCL	328.4

NICKEL

General Statistics			
Number of Valid Observations	14	Number of Distinct Observations	14
Raw Statistics		Log-transformed Statistics	
Minimum	8.3	Minimum of Log Data	2.116
Maximum	4040	Maximum of Log Data	8.304
Mean	312.7	Mean of log Data	3.438
Median	20	SD of log Data	1.537
SD	1073		
Coefficient of Variation	3.432		
Skewness	3.74		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.309	Shapiro Wilk Test Statistic	0.688
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	820.5	95% H-UCL	504
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	262.9
95% Adjusted-CLT UCL	1091	97.5% Chebyshev (MVUE) UCL	339
95% Modified-t UCL	868.2	99% Chebyshev (MVUE) UCL	488.5
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.283	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1106		
nu star	7.913		
Approximate Chi Square Value (.05)	2.685	Nonparametric Statistics	
Adjusted Level of Significance	0.0312	95% CLT UCL	784.3
Adjusted Chi Square Value	2.298	95% Jackknife UCL	820.5
		95% Standard Bootstrap UCL	773.6
Anderson-Darling Test Statistic	3.394	95% Bootstrap-t UCL	22894
Anderson-Darling 5% Critical Value	0.832	95% Hall's Bootstrap UCL	10791
Kolmogorov-Smirnov Test Statistic	0.482	95% Percentile Bootstrap UCL	885.3
Kolmogorov-Smirnov 5% Critical Value	0.248	95% BCA Bootstrap UCL	1173
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1563
		97.5% Chebyshev(Mean, Sd) UCL	2103
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3166
95% Approximate Gamma UCL	921.5		
95% Adjusted Gamma UCL	1077		
Potential UCL to Use		99% Chebyshev (Mean, Sd) UCL	3166

VANADIUM

General Statistics			
Number of Valid Observations	14	Number of Distinct Observations	14

APPENDIX K, TABLE 2
RAGS 3.3 - GENERAL PLANT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Raw Statistics		Log-transformed Statistics	
Minimum	5.7	Minimum of Log Data	1.74
Maximum	43.6	Maximum of Log Data	3.775
Mean	20.83	Mean of log Data	2.919
Median	21.8	SD of log Data	0.535
SD	9.742		
Coefficient of Variation	0.468		
Skewness	0.641		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.948	Shapiro Wilk Test Statistic	0.935
Shapiro Wilk Critical Value	0.874	Shapiro Wilk Critical Value	0.874
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	25.44	95% H-UCL	28.98
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	34.7
95% Adjusted-CLT UCL	25.59	97.5% Chebyshev (MVUE) UCL	40.57
95% Modified-t UCL	25.51	99% Chebyshev (MVUE) UCL	52.11
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.522	Data appear Normal at 5% Significance Level	
Theta Star	5.914		
nu star	98.61		
Approximate Chi Square Value (.05)	76.71	Nonparametric Statistics	
Adjusted Level of Significance	0.0312	95% CLT UCL	25.11
Adjusted Chi Square Value	74.15	95% Jackknife UCL	25.44
		95% Standard Bootstrap UCL	24.96
Anderson-Darling Test Statistic	0.373	95% Bootstrap-t UCL	25.55
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	26.93
Kolmogorov-Smirnov Test Statistic	0.148	95% Percentile Bootstrap UCL	25.17
Kolmogorov-Smirnov 5% Critical Value	0.23	95% BCA Bootstrap UCL	25.39
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	32.18
		97.5% Chebyshev(Mean, Sd) UCL	37.09
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	46.74
95% Approximate Gamma UCL	26.78		
95% Adjusted Gamma UCL	27.7		
Potential UCL to Use		95% Student's-t UCL	25.44

HIGHLY CHLORINATED

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11

Raw Statistics		Log-transformed Statistics	
Minimum	0.034	Minimum of Log Data	-3.381
Maximum	3.1	Maximum of Log Data	1.131
Mean	0.916	Mean of log Data	-0.817
Median	0.6	SD of log Data	1.448
SD	1.089		
Coefficient of Variation	1.189		
Skewness	1.651		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.715	Shapiro Wilk Test Statistic	0.91
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.511	95% H-UCL	7.595
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.276

95% Adjusted-CLT UCL	1.631	97.5% Chebyshev (MVUE) UCL	4.229
95% Modified-t UCL	1.538	99% Chebyshev (MVUE) UCL	6.1
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.651	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.407		
nu star	14.32		
Approximate Chi Square Value (.05)	6.792	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	1.456
Adjusted Chi Square Value	5.967	95% Jackknife UCL	1.511
		95% Standard Bootstrap UCL	1.436
Anderson-Darling Test Statistic	0.414	95% Bootstrap-t UCL	2.738
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	5.328
Kolmogorov-Smirnov Test Statistic	0.193	95% Percentile Bootstrap UCL	1.464
Kolmogorov-Smirnov 5% Critical Value	0.264	95% BCA Bootstrap UCL	1.611
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.348
		97.5% Chebyshev(Mean, Sd) UCL	2.967
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.184
95% Approximate Gamma UCL	1.931		
95% Adjusted Gamma UCL	2.199		
Potential UCL to Use		95% Approximate Gamma UCL	1.931

TOTAL PCBs

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	0.034	Minimum of Log Data	-3.381
Maximum	3.1	Maximum of Log Data	1.131
Mean	0.916	Mean of log Data	-0.817
Median	0.6	SD of log Data	1.448
SD	1.089		
Coefficient of Variation	1.189		
Skewness	1.651		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.715	Shapiro Wilk Test Statistic	0.91
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.511	95% H-UCL	7.595
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.276
95% Adjusted-CLT UCL	1.631	97.5% Chebyshev (MVUE) UCL	4.229
95% Modified-t UCL	1.538	99% Chebyshev (MVUE) UCL	6.1
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.651	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.407		
nu star	14.32		
Approximate Chi Square Value (.05)	6.792	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	1.456
Adjusted Chi Square Value	5.967	95% Jackknife UCL	1.511
		95% Standard Bootstrap UCL	1.436
Anderson-Darling Test Statistic	0.414	95% Bootstrap-t UCL	2.738
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	5.328
Kolmogorov-Smirnov Test Statistic	0.193	95% Percentile Bootstrap UCL	1.464
Kolmogorov-Smirnov 5% Critical Value	0.264	95% BCA Bootstrap UCL	1.611
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.348
		97.5% Chebyshev(Mean, Sd) UCL	2.967
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.184

95% Approximate Gamma UCL	1.931
95% Adjusted Gamma UCL	2.199

Potential UCL to Use		95% Approximate Gamma UCL	1.931

DELTA-BHC

General Statistics			
Number of Valid Data	16	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	15
		Percent Non-Detects	93.75%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DELTA-BHC was not processed!

DIELDRIN

General Statistics			
Number of Valid Data	16	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	15
		Percent Non-Detects	93.75%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DIELDRIN was not processed!

ACENAPHTHYLENE

General Statistics			
Number of Valid Data	14	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	9
		Percent Non-Detects	64.29%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.078	Minimum Detected	-2.551
Maximum Detected	0.42	Maximum Detected	-0.868
Mean of Detected	0.165	Mean of Detected	-2.029
SD of Detected	0.145	SD of Detected	0.697
Minimum Non-Detect	0.37	Minimum Non-Detect	-0.994
Maximum Non-Detect	56	Maximum Non-Detect	4.025

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.702	Shapiro Wilk Test Statistic	0.815
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.302	Mean	-0.632
SD	7.437	SD	1.906
95% DL/2 (t) UCL	6.822	95% H-Stat (DL/2) UCL	123.6
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.141
		SD in Log Scale	0.398
		Mean in Original Scale	0.13
		SD in Original Scale	0.0851
		95% Percentile Bootstrap UCL	0.172
		95% BCA Bootstrap UCL	0.199
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.064	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.155		
nu star	10.64		
A-D Test Statistic	0.656	Nonparametric Statistics	
5% A-D Critical Value	0.684	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.684	Mean	0.137
5% K-S Critical Value	0.36	SD	0.104
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0399
		95% KM (t) UCL	0.208
Assuming Gamma Distribution		95% KM (z) UCL	0.203
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.207
Minimum	0.078	95% KM (bootstrap t) UCL	0.669
Maximum	0.42	95% KM (BCA) UCL	0.21
Mean	0.168	95% KM (Percentile Bootstrap) UCL	0.205
Median	0.166	95% KM (Chebyshev) UCL	0.311
SD	0.0806	97.5% KM (Chebyshev) UCL	0.386
k star	4.947	99% KM (Chebyshev) UCL	0.534
Theta star	0.034		
Nu star	138.5	Potential UCLs to Use	
AppChi2	112.3	95% KM (t) UCL	0.208
95% Gamma Approximate UCL	0.207		
95% Adjusted Gamma UCL	0.213		

Note: DL/2 is not a recommended method.

BENZO(A)ANTHRACENE

General Statistics			
Number of Valid Data	14	Number of Detected Data	12
Number of Distinct Detected Data	11	Number of Non-Detect Data	2
		Percent Non-Detects	14.29%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	16	Maximum Detected	2.773
Mean of Detected	4.507	Mean of Detected	0.777
SD of Detected	5.28	SD of Detected	1.426
Minimum Non-Detect	1.1	Minimum Non-Detect	0.0953
Maximum Non-Detect	56	Maximum Non-Detect	4.025
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.767	Shapiro Wilk Test Statistic	0.962
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859

APPENDIX K, TABLE 2
RAGS 3.3 - GENERAL PLANT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.902	Mean	0.862
SD	8.072	SD	1.537
95% DL/2 (t) UCL	9.723	95% H-Stat (DL/2) UCL	47.89
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.613
		SD in Log Scale	1.432
		Mean in Original Scale	4.014
		SD in Original Scale	5.026
		95% Percentile Bootstrap UCL	6.247
		95% BCA Bootstrap UCL	6.906
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.666	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	6.772		
nu star	15.97		
A-D Test Statistic	0.237	Nonparametric Statistics	
5% A-D Critical Value	0.763	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.763	Mean	4.178
5% K-S Critical Value	0.254	SD	4.988
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.445
		95% KM (t) UCL	6.738
Assuming Gamma Distribution		95% KM (z) UCL	6.555
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.736
Minimum	1.00E-09	95% KM (bootstrap t) UCL	9.621
Maximum	16	95% KM (BCA) UCL	6.817
Mean	4.183	95% KM (Percentile Bootstrap) UCL	6.618
Median	2.45	95% KM (Chebyshev) UCL	10.48
SD	5.004	97.5% KM (Chebyshev) UCL	13.2
k star	0.298	99% KM (Chebyshev) UCL	18.56
Theta star	14.01		
Nu star	8.358	Potential UCLs to Use	
AppChi2	2.944	95% KM (Chebyshev) UCL	10.48
95% Gamma Approximate UCL	11.88		
95% Adjusted Gamma UCL	13.8		
Note: DL/2 is not a recommended method.			

BENZO(A)PYRENE

General Statistics			
Number of Valid Data	14	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	3
		Percent Non-Detects	21.43%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	18	Maximum Detected	2.89
Mean of Detected	4.782	Mean of Detected	0.8
SD of Detected	5.715	SD of Detected	1.483
Minimum Non-Detect	1.1	Minimum Non-Detect	0.0953
Maximum Non-Detect	56	Maximum Non-Detect	4.025
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.778	Shapiro Wilk Test Statistic	0.969

5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.121	Mean	0.932
SD	8.127	SD	1.535
95% DL/2 (t) UCL	9.968	95% H-Stat (DL/2) UCL	58.1
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.625
		SD in Log Scale	1.383
		Mean in Original Scale	4.011
		SD in Original Scale	5.249
		95% Percentile Bootstrap UCL	6.522
		95% BCA Bootstrap UCL	7.102
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.627	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	7.63		
nu star	13.79		
A-D Test Statistic	0.177	Nonparametric Statistics	
5% A-D Critical Value	0.761	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.761	Mean	4.255
5% K-S Critical Value	0.265	SD	5.202
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.522
		95% KM (t) UCL	6.951
Assuming Gamma Distribution		95% KM (z) UCL	6.759
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.942
Minimum	0.12	95% KM (bootstrap t) UCL	10.16
Maximum	18	95% KM (BCA) UCL	6.933
Mean	4.564	95% KM (Percentile Bootstrap) UCL	6.877
Median	3.2	95% KM (Chebyshev) UCL	10.89
SD	5.089	97.5% KM (Chebyshev) UCL	13.76
k star	0.773	99% KM (Chebyshev) UCL	19.4
Theta star	5.908		
Nu star	21.63	Potential UCLs to Use	
AppChi2	12.06	95% KM (Chebyshev) UCL	10.89
95% Gamma Approximate UCL	8.185		
95% Adjusted Gamma UCL	8.876		
Note: DL/2 is not a recommended method.			

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Data	14	Number of Detected Data	12
Number of Distinct Detected Data	12	Number of Non-Detect Data	2
		Percent Non-Detects	14.29%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.19	Minimum Detected	-1.661
Maximum Detected	23	Maximum Detected	3.135
Mean of Detected	6.488	Mean of Detected	1.227
SD of Detected	7.145	SD of Detected	1.343
Minimum Non-Detect	1.1	Minimum Non-Detect	0.0953
Maximum Non-Detect	56	Maximum Non-Detect	4.025
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	

Shapiro Wilk Test Statistic	0.797	Shapiro Wilk Test Statistic	0.964
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	7.601	Mean	1.247
SD	8.954	SD	1.457
95% DL/2 (t) UCL	11.84	95% H-Stat (DL/2) UCL	48.81
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.072
		SD in Log Scale	1.347
		Mean in Original Scale	5.805
		SD in Original Scale	6.816
		95% Percentile Bootstrap UCL	9.128
		95% BCA Bootstrap UCL	9.905
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.736	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	8.812		
nu star	17.67		
A-D Test Statistic	0.19	Nonparametric Statistics	
5% A-D Critical Value	0.76	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.76	Mean	6.03
5% K-S Critical Value	0.253	SD	6.763
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.959
		95% KM (t) UCL	9.5
Assuming Gamma Distribution		95% KM (z) UCL	9.253
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	9.499
Minimum	1.00E-09	95% KM (bootstrap t) UCL	12.52
Maximum	23	95% KM (BCA) UCL	9.364
Mean	6.04	95% KM (Percentile Bootstrap) UCL	9.467
Median	3.8	95% KM (Chebyshev) UCL	14.57
SD	6.799	97.5% KM (Chebyshev) UCL	18.27
k star	0.303	99% KM (Chebyshev) UCL	25.52
Theta star	19.92		
Nu star	8.492	Potential UCLs to Use	
AppChi2	3.023	95% KM (Chebyshev) UCL	14.57
95% Gamma Approximate UCL	16.97		
95% Adjusted Gamma UCL	19.68		
Note: DL/2 is not a recommended method.			

BENZO(G,H,I)PERYLENE

General Statistics			
Number of Valid Data	14	Number of Detected Data	12
Number of Distinct Detected Data	12	Number of Non-Detect Data	2
		Percent Non-Detects	14.29%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.063	Minimum Detected	-2.765
Maximum Detected	23	Maximum Detected	3.135
Mean of Detected	4.771	Mean of Detected	0.652
SD of Detected	6.636	SD of Detected	1.624
Minimum Non-Detect	1.1	Minimum Non-Detect	0.0953
Maximum Non-Detect	56	Maximum Non-Detect	4.025
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			

APPENDIX K, TABLE 2
RAGS 3.3 - GENERAL PLANT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.702	Shapiro Wilk Test Statistic	0.965
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	6.129	Mean	0.754
SD	8.841	SD	1.701
95% DL/2 (t) UCL	10.31	95% H-Stat (DL/2) UCL	89.7
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.497
		SD in Log Scale	1.588
		Mean in Original Scale	4.225
		SD in Original Scale	6.266
		95% Percentile Bootstrap UCL	7.082
		95% BCA Bootstrap UCL	8.494
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.557	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	8.571		
nu star	13.36		
A-D Test Statistic	0.227	Nonparametric Statistics	
5% A-D Critical Value	0.772	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.772	Mean	4.436
5% K-S Critical Value	0.256	SD	6.215
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.801
		95% KM (t) UCL	7.625
Assuming Gamma Distribution		95% KM (z) UCL	7.398
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7.624
Minimum	1.00E-09	95% KM (bootstrap t) UCL	13.29
Maximum	23	95% KM (BCA) UCL	7.722
Mean	4.399	95% KM (Percentile Bootstrap) UCL	7.542
Median	2	95% KM (Chebyshev) UCL	12.29
SD	6.236	97.5% KM (Chebyshev) UCL	15.68
k star	0.283	99% KM (Chebyshev) UCL	22.35
Theta star	15.52		
Nu star	7.935	Potential UCLs to Use	
AppChi2	2.697	95% KM (Chebyshev) UCL	12.29
95% Gamma Approximate UCL	12.94		
95% Adjusted Gamma UCL	15.12		
Note: DL/2 is not a recommended method.			

BENZO(K)FLUORANTHENE

General Statistics			
Number of Valid Data	14	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	3
		Percent Non-Detects	21.43%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.068	Minimum Detected	-2.688
Maximum Detected	7.6	Maximum Detected	2.028
Mean of Detected	2.379	Mean of Detected	0.197
SD of Detected	2.523	SD of Detected	1.406
Minimum Non-Detect	1.1	Minimum Non-Detect	0.0953
Maximum Non-Detect	56	Maximum Non-Detect	4.025
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

APPENDIX K, TABLE 2
RAGS 3.3 - GENERAL PLANT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.829	Shapiro Wilk Test Statistic	0.96
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.233	Mean	0.458
SD	7.232	SD	1.545
95% DL/2 (t) UCL	7.657	95% H-Stat (DL/2) UCL	43.25
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.0796
		SD in Log Scale	1.288
		Mean in Original Scale	2.045
		SD in Original Scale	2.317
		95% Percentile Bootstrap UCL	3.055
		95% BCA Bootstrap UCL	3.356
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.698	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.409		
nu star	15.35		
A-D Test Statistic	0.149	Nonparametric Statistics	
5% A-D Critical Value	0.757	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.757	Mean	2.213
5% K-S Critical Value	0.264	SD	2.369
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.718
		95% KM (t) UCL	3.484
Assuming Gamma Distribution		95% KM (z) UCL	3.394
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.488
Minimum	0.068	95% KM (bootstrap t) UCL	4.631
Maximum	7.6	95% KM (BCA) UCL	3.275
Mean	2.23	95% KM (Percentile Bootstrap) UCL	3.375
Median	1.7	95% KM (Chebyshev) UCL	5.341
SD	2.292	97.5% KM (Chebyshev) UCL	6.695
k star	0.755	99% KM (Chebyshev) UCL	9.354
Theta star	2.951		
Nu star	21.15	Potential UCLs to Use	
AppChi2	11.71	95% KM (Chebyshev) UCL	5.341
95% Gamma Approximate UCL	4.029		
95% Adjusted Gamma UCL	4.374		
Note: DL/2 is not a recommended method.			

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	14	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	6
		Percent Non-Detects	42.86%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.085	Minimum Detected	-2.465
Maximum Detected	5.8	Maximum Detected	1.758
Mean of Detected	1.334	Mean of Detected	-0.387
SD of Detected	1.877	SD of Detected	1.248
Minimum Non-Detect	0.42	Minimum Non-Detect	-0.868
Maximum Non-Detect	56	Maximum Non-Detect	4.025
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

APPENDIX K, TABLE 2
RAGS 3.3 - GENERAL PLANT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk Test Statistic	0.976
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.963	Mean	0.22
SD	7.287	SD	1.611
95% DL/2 (t) UCL	7.412	95% H-Stat (DL/2) UCL	88.84
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.589
		SD in Log Scale	0.981
		Mean in Original Scale	0.955
		SD in Original Scale	1.454
		95% Percentile Bootstrap UCL	1.691
		95% BCA Bootstrap UCL	2.088
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.626	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.131		
nu star	10.02		
A-D Test Statistic	0.412	Nonparametric Statistics	
5% A-D Critical Value	0.741	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.741	Mean	1.133
5% K-S Critical Value	0.303	SD	1.623
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.55
		95% KM (t) UCL	2.106
Assuming Gamma Distribution		95% KM (z) UCL	2.037
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.109
Minimum	0.085	95% KM (bootstrap t) UCL	4.821
Maximum	5.8	95% KM (BCA) UCL	2.261
Mean	1.344	95% KM (Percentile Bootstrap) UCL	2.103
Median	1	95% KM (Chebyshev) UCL	3.528
SD	1.444	97.5% KM (Chebyshev) UCL	4.565
k star	0.964	99% KM (Chebyshev) UCL	6.601
Theta star	1.394		
Nu star	26.99	Potential UCLs to Use	
AppChi2	16.14	95% KM (BCA) UCL	2.261
95% Gamma Approximate UCL	2.247		
95% Adjusted Gamma UCL	2.412		

Note: DL/2 is not a recommended method.

HEXACHLOROBENZENE

General Statistics

Number of Valid Data	18	Number of Detected Data	10
Number of Distinct Detected Data	9	Number of Non-Detect Data	8
		Percent Non-Detects	44.44%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.007	Minimum Detected	-4.962
Maximum Detected	28	Maximum Detected	3.332

Mean of Detected	3.249	Mean of Detected	-1.134
SD of Detected	8.712	SD of Detected	2.294
Minimum Non-Detect	0.37	Minimum Non-Detect	-0.994
Maximum Non-Detect	56	Maximum Non-Detect	4.025
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.416	Shapiro Wilk Test Statistic	0.975
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.316	Mean	-0.47
SD	8.827	SD	2.223
95% DL/2 (t) UCL	7.935	95% H-Stat (DL/2) UCL	214.9
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.65
		SD in Log Scale	1.798
		Mean in Original Scale	1.854
		SD in Original Scale	6.539
		95% Percentile Bootstrap UCL	4.943
		95% BCA Bootstrap UCL	6.578
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.276	Data appear Lognormal at 5% Significance Level	
Theta Star	11.79		
nu star	5.512		
A-D Test Statistic	0.91	Nonparametric Statistics	
5% A-D Critical Value	0.814	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.814	Mean	2.007
5% K-S Critical Value	0.288	SD	6.514
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.666
		95% KM (t) UCL	4.906
Assuming Gamma Distribution		95% KM (z) UCL	4.748
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.848
Minimum	1.00E-09	95% KM (bootstrap t) UCL	29.2
Maximum	28	95% KM (BCA) UCL	5.191
Mean	2.41	95% KM (Percentile Bootstrap) UCL	5.139
Median	0.577	95% KM (Chebyshev) UCL	9.271
SD	6.468	97.5% KM (Chebyshev) UCL	12.41
k star	0.17	99% KM (Chebyshev) UCL	18.59
Theta star	14.19		
Nu star	6.115	Potential UCLs to Use	
AppChi2	1.699	99% KM (Chebyshev) UCL	18.59
95% Gamma Approximate UCL	8.675		
95% Adjusted Gamma UCL	9.918		
Note: DL/2 is not a recommended method.			

HEXACHLOROBUTADIENE

General Statistics			
Number of Valid Data	18	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	16
		Percent Non-Detects	88.89%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12

APPENDIX K, TABLE 2
RAGS 3.3 - GENERAL PLANT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Maximum Detected	1.8	Maximum Detected	0.588
Mean of Detected	0.96	Mean of Detected	-0.766
SD of Detected	1.188	SD of Detected	1.915
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	56	Maximum Non-Detect	4.025

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.662	Mean	-1.717
SD	6.63	SD	3.029
95% DL/2 (t) UCL	5.38	95% H-Stat (DL/2) UCL	2175
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.356	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.24
5% K-S Critical Value	N/A	SD	0.433
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.164
		95% KM (t) UCL	0.524
Assuming Gamma Distribution		95% KM (z) UCL	0.509
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.348
Minimum	N/A	95% KM (bootstrap t) UCL	0.271
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	1.8
Median	N/A	95% KM (Chebyshev) UCL	0.953
SD	N/A	97.5% KM (Chebyshev) UCL	1.261
k star	N/A	99% KM (Chebyshev) UCL	1.867
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	97.5% KM (Chebyshev) UCL	1.261

95% Gamma Approximate UCL	N/A
95% Adjusted Gamma UCL	N/A

Note: DL/2 is not a recommended method.

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	14	Number of Detected Data	11
Number of Distinct Detected Data	10	Number of Non-Detect Data	3
		Percent Non-Detects	21.43%
Raw Statistics		**Log-transformed Statistics**	
Minimum Detected	0.057	Minimum Detected	-2.865
Maximum Detected	18	Maximum Detected	2.89
Mean of Detected	3.962	Mean of Detected	0.525
SD of Detected	5.18	SD of Detected	1.622
Minimum Non-Detect	1.1	Minimum Non-Detect	0.0953
Maximum Non-Detect	56	Maximum Non-Detect	4.025
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.724	Shapiro Wilk Test Statistic	0.954
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		**Assuming Lognormal Distribution**	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.478	Mean	0.716
SD	7.971	SD	1.662
95% DL/2 (t) UCL	9.25	95% H-Stat (DL/2) UCL	44.57
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.377
		SD in Log Scale	1.482
		Mean in Original Scale	3.326
		SD in Original Scale	4.721
		95% Percentile Bootstrap UCL	5.643
		95% BCA Bootstrap UCL	6.585
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.576	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	6.883		
nu star	12.67		
A-D Test Statistic	0.165	Nonparametric Statistics	
5% A-D Critical Value	0.766	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.766	Mean	3.578
5% K-S Critical Value	0.266	SD	4.688
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.377
		95% KM (t) UCL	6.017
Assuming Gamma Distribution		95% KM (z) UCL	5.843
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.011
Minimum	1.00E-09	95% KM (bootstrap t) UCL	8.758
Maximum	18	95% KM (BCA) UCL	6.042
Mean	3.602	95% KM (Percentile Bootstrap) UCL	5.89
Median	2.546	95% KM (Chebyshev) UCL	9.581
SD	4.665	97.5% KM (Chebyshev) UCL	12.18
k star	0.295	99% KM (Chebyshev) UCL	17.28
Theta star	12.22		
Nu star	8.257	Potential UCLs to Use	

AppChi2	2.884	95% KM (Chebyshev) UCL	9.581
95% Gamma Approximate UCL	10.31		
95% Adjusted Gamma UCL	11.99		

Note: DL/2 is not a recommended method.

PHENANTHRENE

General Statistics			
Number of Valid Data	14	Number of Detected Data	11
Number of Distinct Detected Data	10	Number of Non-Detect Data	3
		Percent Non-Detects	21.43%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.2	Minimum Detected	-1.609
Maximum Detected	20	Maximum Detected	2.996
Mean of Detected	6.048	Mean of Detected	0.941
SD of Detected	7.35	SD of Detected	1.524
Minimum Non-Detect	1.1	Minimum Non-Detect	0.0953
Maximum Non-Detect	56	Maximum Non-Detect	4.025
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.762	Shapiro Wilk Test Statistic	0.948
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	7.22	Mean	1.063
SD	8.915	SD	1.565
95% DL/2 (t) UCL	11.44	95% H-Stat (DL/2) UCL	65.54
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.716
		SD in Log Scale	1.463
		Mean in Original Scale	5.003
		SD in Original Scale	6.781
		95% Percentile Bootstrap UCL	8.079
		95% BCA Bootstrap UCL	8.549
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.572	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	10.57		
nu star	12.59		
A-D Test Statistic	0.389	Nonparametric Statistics	
5% A-D Critical Value	0.766	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.766	Mean	5.273
5% K-S Critical Value	0.266	SD	6.718
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.959
		95% KM (t) UCL	8.742
Assuming Gamma Distribution		95% KM (z) UCL	8.495
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8.728
Minimum	0.2	95% KM (bootstrap t) UCL	11.08
Maximum	20	95% KM (BCA) UCL	8.958
Mean	5.58	95% KM (Percentile Bootstrap) UCL	8.609
Median	2.75	95% KM (Chebyshev) UCL	13.81
SD	6.627	97.5% KM (Chebyshev) UCL	17.51
k star	0.65	99% KM (Chebyshev) UCL	24.76
Theta star	8.588		

Nu star	18.19	Potential UCLs to Use	
AppChi2	9.529	95% KM (Chebyshev) UCL	13.81
95% Gamma Approximate UCL	10.65		
95% Adjusted Gamma UCL	11.66		

Note: DL/2 is not a recommended method.

1,2,3-TRICHLOROBENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,3-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2,4-TRICHLOROBENZENE

General Statistics			
Number of Valid Data	18	Number of Detected Data	12
Number of Distinct Detected Data	11	Number of Non-Detect Data	6
		Percent Non-Detects	33.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0013	Minimum Detected	-6.645
Maximum Detected	19	Maximum Detected	2.944
Mean of Detected	3.451	Mean of Detected	-1.876
SD of Detected	6.361	SD of Detected	3.351
Minimum Non-Detect	0.0033	Minimum Non-Detect	-5.714
Maximum Non-Detect	11	Maximum Non-Detect	2.398
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	16
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	88.89%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.627	Shapiro Wilk Test Statistic	0.927
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.672	Mean	-1.806
SD	5.37	SD	3.055
95% DL/2 (t) UCL	4.874	95% H-Stat (DL/2) UCL	2210
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.642
		SD in Log Scale	2.995
		Mean in Original Scale	2.308
		SD in Original Scale	5.381
		95% Percentile Bootstrap UCL	4.5
		95% BCA Bootstrap UCL	5.201
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.229	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	15.09		

nu star	5.49		
A-D Test Statistic	0.65	Nonparametric Statistics	
5% A-D Critical Value	0.853	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.853	Mean	2.352
5% K-S Critical Value	0.269	SD	5.23
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.292
		95% KM (t) UCL	4.6
Assuming Gamma Distribution		95% KM (z) UCL	4.478
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.568
Minimum	0.0013	95% KM (bootstrap t) UCL	7.831
Maximum	19	95% KM (BCA) UCL	4.679
Mean	3.635	95% KM (Percentile Bootstrap) UCL	4.483
Median	2.517	95% KM (Chebyshev) UCL	7.986
SD	5.125	97.5% KM (Chebyshev) UCL	10.42
k star	0.31	99% KM (Chebyshev) UCL	15.21
Theta star	11.74		
Nu star	11.14	Potential UCLs to Use	
AppChi2	4.668	95% KM (BCA) UCL	4.679
95% Gamma Approximate UCL	8.676		
95% Adjusted Gamma UCL	9.481		
Note: DL/2 is not a recommended method.			

1,2-DICHLOROBENZENE

General Statistics			
Number of Valid Data	18	Number of Detected Data	15
Number of Distinct Detected Data	15	Number of Non-Detect Data	3
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0025	Minimum Detected	-5.991
Maximum Detected	420	Maximum Detected	6.04
Mean of Detected	40.61	Mean of Detected	-0.052
SD of Detected	109.3	SD of Detected	3.361
Minimum Non-Detect	0.0033	Minimum Non-Detect	-5.714
Maximum Non-Detect	11	Maximum Non-Detect	2.398
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	77.78%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.436	Shapiro Wilk Test Statistic	0.978
5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	34.16	Mean	-0.391
SD	100.3	SD	3.445
95% DL/2 (t) UCL	75.28	95% H-Stat (DL/2) UCL	70432
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.662
		SD in Log Scale	3.454
		Mean in Original Scale	33.85
		SD in Original Scale	100.4
		95% Percentile Bootstrap UCL	76.69
		95% BCA Bootstrap UCL	106
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.202	Data appear Lognormal at 5% Significance Level	

Theta Star	201.4		
nu star	6.049		
A-D Test Statistic	1.019	Nonparametric Statistics	
5% A-D Critical Value	0.878	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.878	Mean	33.88
5% K-S Critical Value	0.245	SD	97.56
Data not Gamma Distributed at 5% Significance Level		SE of Mean	23.8
		95% KM (t) UCL	75.28
Assuming Gamma Distribution		95% KM (z) UCL	73.03
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	75.04
Minimum	1.00E-09	95% KM (bootstrap t) UCL	260
Maximum	420	95% KM (BCA) UCL	77.36
Mean	33.84	95% KM (Percentile Bootstrap) UCL	77.64
Median	0.275	95% KM (Chebyshev) UCL	137.6
SD	100.4	97.5% KM (Chebyshev) UCL	182.5
k star	0.132	99% KM (Chebyshev) UCL	270.7
Theta star	256.6		
Nu star	4.747	Potential UCLs to Use	
AppChi2	1.037	99% KM (Chebyshev) UCL	270.7
95% Gamma Approximate UCL	154.9		
95% Adjusted Gamma UCL	181.8		

Note: DL/2 is not a recommended method.

1,3-DICHLOROBENZENE

General Statistics			
Number of Valid Data	18	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	12
		Percent Non-Detects	66.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.026	Minimum Detected	-3.65
Maximum Detected	31	Maximum Detected	3.434
Mean of Detected	6.531	Mean of Detected	-0.935
SD of Detected	12.39	SD of Detected	2.929
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	56	Maximum Non-Detect	4.025
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.638	Shapiro Wilk Test Statistic	0.825
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.135	Mean	-1.681
SD	9.488	SD	2.993
95% DL/2 (t) UCL	8.025	95% H-Stat (DL/2) UCL	1579
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-3.731

		SD in Log Scale	2.841
		Mean in Original Scale	2.185
		SD in Original Scale	7.426
		95% Percentile Bootstrap UCL	5.613
		95% BCA Bootstrap UCL	7.339
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.237	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	27.53		
nu star	2.847		
A-D Test Statistic	0.744	Nonparametric Statistics	
5% A-D Critical Value	0.784	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.784	Mean	2.365
5% K-S Critical Value	0.36	SD	7.407
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	1.972
		95% KM (t) UCL	5.795
Assuming Gamma Distribution		95% KM (z) UCL	5.609
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.586
Minimum	1.00E-09	95% KM (bootstrap t) UCL	415.5
Maximum	31	95% KM (BCA) UCL	6.272
Mean	4.267	95% KM (Percentile Bootstrap) UCL	5.91
Median	2.67	95% KM (Chebyshev) UCL	10.96
SD	7.591	97.5% KM (Chebyshev) UCL	14.68
k star	0.15	99% KM (Chebyshev) UCL	21.99
Theta star	28.49		
Nu star	5.391	Potential UCLs to Use	
AppChi2	1.337	95% KM (t) UCL	5.795
95% Gamma Approximate UCL	17.2		
95% Adjusted Gamma UCL	19.92		

Note: DL/2 is not a recommended method.

1,4-DICHLOROBENZENE

General Statistics			
Number of Valid Data	18	Number of Detected Data	14
Number of Distinct Detected Data	14	Number of Non-Detect Data	4
		Percent Non-Detects	22.22%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0053	Minimum Detected	-5.24
Maximum Detected	2600	Maximum Detected	7.863
Mean of Detected	231.7	Mean of Detected	0.0802
SD of Detected	695.3	SD of Detected	3.672
Minimum Non-Detect	0.0033	Minimum Non-Detect	-5.714
Maximum Non-Detect	11	Maximum Non-Detect	2.398
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	15
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	83.33%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.39	Shapiro Wilk Test Statistic	0.842
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	180.6	Mean	-0.319
SD	616	SD	3.6
95% DL/2 (t) UCL	433.1	95% H-Stat (DL/2) UCL	320028
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	

MLE yields a negative mean		Mean in Log Scale	-0.694
		SD in Log Scale	3.759
		Mean in Original Scale	180.2
		SD in Original Scale	616.1
		95% Percentile Bootstrap UCL	461.9
		95% BCA Bootstrap UCL	656.2
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.161	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1441		
nu star	4.503		
A-D Test Statistic	2.168	Nonparametric Statistics	
5% A-D Critical Value	0.892	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.892	Mean	180.3
5% K-S Critical Value	0.255	SD	598.7
Data not Gamma Distributed at 5% Significance Level		SE of Mean	146.4
		95% KM (t) UCL	435
Assuming Gamma Distribution		95% KM (z) UCL	421.1
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	432.9
Minimum	1.00E-09	95% KM (bootstrap t) UCL	3663
Maximum	2600	95% KM (BCA) UCL	462
Mean	180.2	95% KM (Percentile Bootstrap) UCL	461.9
Median	0.275	95% KM (Chebyshev) UCL	818.6
SD	616.1	97.5% KM (Chebyshev) UCL	1095
k star	0.108	99% KM (Chebyshev) UCL	1637
Theta star	1670		
Nu star	3.885	Potential UCLs to Use	
AppChi2	0.677	99% KM (Chebyshev) UCL	1637
95% Gamma Approximate UCL	1034		
95% Adjusted Gamma UCL	1242		

Note: DL/2 is not a recommended method.

BENZENE

General Statistics			
Number of Valid Data	18	Number of Detected Data	10
Number of Distinct Detected Data	7	Number of Non-Detect Data	8
		Percent Non-Detects	44.44%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0017	Minimum Detected	-6.377
Maximum Detected	3.2	Maximum Detected	1.163
Mean of Detected	0.324	Mean of Detected	-5.056
SD of Detected	1.011	SD of Detected	2.273
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	13	Maximum Non-Detect	2.565
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.368	Shapiro Wilk Test Statistic	0.593
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.543	Mean	-4.917
SD	1.666	SD	2.425
95% DL/2 (t) UCL	1.226	95% H-Stat (DL/2) UCL	4.089

APPENDIX K, TABLE 2
RAGS 3.3 - GENERAL PLANT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.441
		SD in Log Scale	1.739
		Mean in Original Scale	0.181
		SD in Original Scale	0.753
		95% Percentile Bootstrap UCL	0.536
		95% BCA Bootstrap UCL	0.715
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.199	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.627		
nu star	3.979		
A-D Test Statistic	2.691	Nonparametric Statistics	
5% A-D Critical Value	0.858	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.858	Mean	0.191
5% K-S Critical Value	0.295	SD	0.752
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.192
		95% KM (t) UCL	0.526
Assuming Gamma Distribution		95% KM (z) UCL	0.508
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.519
Minimum	1.00E-09	95% KM (bootstrap t) UCL	125.2
Maximum	3.2	95% KM (BCA) UCL	0.567
Mean	0.217	95% KM (Percentile Bootstrap) UCL	0.538
Median	0.002	95% KM (Chebyshev) UCL	1.03
SD	0.755	97.5% KM (Chebyshev) UCL	1.392
k star	0.118	99% KM (Chebyshev) UCL	2.105
Theta star	1.831		
Nu star	4.265	Potential UCLs to Use	
AppChi2	0.829	99% KM (Chebyshev) UCL	2.105
95% Gamma Approximate UCL	1.116		
95% Adjusted Gamma UCL	1.325		
Note: DL/2 is not a recommended method.			

CHLOROBENZENE

General Statistics			
Number of Valid Data	18	Number of Detected Data	12
Number of Distinct Detected Data	10	Number of Non-Detect Data	6
		Percent Non-Detects	33.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.001	Minimum Detected	-6.908
Maximum Detected	150	Maximum Detected	5.011
Mean of Detected	24.17	Mean of Detected	-3.799
SD of Detected	56.48	SD of Detected	4.198
Minimum Non-Detect	0.0032	Minimum Non-Detect	-5.745
Maximum Non-Detect	0.016	Maximum Non-Detect	-4.135
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	15
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	83.33%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.472	Shapiro Wilk Test Statistic	0.664
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	16.12	Mean	-4.363
SD	46.92	SD	3.497
95% DL/2 (t) UCL	35.35	95% H-Stat (DL/2) UCL	1766

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.543
		SD in Log Scale	3.585
		Mean in Original Scale	16.12
		SD in Original Scale	46.92
		95% Percentile Bootstrap UCL	32.78
		95% BCA Bootstrap UCL	40.56
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.141	Data do not follow a Discernable Distribution (0.05)	
Theta Star	171.1		
nu star	3.391		
A-D Test Statistic	2.64	Nonparametric Statistics	
5% A-D Critical Value	0.894	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.894	Mean	16.12
5% K-S Critical Value	0.275	SD	45.6
Data not Gamma Distributed at 5% Significance Level		SE of Mean	11.23
		95% KM (t) UCL	35.64
Assuming Gamma Distribution		95% KM (z) UCL	34.58
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	35.35
Minimum	0.001	95% KM (bootstrap t) UCL	162629
Maximum	150	95% KM (BCA) UCL	40
Mean	26	95% KM (Percentile Bootstrap) UCL	32.78
Median	0.015	95% KM (Chebyshev) UCL	65.05
SD	45.52	97.5% KM (Chebyshev) UCL	86.22
k star	0.173	99% KM (Chebyshev) UCL	127.8
Theta star	150.5		
Nu star	6.22	Potential UCLs to Use	
AppChi2	1.753	99% KM (Chebyshev) UCL	127.8
95% Gamma Approximate UCL	92.24		
95% Adjusted Gamma UCL	105.3		

Note: DL/2 is not a recommended method.

METHYL MERCURY

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2,3,7,8-TCDD Equivalent

General Statistics			
Number of Valid Observations	27	Number of Distinct Observations	27
Raw Statistics		Log-transformed Statistics	
Minimum	1.254	Minimum of Log Data	0.226
Maximum	2090	Maximum of Log Data	7.645
Mean	208.3	Mean of log Data	3.921
Median	51.29	SD of log Data	1.806
SD	444.3		
Coefficient of Variation	2.134		
Skewness	3.455		

APPENDIX K, TABLE 2
RAGS 3.3 - GENERAL PLANT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.497	Shapiro Wilk Test Statistic	0.976
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	354.1	95% H-UCL	926.6
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	664.7
95% Adjusted-CLT UCL	409.7	97.5% Chebyshev (MVUE) UCL	855.2
95% Modified-t UCL	363.6	99% Chebyshev (MVUE) UCL	1229
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.429	Data appear Lognormal at 5% Significance Level	
Theta Star	485.5		
nu star	23.16		
Approximate Chi Square Value (.05)	13.21	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	348.9
Adjusted Chi Square Value	12.73	95% Jackknife UCL	354.1
		95% Standard Bootstrap UCL	347.7
Anderson-Darling Test Statistic	1.157	95% Bootstrap-t UCL	631.1
Anderson-Darling 5% Critical Value	0.818	95% Hall's Bootstrap UCL	822.7
Kolmogorov-Smirnov Test Statistic	0.195	95% Percentile Bootstrap UCL	363.7
Kolmogorov-Smirnov 5% Critical Value	0.179	95% BCA Bootstrap UCL	440.3
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	581
		97.5% Chebyshev(Mean, Sd) UCL	742.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1059
95% Approximate Gamma UCL	365.1		
95% Adjusted Gamma UCL	378.8		
Potential UCL to Use		95% Chebyshev (MVUE) UCL	664.7

APPENDIX K, TABLE 3
RAGS 3.3 - GENERAL PLANT AREA - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ALUMINUM

General Statistics			
Number of Valid Observations	20	Number of Distinct Observations	19
Raw Statistics		Log-transformed Statistics	
Minimum	1350	Minimum of Log Data	7.208
Maximum	27100	Maximum of Log Data	10.21
Mean	9086	Mean of log Data	8.899
Median	7760	SD of log Data	0.696
SD	6379		
Coefficient of Variation	0.702		
Skewness	1.649		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.844	Shapiro Wilk Test Statistic	0.978
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	11552	95% H-UCL	13256
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	15842
95% Adjusted-CLT UCL	11994	97.5% Chebyshev (MVUE) UCL	18719
95% Modified-t UCL	11640	99% Chebyshev (MVUE) UCL	24370
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.135	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	4256		
nu star	85.39		
Approximate Chi Square Value (.05)	65.09	Nonparametric Statistics	
Adjusted Level of Significance	0.038	95% CLT UCL	11432
Adjusted Chi Square Value	63.69	95% Jackknife UCL	11552
		95% Standard Bootstrap UCL	11357
Anderson-Darling Test Statistic	0.261	95% Bootstrap-t UCL	13049
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL	14828
Kolmogorov-Smirnov Test Statistic	0.134	95% Percentile Bootstrap UCL	11449
Kolmogorov-Smirnov 5% Critical Value	0.196	95% BCA Bootstrap UCL	11848
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15303
		97.5% Chebyshev(Mean, Sd) UCL	17994
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	23279
95% Approximate Gamma UCL	11919		
95% Adjusted Gamma UCL	12181		
Potential UCL to Use		95% Approximate Gamma UCL	11919

ARSENIC

General Statistics			
Number of Valid Observations	20	Number of Distinct Observations	20
Raw Statistics		Log-transformed Statistics	
Minimum	5.2	Minimum of Log Data	1.649
Maximum	65.7	Maximum of Log Data	4.185
Mean	15	Mean of log Data	2.46

Median	11.75	SD of log Data	0.662
SD	13.84		
Coefficient of Variation	0.923		
Skewness	2.882		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.658	Shapiro Wilk Test Statistic	0.911
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	20.35	95% H-UCL	20.24
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	24.23
95% Adjusted-CLT UCL	22.22	97.5% Chebyshev (MVUE) UCL	28.49
95% Modified-t UCL	20.68	99% Chebyshev (MVUE) UCL	36.85
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.88	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	7.975		
nu star	75.21		
Approximate Chi Square Value (.05)	56.23	Nonparametric Statistics	
Adjusted Level of Significance	0.038	95% CLT UCL	20.08
Adjusted Chi Square Value	54.94	95% Jackknife UCL	20.35
		95% Standard Bootstrap UCL	19.93
Anderson-Darling Test Statistic	0.924	95% Bootstrap-t UCL	25.72
Anderson-Darling 5% Critical Value	0.752	95% Hall's Bootstrap UCL	42.11
Kolmogorov-Smirnov Test Statistic	0.157	95% Percentile Bootstrap UCL	20.52
Kolmogorov-Smirnov 5% Critical Value	0.196	95% BCA Bootstrap UCL	22.6
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28.48
		97.5% Chebyshev(Mean, Sd) UCL	34.32
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	45.78
95% Approximate Gamma UCL	20.05		
95% Adjusted Gamma UCL	20.53		
Potential UCL to Use		95% Approximate Gamma UCL	20.05

BARIUM

General Statistics			
Number of Valid Observations	20	Number of Distinct Observations	20
Raw Statistics		Log-transformed Statistics	
Minimum	22.4	Minimum of Log Data	3.109
Maximum	958	Maximum of Log Data	6.865
Mean	163.4	Mean of log Data	4.472
Median	79.15	SD of log Data	1.041
SD	238.6		
Coefficient of Variation	1.461		
Skewness	2.538		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.592	Shapiro Wilk Test Statistic	0.91
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	255.6	95% H-UCL	282.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	309.8
95% Adjusted-CLT UCL	283.5	97.5% Chebyshev (MVUE) UCL	381.3
95% Modified-t UCL	260.7	99% Chebyshev (MVUE) UCL	521.7
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.826	Data appear Lognormal at 5% Significance Level	

APPENDIX K, TABLE 3
RAGS 3.3 - GENERAL PLANT AREA - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Theta Star	197.8		
nu star	33.04		
Approximate Chi Square Value (.05)	20.9	Nonparametric Statistics	
Adjusted Level of Significance	0.038	95% CLT UCL	251.1
Adjusted Chi Square Value	20.14	95% Jackknife UCL	255.6
		95% Standard Bootstrap UCL	245.1
Anderson-Darling Test Statistic	1.53	95% Bootstrap-t UCL	326.5
Anderson-Darling 5% Critical Value	0.771	95% Hall's Bootstrap UCL	253.9
Kolmogorov-Smirnov Test Statistic	0.271	95% Percentile Bootstrap UCL	258.1
Kolmogorov-Smirnov 5% Critical Value	0.2	95% BCA Bootstrap UCL	282.2
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	395.9
		97.5% Chebyshev(Mean, Sd) UCL	496.5
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	694.2
95% Approximate Gamma UCL	258.3		
95% Adjusted Gamma UCL	268		
Potential UCL to Use		95% Chebyshev (MVUE) UCL	309.8

CHROMIUM

General Statistics			
Number of Valid Observations	20	Number of Distinct Observations	19
Raw Statistics		Log-transformed Statistics	
Minimum	8	Minimum of Log Data	2.079
Maximum	29	Maximum of Log Data	3.367
Mean	14.7	Mean of log Data	2.624
Median	13.4	SD of log Data	0.361
SD	5.626		
Coefficient of Variation	0.383		
Skewness	1.037		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.906	Shapiro Wilk Test Statistic	0.959
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	16.88	95% H-UCL	17.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19.93
95% Adjusted-CLT UCL	17.08	97.5% Chebyshev (MVUE) UCL	22.2
95% Modified-t UCL	16.92	99% Chebyshev (MVUE) UCL	26.68
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.833	Data appear Normal at 5% Significance Level	
Theta Star	2.151		
nu star	273.3		
Approximate Chi Square Value (.05)	236	Nonparametric Statistics	
Adjusted Level of Significance	0.038	95% CLT UCL	16.77
Adjusted Chi Square Value	233.3	95% Jackknife UCL	16.88
		95% Standard Bootstrap UCL	16.69
Anderson-Darling Test Statistic	0.393	95% Bootstrap-t UCL	17.44
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	17.25
Kolmogorov-Smirnov Test Statistic	0.138	95% Percentile Bootstrap UCL	16.8
Kolmogorov-Smirnov 5% Critical Value	0.194	95% BCA Bootstrap UCL	16.97
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20.18
		97.5% Chebyshev(Mean, Sd) UCL	22.56
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	27.22
95% Approximate Gamma UCL	17.02		
95% Adjusted Gamma UCL	17.22		
Potential UCL to Use		95% Student's-t UCL	16.88

APPENDIX K, TABLE 3
RAGS 3.3 - GENERAL PLANT AREA - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

IRON

General Statistics			
Number of Valid Observations	20	Number of Distinct Observations	20
Raw Statistics		Log-transformed Statistics	
Minimum	6370	Minimum of Log Data	8.759
Maximum	45800	Maximum of Log Data	10.73
Mean	14641	Mean of log Data	9.479
Median	12450	SD of log Data	0.453
SD	8652		
Coefficient of Variation	0.591		
Skewness	2.662		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.722	Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	17986	95% H-UCL	17765
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20974
95% Adjusted-CLT UCL	19053	97.5% Chebyshev (MVUE) UCL	23812
95% Modified-t UCL	18178	99% Chebyshev (MVUE) UCL	29387
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.944	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3712		
nu star	157.7		
Approximate Chi Square Value (.05)	129.7	Nonparametric Statistics	
Adjusted Level of Significance	0.038	95% CLT UCL	17823
Adjusted Chi Square Value	127.7	95% Jackknife UCL	17986
		95% Standard Bootstrap UCL	17789
Anderson-Darling Test Statistic	0.705	95% Bootstrap-t UCL	20410
Anderson-Darling 5% Critical Value	0.745	95% Hall's Bootstrap UCL	31757
Kolmogorov-Smirnov Test Statistic	0.168	95% Percentile Bootstrap UCL	18123
Kolmogorov-Smirnov 5% Critical Value	0.195	95% BCA Bootstrap UCL	19308
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	23073
		97.5% Chebyshev(Mean, Sd) UCL	26722
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	33890
95% Approximate Gamma UCL	17805		
95% Adjusted Gamma UCL	18085		
Potential UCL to Use		95% Approximate Gamma UCL	17805

MANGANESE

General Statistics			
Number of Valid Observations	20	Number of Distinct Observations	19
Raw Statistics		Log-transformed Statistics	
Minimum	58.4	Minimum of Log Data	4.067
Maximum	643	Maximum of Log Data	6.466
Mean	248.1	Mean of log Data	5.386
Median	225.5	SD of log Data	0.538
SD	129.8		
Coefficient of Variation	0.523		
Skewness	1.396		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.888	Shapiro Wilk Test Statistic	0.958
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

APPENDIX K, TABLE 3
RAGS 3.3 - GENERAL PLANT AREA - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	298.3	95% H-UCL	324.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	386.8
95% Adjusted-CLT UCL	305.5	97.5% Chebyshev (MVUE) UCL	445.9
95% Modified-t UCL	299.8	99% Chebyshev (MVUE) UCL	562.1
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.486	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	71.17		
nu star	139.4		
Approximate Chi Square Value (.05)	113.1	Nonparametric Statistics	
Adjusted Level of Significance	0.038	95% CLT UCL	295.8
Adjusted Chi Square Value	111.3	95% Jackknife UCL	298.3
		95% Standard Bootstrap UCL	293.2
Anderson-Darling Test Statistic	0.322	95% Bootstrap-t UCL	313
Anderson-Darling 5% Critical Value	0.746	95% Hall's Bootstrap UCL	329.7
Kolmogorov-Smirnov Test Statistic	0.123	95% Percentile Bootstrap UCL	295.1
Kolmogorov-Smirnov 5% Critical Value	0.195	95% BCA Bootstrap UCL	306.3
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	374.6
		97.5% Chebyshev(Mean, Sd) UCL	429.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	536.8
95% Approximate Gamma UCL	305.7		
95% Adjusted Gamma UCL	310.9		
Potential UCL to Use		95% Approximate Gamma UCL	305.7

MERCURY

General Statistics			
Number of Valid Data	36	Number of Detected Data	35
Number of Distinct Detected Data	34	Number of Non-Detect Data	1
		Percent Non-Detects	2.78%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.3	Minimum Detected	-1.204
Maximum Detected	2440	Maximum Detected	7.8
Mean of Detected	170.8	Mean of Detected	2.234
SD of Detected	503.6	SD of Detected	2.299
Minimum Non-Detect	0.2	Minimum Non-Detect	-1.609
Maximum Non-Detect	0.2	Maximum Non-Detect	-1.609
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.392	Shapiro Wilk Test Statistic	0.915
5% Shapiro Wilk Critical Value	0.934	5% Shapiro Wilk Critical Value	0.934
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	166	Mean	2.108
SD	497.2	SD	2.389
95% DL/2 (t) UCL	306	95% H-Stat (DL/2) UCL	717.2
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	156.4	Mean in Log Scale	2.076
SD	498.8	SD in Log Scale	2.458
95% MLE (t) UCL	296.9	Mean in Original Scale	166
95% MLE (Tiku) UCL	281.3	SD in Original Scale	497.2
		95% Percentile Bootstrap UCL	323.8
		95% BCA Bootstrap UCL	374.3
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.243	Data do not follow a Discernable Distribution (0.05)	

Theta Star	702		
nu star	17.03		
A-D Test Statistic	4.129	Nonparametric Statistics	
5% A-D Critical Value	0.88	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.88	Mean	166
5% K-S Critical Value	0.163	SD	490.2
Data not Gamma Distributed at 5% Significance Level		SE of Mean	82.9
		95% KM (t) UCL	306.1
Assuming Gamma Distribution		95% KM (z) UCL	302.4
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	306
Minimum	1.00E-09	95% KM (bootstrap t) UCL	947.8
Maximum	2440	95% KM (BCA) UCL	324.1
Mean	166	95% KM (Percentile Bootstrap) UCL	306.7
Median	5.55	95% KM (Chebyshev) UCL	527.4
SD	497.2	97.5% KM (Chebyshev) UCL	683.7
k star	0.209	99% KM (Chebyshev) UCL	990.9
Theta star	793.4		
Nu star	15.06	Potential UCLs to Use	
AppChi2	7.307	99% KM (Chebyshev) UCL	990.9
95% Gamma Approximate UCL	342.3		
95% Adjusted Gamma UCL	354.2		
Note: DL/2 is not a recommended method.			

NICKEL

General Statistics			
Number of Valid Observations	20	Number of Distinct Observations	19
Raw Statistics		Log-transformed Statistics	
Minimum	7.6	Minimum of Log Data	2.028
Maximum	4040	Maximum of Log Data	8.304
Mean	223.3	Mean of log Data	3.187
Median	17.95	SD of log Data	1.352
SD	898.5		
Coefficient of Variation	4.024		
Skewness	4.47		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.248	Shapiro Wilk Test Statistic	0.664
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	570.7	95% H-UCL	158.8
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	142.5
95% Adjusted-CLT UCL	768.3	97.5% Chebyshev (MVUE) UCL	180
95% Modified-t UCL	604.1	99% Chebyshev (MVUE) UCL	253.6
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.296	Data do not follow a Discernable Distribution (0.05)	
Theta Star	754.5		
nu star	11.84		
Approximate Chi Square Value (.05)	5.12	Nonparametric Statistics	
Adjusted Level of Significance	0.038	95% CLT UCL	553.7
Adjusted Chi Square Value	4.774	95% Jackknife UCL	570.7
		95% Standard Bootstrap UCL	545.5
Anderson-Darling Test Statistic	5.1	95% Bootstrap-t UCL	15899
Anderson-Darling 5% Critical Value	0.843	95% Hall's Bootstrap UCL	7269
Kolmogorov-Smirnov Test Statistic	0.466	95% Percentile Bootstrap UCL	625.1
Kolmogorov-Smirnov 5% Critical Value	0.21	95% BCA Bootstrap UCL	828.8
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1099
		97.5% Chebyshev(Mean, Sd) UCL	1478
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2222

95% Approximate Gamma UCL	516.2		
95% Adjusted Gamma UCL	553.6		
Potential UCL to Use		99% Chebyshev (Mean, Sd) UCL	2222

VANADIUM

General Statistics			
Number of Valid Observations	20	Number of Distinct Observations	20
Raw Statistics		Log-transformed Statistics	
Minimum	5.7	Minimum of Log Data	1.74
Maximum	53.6	Maximum of Log Data	3.982
Mean	23.69	Mean of log Data	3.037
Median	22.2	SD of log Data	0.539
SD	12.23		
Coefficient of Variation	0.516		
Skewness	1.098		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.891	Shapiro Wilk Test Statistic	0.947
Shapiro Wilk Critical Value	0.905	Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	28.41	95% H-UCL	30.98
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	36.97
95% Adjusted-CLT UCL	28.9	97.5% Chebyshev (MVUE) UCL	42.63
95% Modified-t UCL	28.52	99% Chebyshev (MVUE) UCL	53.74
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.484	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	6.797		
nu star	139.4		
Approximate Chi Square Value (.05)	113.1	Nonparametric Statistics	
Adjusted Level of Significance	0.038	95% CLT UCL	28.18
Adjusted Chi Square Value	111.2	95% Jackknife UCL	28.41
		95% Standard Bootstrap UCL	27.98
Anderson-Darling Test Statistic	0.497	95% Bootstrap-t UCL	29.71
Anderson-Darling 5% Critical Value	0.746	95% Hall's Bootstrap UCL	29.86
Kolmogorov-Smirnov Test Statistic	0.179	95% Percentile Bootstrap UCL	28.34
Kolmogorov-Smirnov 5% Critical Value	0.195	95% BCA Bootstrap UCL	28.99
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	35.6
		97.5% Chebyshev(Mean, Sd) UCL	40.76
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	50.88
95% Approximate Gamma UCL	29.19		
95% Adjusted Gamma UCL	29.68		
Potential UCL to Use		95% Approximate Gamma UCL	29.19

HIGHLY CHLORINATED

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	0.034	Minimum of Log Data	-3.381
Maximum	3.1	Maximum of Log Data	1.131
Mean	0.916	Mean of log Data	-0.817
Median	0.6	SD of log Data	1.448
SD	1.089		
Coefficient of Variation	1.189		
Skewness	1.651		

APPENDIX K, TABLE 3
RAGS 3.3 - GENERAL PLANT AREA - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.715	Shapiro Wilk Test Statistic	0.91
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.511	95% H-UCL	7.595
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.276
95% Adjusted-CLT UCL	1.631	97.5% Chebyshev (MVUE) UCL	4.229
95% Modified-t UCL	1.538	99% Chebyshev (MVUE) UCL	6.1
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.651	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.407		
nu star	14.32		
Approximate Chi Square Value (.05)	6.792	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	1.456
Adjusted Chi Square Value	5.967	95% Jackknife UCL	1.511
		95% Standard Bootstrap UCL	1.446
Anderson-Darling Test Statistic	0.414	95% Bootstrap-t UCL	2.717
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	5.257
Kolmogorov-Smirnov Test Statistic	0.193	95% Percentile Bootstrap UCL	1.477
Kolmogorov-Smirnov 5% Critical Value	0.264	95% BCA Bootstrap UCL	1.631
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.348
		97.5% Chebyshev(Mean, Sd) UCL	2.967
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.184
95% Approximate Gamma UCL	1.931		
95% Adjusted Gamma UCL	2.199		
Potential UCL to Use		95% Approximate Gamma UCL	1.931

TOTAL PCBs

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	0.034	Minimum of Log Data	-3.381
Maximum	3.1	Maximum of Log Data	1.131
Mean	0.916	Mean of log Data	-0.817
Median	0.6	SD of log Data	1.448
SD	1.089		
Coefficient of Variation	1.189		
Skewness	1.651		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.715	Shapiro Wilk Test Statistic	0.91
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.511	95% H-UCL	7.595
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.276
95% Adjusted-CLT UCL	1.631	97.5% Chebyshev (MVUE) UCL	4.229
95% Modified-t UCL	1.538	99% Chebyshev (MVUE) UCL	6.1
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.651	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.407		
nu star	14.32		
Approximate Chi Square Value (.05)	6.792	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	1.456

APPENDIX K, TABLE 3
RAGS 3.3 - GENERAL PLANT AREA - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Adjusted Chi Square Value	5.967	95% Jackknife UCL	1.511
		95% Standard Bootstrap UCL	1.419
Anderson-Darling Test Statistic	0.414	95% Bootstrap-t UCL	2.824
Anderson-Darling 5% Critical Value	0.76	95% Hall's Bootstrap UCL	5.316
Kolmogorov-Smirnov Test Statistic	0.193	95% Percentile Bootstrap UCL	1.467
Kolmogorov-Smirnov 5% Critical Value	0.264	95% BCA Bootstrap UCL	1.616
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.348
		97.5% Chebyshev(Mean, Sd) UCL	2.967
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.184
95% Approximate Gamma UCL	1.931		
95% Adjusted Gamma UCL	2.199		
Potential UCL to Use		95% Approximate Gamma UCL	1.931

DELTA-BHC

General Statistics			
Number of Valid Data	16	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	15
		Percent Non-Detects	93.75%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DELTA-BHC was not processed!

DIELDRIN

General Statistics			
Number of Valid Data	16	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	15
		Percent Non-Detects	93.75%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DIELDRIN was not processed!

ACENAPHTHYLENE

General Statistics			
Number of Valid Data	20	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	14
		Percent Non-Detects	70.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.078	Minimum Detected	-2.551
Maximum Detected	6.8	Maximum Detected	1.917
Mean of Detected	1.271	Mean of Detected	-1.372
SD of Detected	2.712	SD of Detected	1.728
Minimum Non-Detect	0.37	Minimum Non-Detect	-0.994
Maximum Non-Detect	490	Maximum Non-Detect	6.194
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

APPENDIX K, TABLE 3
RAGS 3.3 - GENERAL PLANT AREA - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK
It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.532	Shapiro Wilk Test Statistic	0.759
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	18.82	Mean	0.37
SD	54.25	SD	2.477
95% DL/2 (t) UCL	39.8	95% H-Stat (DL/2) UCL	1466
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.777
		SD in Log Scale	0.937
		Mean in Original Scale	0.482
		SD in Original Scale	1.489
		95% Percentile Bootstrap UCL	1.137
		95% BCA Bootstrap UCL	1.511
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.315	Data do not follow a Discernable Distribution (0.05)	
Theta Star	4.039		
nu star	3.776		
A-D Test Statistic	1.065	Nonparametric Statistics	
5% A-D Critical Value	0.75	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.75	Mean	0.692
5% K-S Critical Value	0.352	SD	1.844
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.583
		95% KM (t) UCL	1.701
Assuming Gamma Distribution		95% KM (z) UCL	1.652
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.672
Minimum	0.078	95% KM (bootstrap t) UCL	27.02
Maximum	6.8	95% KM (BCA) UCL	1.805
Mean	1.25	95% KM (Percentile Bootstrap) UCL	1.705
Median	1.159	95% KM (Chebyshev) UCL	3.236
SD	1.394	97.5% KM (Chebyshev) UCL	4.336
k star	1.026	99% KM (Chebyshev) UCL	6.498
Theta star	1.218		
Nu star	41.04	Potential UCLs to Use	
AppChi2	27.36	97.5% KM (Chebyshev) UCL	4.336
95% Gamma Approximate UCL	1.874		
95% Adjusted Gamma UCL	1.937		
Note: DL/2 is not a recommended method.			

BENZO(A)ANTHRACENE

General Statistics			
Number of Valid Data	20	Number of Detected Data	14
Number of Distinct Detected Data	13	Number of Non-Detect Data	6
		Percent Non-Detects	30.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	16	Maximum Detected	2.773
Mean of Detected	4.62	Mean of Detected	0.828
SD of Detected	5.149	SD of Detected	1.391
Minimum Non-Detect	0.79	Minimum Non-Detect	-0.236
Maximum Non-Detect	490	Maximum Non-Detect	6.194
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20

For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.8	Shapiro Wilk Test Statistic	0.961
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	19.73	Mean	1.278
SD	53.92	SD	1.876
95% DL/2 (t) UCL	40.58	95% H-Stat (DL/2) UCL	198.3
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.57
		SD in Log Scale	1.31
		Mean in Original Scale	3.617
		SD in Original Scale	4.557
		95% Percentile Bootstrap UCL	5.442
		95% BCA Bootstrap UCL	5.789
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.707	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	6.532		
nu star	19.8		
A-D Test Statistic	0.253	Nonparametric Statistics	
5% A-D Critical Value	0.767	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.767	Mean	4.084
5% K-S Critical Value	0.237	SD	4.854
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.26
		95% KM (t) UCL	6.262
Assuming Gamma Distribution		95% KM (z) UCL	6.156
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.267
Minimum	1.00E-09	95% KM (bootstrap t) UCL	7.223
Maximum	16	95% KM (BCA) UCL	6.207
Mean	4.273	95% KM (Percentile Bootstrap) UCL	6.245
Median	3.3	95% KM (Chebyshev) UCL	9.575
SD	4.509	97.5% KM (Chebyshev) UCL	11.95
k star	0.262	99% KM (Chebyshev) UCL	16.62
Theta star	16.34		
Nu star	10.46	Potential UCLs to Use	
AppChi2	4.232	95% KM (BCA) UCL	6.207
95% Gamma Approximate UCL	10.56		
95% Adjusted Gamma UCL	11.39		
Note: DL/2 is not a recommended method.			

BENZO(A)PYRENE

General Statistics			
Number of Valid Data	20	Number of Detected Data	12
Number of Distinct Detected Data	12	Number of Non-Detect Data	8
		Percent Non-Detects	40.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	18	Maximum Detected	2.89
Mean of Detected	4.842	Mean of Detected	0.875
SD of Detected	5.453	SD of Detected	1.438
Minimum Non-Detect	0.79	Minimum Non-Detect	-0.236
Maximum Non-Detect	490	Maximum Non-Detect	6.194
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20

For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.796	Shapiro Wilk Test Statistic	0.959
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	20.73	Mean	1.454
SD	53.75	SD	1.868
95% DL/2 (t) UCL	41.51	95% H-Stat (DL/2) UCL	428.5
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.568
		SD in Log Scale	1.243
		Mean in Original Scale	3.437
		SD in Original Scale	4.525
		95% Percentile Bootstrap UCL	5.204
		95% BCA Bootstrap UCL	5.714
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.685	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	7.064		
nu star	16.45		
A-D Test Statistic	0.155	Nonparametric Statistics	
5% A-D Critical Value	0.762	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.762	Mean	4.074
5% K-S Critical Value	0.254	SD	4.964
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.347
		95% KM (t) UCL	6.403
Assuming Gamma Distribution		95% KM (z) UCL	6.29
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.406
Minimum	1.00E-09	95% KM (bootstrap t) UCL	8.67
Maximum	18	95% KM (BCA) UCL	6.451
Mean	4.509	95% KM (Percentile Bootstrap) UCL	6.347
Median	4.206	95% KM (Chebyshev) UCL	9.947
SD	4.442	97.5% KM (Chebyshev) UCL	12.49
k star	0.266	99% KM (Chebyshev) UCL	17.48
Theta star	16.92		
Nu star	10.66	Potential UCLs to Use	
AppChi2	4.356	95% KM (BCA) UCL	6.451
95% Gamma Approximate UCL	11.03		
95% Adjusted Gamma UCL	11.89		
Note: DL/2 is not a recommended method.			

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Data	20	Number of Detected Data	12
Number of Distinct Detected Data	12	Number of Non-Detect Data	8
		Percent Non-Detects	40.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.19	Minimum Detected	-1.661
Maximum Detected	23	Maximum Detected	3.135
Mean of Detected	6.488	Mean of Detected	1.227
SD of Detected	7.145	SD of Detected	1.343
Minimum Non-Detect	0.79	Minimum Non-Detect	-0.236
Maximum Non-Detect	490	Maximum Non-Detect	6.194
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20

For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.797	Shapiro Wilk Test Statistic	0.964
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	23.29	Mean	1.768
SD	53.5	SD	1.815
95% DL/2 (t) UCL	43.97	95% H-Stat (DL/2) UCL	342.5
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.899
		SD in Log Scale	1.236
		Mean in Original Scale	4.668
		SD in Original Scale	5.929
		95% Percentile Bootstrap UCL	7.001
		95% BCA Bootstrap UCL	7.851
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.736	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	8.812		
nu star	17.67		
A-D Test Statistic	0.19	Nonparametric Statistics	
5% A-D Critical Value	0.76	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.76	Mean	5.605
5% K-S Critical Value	0.253	SD	6.694
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.869
		95% KM (t) UCL	8.836
Assuming Gamma Distribution		95% KM (z) UCL	8.679
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8.81
Minimum	1.00E-09	95% KM (bootstrap t) UCL	12.04
Maximum	23	95% KM (BCA) UCL	8.963
Mean	6.175	95% KM (Percentile Bootstrap) UCL	8.95
Median	7.1	95% KM (Chebyshev) UCL	13.75
SD	5.855	97.5% KM (Chebyshev) UCL	17.28
k star	0.267	99% KM (Chebyshev) UCL	24.2
Theta star	23.15		
Nu star	10.67	Potential UCLs to Use	
AppChi2	4.363	95% KM (BCA) UCL	8.963
95% Gamma Approximate UCL	15.1		
95% Adjusted Gamma UCL	16.27		
Note: DL/2 is not a recommended method.			

BENZO(G,H,I)PERYLENE

General Statistics			
Number of Valid Data	20	Number of Detected Data	12
Number of Distinct Detected Data	12	Number of Non-Detect Data	8
		Percent Non-Detects	40.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.063	Minimum Detected	-2.765
Maximum Detected	23	Maximum Detected	3.135
Mean of Detected	4.771	Mean of Detected	0.652
SD of Detected	6.636	SD of Detected	1.624
Minimum Non-Detect	0.79	Minimum Non-Detect	-0.236
Maximum Non-Detect	490	Maximum Non-Detect	6.194
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20

For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.702	Shapiro Wilk Test Statistic	0.965
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	22.26	Mean	1.424
SD	53.81	SD	2.062
95% DL/2 (t) UCL	43.06	95% H-Stat (DL/2) UCL	807.5
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.325
		SD in Log Scale	1.414
		Mean in Original Scale	3.297
		SD in Original Scale	5.389
		95% Percentile Bootstrap UCL	5.432
		95% BCA Bootstrap UCL	6.552
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.557	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	8.571		
nu star	13.36		
A-D Test Statistic	0.227	Nonparametric Statistics	
5% A-D Critical Value	0.772	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.772	Mean	4.126
5% K-S Critical Value	0.256	SD	6.092
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.701
		95% KM (t) UCL	7.067
Assuming Gamma Distribution		95% KM (z) UCL	6.924
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7.082
Minimum	1.00E-09	95% KM (bootstrap t) UCL	12.34
Maximum	23	95% KM (BCA) UCL	7.136
Mean	4.41	95% KM (Percentile Bootstrap) UCL	7.335
Median	4.529	95% KM (Chebyshev) UCL	11.54
SD	5.273	97.5% KM (Chebyshev) UCL	14.75
k star	0.257	99% KM (Chebyshev) UCL	21.05
Theta star	17.14		
Nu star	10.29	Potential UCLs to Use	
AppChi2	4.125	95% KM (BCA) UCL	7.136
95% Gamma Approximate UCL	11		
95% Adjusted Gamma UCL	11.88		
Note: DL/2 is not a recommended method.			

BENZO(K)FLUORANTHENE

General Statistics			
Number of Valid Data	20	Number of Detected Data	12
Number of Distinct Detected Data	12	Number of Non-Detect Data	8
		Percent Non-Detects	40.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.068	Minimum Detected	-2.688
Maximum Detected	12	Maximum Detected	2.485
Mean of Detected	3.181	Mean of Detected	0.388
SD of Detected	3.674	SD of Detected	1.495
Minimum Non-Detect	0.79	Minimum Non-Detect	-0.236
Maximum Non-Detect	490	Maximum Non-Detect	6.194
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20

For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.808	Shapiro Wilk Test Statistic	0.97
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	19.73	Mean	1.162
SD	53.98	SD	2.001
95% DL/2 (t) UCL	40.6	95% H-Stat (DL/2) UCL	159.8
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.146
		SD in Log Scale	1.228
		Mean in Original Scale	2.27
		SD in Original Scale	3.029
		95% Percentile Bootstrap UCL	3.425
		95% BCA Bootstrap UCL	3.791
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.637	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	4.996		
nu star	15.28		
A-D Test Statistic	0.154	Nonparametric Statistics	
5% A-D Critical Value	0.765	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.765	Mean	2.735
5% K-S Critical Value	0.255	SD	3.345
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.918
		95% KM (t) UCL	4.323
Assuming Gamma Distribution		95% KM (z) UCL	4.245
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.328
Minimum	0.068	95% KM (bootstrap t) UCL	5.736
Maximum	12	95% KM (BCA) UCL	4.381
Mean	2.986	95% KM (Percentile Bootstrap) UCL	4.405
Median	2.916	95% KM (Chebyshev) UCL	6.738
SD	2.962	97.5% KM (Chebyshev) UCL	8.469
k star	0.792	99% KM (Chebyshev) UCL	11.87
Theta star	3.772		
Nu star	31.67	Potential UCLs to Use	
AppChi2	19.81	95% KM (BCA) UCL	4.381
95% Gamma Approximate UCL	4.774		
95% Adjusted Gamma UCL	4.96		
Note: DL/2 is not a recommended method.			

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	20	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	12
		Percent Non-Detects	60.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.085	Minimum Detected	-2.465
Maximum Detected	5.8	Maximum Detected	1.758
Mean of Detected	1.334	Mean of Detected	-0.387
SD of Detected	1.877	SD of Detected	1.248
Minimum Non-Detect	0.42	Minimum Non-Detect	-0.868
Maximum Non-Detect	490	Maximum Non-Detect	6.194
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20

APPENDIX K, TABLE 3
RAGS 3.3 - GENERAL PLANT AREA - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk Test Statistic	0.976
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	20.74	Mean	1.05
SD	54.13	SD	2.153
95% DL/2 (t) UCL	41.67	95% H-Stat (DL/2) UCL	495.2
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.649
		SD in Log Scale	0.82
		Mean in Original Scale	0.806
		SD in Original Scale	1.225
		95% Percentile Bootstrap UCL	1.307
		95% BCA Bootstrap UCL	1.587
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.626	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.131		
nu star	10.02		
A-D Test Statistic	0.412	Nonparametric Statistics	
5% A-D Critical Value	0.741	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.741	Mean	1.064
5% K-S Critical Value	0.303	SD	1.564
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.505
		95% KM (t) UCL	1.938
Assuming Gamma Distribution		95% KM (z) UCL	1.895
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.942
Minimum	0.085	95% KM (bootstrap t) UCL	4.13
Maximum	5.8	95% KM (BCA) UCL	2.108
Mean	1.383	95% KM (Percentile Bootstrap) UCL	1.963
Median	1.462	95% KM (Chebyshev) UCL	3.267
SD	1.142	97.5% KM (Chebyshev) UCL	4.22
k star	1.724	99% KM (Chebyshev) UCL	6.093
Theta star	0.802		
Nu star	68.97	Potential UCLs to Use	
AppChi2	50.86	95% KM (t) UCL	1.938
95% Gamma Approximate UCL	1.876		
95% Adjusted Gamma UCL	1.922		
Note: DL/2 is not a recommended method.			

HEXACHLOROBENZENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	10
Number of Distinct Detected Data	9	Number of Non-Detect Data	14
		Percent Non-Detects	58.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.007	Minimum Detected	-4.962

Maximum Detected	28	Maximum Detected	3.332
Mean of Detected	3.249	Mean of Detected	-1.134
SD of Detected	8.712	SD of Detected	2.294
Minimum Non-Detect	0.37	Minimum Non-Detect	-0.994
Maximum Non-Detect	490	Maximum Non-Detect	6.194
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	24
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.416	Shapiro Wilk Test Statistic	0.975
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	18.21	Mean	0.394
SD	49.81	SD	2.637
95% DL/2 (t) UCL	35.64	95% H-Stat (DL/2) UCL	2699
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.738
		SD in Log Scale	1.561
		Mean in Original Scale	1.426
		SD in Original Scale	5.672
		95% Percentile Bootstrap UCL	3.74
		95% BCA Bootstrap UCL	4.918
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.276	Data appear Lognormal at 5% Significance Level	
Theta Star	11.79		
nu star	5.512		
A-D Test Statistic	0.91	Nonparametric Statistics	
5% A-D Critical Value	0.814	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.814	Mean	1.9
5% K-S Critical Value	0.288	SD	6.346
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.578
		95% KM (t) UCL	4.604
Assuming Gamma Distribution		95% KM (z) UCL	4.495
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.559
Minimum	0.007	95% KM (bootstrap t) UCL	30.47
Maximum	28	95% KM (BCA) UCL	5
Mean	3.226	95% KM (Percentile Bootstrap) UCL	4.694
Median	2.994	95% KM (Chebyshev) UCL	8.777
SD	5.453	97.5% KM (Chebyshev) UCL	11.75
k star	0.583	99% KM (Chebyshev) UCL	17.6
Theta star	5.531		
Nu star	28	Potential UCLs to Use	
AppChi2	16.93	99% KM (Chebyshev) UCL	17.6
95% Gamma Approximate UCL	5.336		
95% Adjusted Gamma UCL	5.534		
Note: DL/2 is not a recommended method.			

HEXACHLOROBUTADIENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	22
		Percent Non-Detects	91.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12

APPENDIX K, TABLE 3
RAGS 3.3 - GENERAL PLANT AREA - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Maximum Detected	1.8	Maximum Detected	0.588
Mean of Detected	0.96	Mean of Detected	-0.766
SD of Detected	1.188	SD of Detected	1.915
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	490	Maximum Non-Detect	6.194

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	24
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	16.97	Mean	-0.541
SD	49.93	SD	3.475
95% DL/2 (t) UCL	34.44	95% H-Stat (DL/2) UCL	32866
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.356	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.232
5% K-S Critical Value	N/A	SD	0.419
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.153
		95% KM (t) UCL	0.494
Assuming Gamma Distribution		95% KM (z) UCL	0.484
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.32
Minimum	N/A	95% KM (bootstrap t) UCL	0.286
Maximum	N/A	95% KM (BCA) UCL	1.8
Mean	N/A	95% KM (Percentile Bootstrap) UCL	1.8
Median	N/A	95% KM (Chebyshev) UCL	0.899
SD	N/A	97.5% KM (Chebyshev) UCL	1.188
k star	N/A	99% KM (Chebyshev) UCL	1.755
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	97.5% KM (Chebyshev) UCL	1.188
95% Gamma Approximate UCL	N/A		

95% Adjusted Gamma UCL	N/A

Note: DL/2 is not a recommended method.

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	20	Number of Detected Data	12
Number of Distinct Detected Data	11	Number of Non-Detect Data	8
		Percent Non-Detects	40.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.057	Minimum Detected	-2.865
Maximum Detected	18	Maximum Detected	2.89
Mean of Detected	3.857	Mean of Detected	0.564
SD of Detected	4.952	SD of Detected	1.553
Minimum Non-Detect	0.79	Minimum Non-Detect	-0.236
Maximum Non-Detect	490	Maximum Non-Detect	6.194

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.713	Shapiro Wilk Test Statistic	0.946
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	20.14	Mean	1.267
SD	53.91	SD	1.985
95% DL/2 (t) UCL	40.98	95% H-Stat (DL/2) UCL	323.2
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.267
		SD in Log Scale	1.321
		Mean in Original Scale	2.715
		SD in Original Scale	4.042
		95% Percentile Bootstrap UCL	4.303
		95% BCA Bootstrap UCL	5.218
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.626	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	6.164		
nu star	15.02		
A-D Test Statistic	0.172	Nonparametric Statistics	
5% A-D Critical Value	0.765	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.765	Mean	3.275
5% K-S Critical Value	0.255	SD	4.453
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.211
		95% KM (t) UCL	5.37
Assuming Gamma Distribution		95% KM (z) UCL	5.268
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.373
Minimum	1.00E-09	95% KM (bootstrap t) UCL	7.498
Maximum	18	95% KM (BCA) UCL	5.432
Mean	3.593	95% KM (Percentile Bootstrap) UCL	5.37
Median	3.472	95% KM (Chebyshev) UCL	8.555
SD	3.958	97.5% KM (Chebyshev) UCL	10.84
k star	0.377	99% KM (Chebyshev) UCL	15.33
Theta star	9.531		
Nu star	15.08	Potential UCLs to Use	
AppChi2	7.317	95% KM (BCA) UCL	5.432
95% Gamma Approximate UCL	7.405		

95% Adjusted Gamma UCL	7.862

Note: DL/2 is not a recommended method.

NAPHTHALENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	15
Number of Distinct Detected Data	14	Number of Non-Detect Data	9
		Percent Non-Detects	37.50%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0017	Minimum Detected	-6.377
Maximum Detected	43	Maximum Detected	3.761
Mean of Detected	4.089	Mean of Detected	-0.751
SD of Detected	10.9	SD of Detected	2.539
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	490	Maximum Non-Detect	6.194
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	24
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.402	Shapiro Wilk Test Statistic	0.973
5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	15.59	Mean	-0.452
SD	50.11	SD	3.217
95% DL/2 (t) UCL	33.12	95% H-Stat (DL/2) UCL	10252
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.515
		SD in Log Scale	2.41
		Mean in Original Scale	2.6
		SD in Original Scale	8.726
		95% Percentile Bootstrap UCL	6.032
		95% BCA Bootstrap UCL	7.843
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.298	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	13.74		
nu star	8.93		
A-D Test Statistic	0.598	Nonparametric Statistics	
5% A-D Critical Value	0.832	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.832	Mean	3.035
5% K-S Critical Value	0.24	SD	9.069
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.052
		95% KM (t) UCL	6.551
Assuming Gamma Distribution		95% KM (z) UCL	6.41
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.526
Minimum	1.00E-09	95% KM (bootstrap t) UCL	22.25
Maximum	43	95% KM (BCA) UCL	7.183
Mean	3.262	95% KM (Percentile Bootstrap) UCL	6.956
Median	0.725	95% KM (Chebyshev) UCL	11.98
SD	8.639	97.5% KM (Chebyshev) UCL	15.85
k star	0.165	99% KM (Chebyshev) UCL	23.45
Theta star	19.72		
Nu star	7.939	Potential UCLs to Use	
AppChi2	2.7	95% KM (BCA) UCL	7.183
95% Gamma Approximate UCL	9.592		

95% Adjusted Gamma UCL	10.4

Note: DL/2 is not a recommended method.

PHENANTHRENE

General Statistics			
Number of Valid Data	20	Number of Detected Data	13
Number of Distinct Detected Data	12	Number of Non-Detect Data	7
		Percent Non-Detects	35.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.2	Minimum Detected	-1.609
Maximum Detected	42	Maximum Detected	3.738
Mean of Detected	8.421	Mean of Detected	1.079
SD of Detected	12.2	SD of Detected	1.628
Minimum Non-Detect	0.79	Minimum Non-Detect	-0.236
Maximum Non-Detect	490	Maximum Non-Detect	6.194

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	20
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.709	Shapiro Wilk Test Statistic	0.966
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	22.27	Mean	1.49
SD	53.9	SD	1.927
95% DL/2 (t) UCL	43.11	95% H-Stat (DL/2) UCL	298.9
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.724
		SD in Log Scale	1.479
		Mean in Original Scale	5.962
		SD in Original Scale	10.3
		95% Percentile Bootstrap UCL	10.25
		95% BCA Bootstrap UCL	11.05
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.505	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	16.69		
nu star	13.12		
A-D Test Statistic	0.473	Nonparametric Statistics	
5% A-D Critical Value	0.783	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.783	Mean	6.983
5% K-S Critical Value	0.248	SD	10.99
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.861
		95% KM (t) UCL	11.93
Assuming Gamma Distribution		95% KM (z) UCL	11.69
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	11.93
Minimum	1.00E-09	95% KM (bootstrap t) UCL	16.38
Maximum	42	95% KM (BCA) UCL	12.13
Mean	7.748	95% KM (Percentile Bootstrap) UCL	11.83
Median	4.092	95% KM (Chebyshev) UCL	19.46
SD	10.12	97.5% KM (Chebyshev) UCL	24.85
k star	0.244	99% KM (Chebyshev) UCL	35.45
Theta star	31.8		
Nu star	9.745	Potential UCLs to Use	
AppChi2	3.783	95% KM (BCA) UCL	12.13
95% Gamma Approximate UCL	19.96		

95% Adjusted Gamma UCL	21.61

Note: DL/2 is not a recommended method.

1,2,4-TRICHLOROBENZENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	15
Number of Distinct Detected Data	13	Number of Non-Detect Data	9
		Percent Non-Detects	37.50%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0013	Minimum Detected	-6.645
Maximum Detected	360	Maximum Detected	5.886
Mean of Detected	28.21	Mean of Detected	-0.793
SD of Detected	92	SD of Detected	3.801
Minimum Non-Detect	0.0033	Minimum Non-Detect	-5.714
Maximum Non-Detect	57	Maximum Non-Detect	4.043
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	23
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	95.83%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.335	Shapiro Wilk Test Statistic	0.942
5% Shapiro Wilk Critical Value	0.881	5% Shapiro Wilk Critical Value	0.881
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	20.03	Mean	-0.682
SD	72.87	SD	3.45
95% DL/2 (t) UCL	45.53	95% H-Stat (DL/2) UCL	30171
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.833
		SD in Log Scale	3.362
		Mean in Original Scale	17.65
		SD in Original Scale	73.12
		95% Percentile Bootstrap UCL	46.57
		95% BCA Bootstrap UCL	75.74
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.189	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	149.2		
nu star	5.674		
A-D Test Statistic	0.873	Nonparametric Statistics	
5% A-D Critical Value	0.883	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.883	Mean	17.95
5% K-S Critical Value	0.246	SD	71.53
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	15.12
		95% KM (t) UCL	43.86
Assuming Gamma Distribution		95% KM (z) UCL	42.82
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	43.52
Minimum	1.00E-09	95% KM (bootstrap t) UCL	296
Maximum	360	95% KM (BCA) UCL	47.79
Mean	19.86	95% KM (Percentile Bootstrap) UCL	47.48
Median	0.0895	95% KM (Chebyshev) UCL	83.85
SD	72.89	97.5% KM (Chebyshev) UCL	112.4
k star	0.113	99% KM (Chebyshev) UCL	168.4
Theta star	175.4		
Nu star	5.436	Potential UCLs to Use	
AppChi2	1.359	95% KM (BCA) UCL	47.79
95% Gamma Approximate UCL	79.47		

95% Adjusted Gamma UCL	88.34

Note: DL/2 is not a recommended method.

1,2-DICHLOROBENZENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	20
Number of Distinct Detected Data	20	Number of Non-Detect Data	4
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0025	Minimum Detected	-5.991
Maximum Detected	2200	Maximum Detected	7.696
Mean of Detected	163.8	Mean of Detected	1.072
SD of Detected	494.1	SD of Detected	3.683
Minimum Non-Detect	0.0033	Minimum Non-Detect	-5.714
Maximum Non-Detect	57	Maximum Non-Detect	4.043
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	75.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.374	Shapiro Wilk Test Statistic	0.984
5% Shapiro Wilk Critical Value	0.905	5% Shapiro Wilk Critical Value	0.905
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	137.9	Mean	0.772
SD	453	SD	3.753
95% DL/2 (t) UCL	296.4	95% H-Stat (DL/2) UCL	516567
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.412
		SD in Log Scale	3.773
		Mean in Original Scale	136.5
		SD in Original Scale	453.4
		95% Percentile Bootstrap UCL	303.9
		95% BCA Bootstrap UCL	422.2
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.191	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	859.5		
nu star	7.623		
A-D Test Statistic	0.949	Nonparametric Statistics	
5% A-D Critical Value	0.894	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.894	Mean	136.6
5% K-S Critical Value	0.215	SD	443.8
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	92.95
		95% KM (t) UCL	295.9
Assuming Gamma Distribution		95% KM (z) UCL	289.5
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	295.2
Minimum	1.00E-09	95% KM (bootstrap t) UCL	801.8
Maximum	2200	95% KM (BCA) UCL	315.9
Mean	136.5	95% KM (Percentile Bootstrap) UCL	306
Median	1.1	95% KM (Chebyshev) UCL	541.8
SD	453.4	97.5% KM (Chebyshev) UCL	717.1
k star	0.122	99% KM (Chebyshev) UCL	1061
Theta star	1119		
Nu star	5.853	Potential UCLs to Use	
AppChi2	1.565	95% KM (Chebyshev) UCL	541.8
95% Gamma Approximate UCL	510.4		

95% Adjusted Gamma UCL	564.4

Note: DL/2 is not a recommended method.

1,3-DICHLOROBENZENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	14
		Percent Non-Detects	58.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.026	Minimum Detected	-3.65
Maximum Detected	290	Maximum Detected	5.67
Mean of Detected	46.37	Mean of Detected	0.617
SD of Detected	94.6	SD of Detected	3.362
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	57	Maximum Non-Detect	4.043
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	22
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.67%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.584	Shapiro Wilk Test Statistic	0.926
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	21.99	Mean	-0.669
SD	63.26	SD	3.374
95% DL/2 (t) UCL	44.12	95% H-Stat (DL/2) UCL	7074
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.605
		SD in Log Scale	3.694
		Mean in Original Scale	19.33
		SD in Original Scale	63.61
		95% Percentile Bootstrap UCL	42.63
		95% BCA Bootstrap UCL	60.82
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.224	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	207.2		
nu star	4.476		
A-D Test Statistic	0.53	Nonparametric Statistics	
5% A-D Critical Value	0.844	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.844	Mean	19.56
5% K-S Critical Value	0.293	SD	62.24
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	13.4
		95% KM (t) UCL	42.53
Assuming Gamma Distribution		95% KM (z) UCL	41.6
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	41.81
Minimum	0.026	95% KM (bootstrap t) UCL	188
Maximum	290	95% KM (BCA) UCL	43.87
Mean	47.22	95% KM (Percentile Bootstrap) UCL	43.17
Median	47.36	95% KM (Chebyshev) UCL	77.97
SD	59.18	97.5% KM (Chebyshev) UCL	103.2
k star	0.445	99% KM (Chebyshev) UCL	152.9
Theta star	106.1		
Nu star	21.36	Potential UCLs to Use	
AppChi2	11.86	95% KM (t) UCL	42.53
95% Gamma Approximate UCL	85.04		

95% Adjusted Gamma UCL	88.76

Note: DL/2 is not a recommended method.

1,4-DICHLOROBENZENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	19
Number of Distinct Detected Data	19	Number of Non-Detect Data	5
		Percent Non-Detects	20.83%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0053	Minimum Detected	-5.24
Maximum Detected	2600	Maximum Detected	7.863
Mean of Detected	258.5	Mean of Detected	1.222
SD of Detected	617.9	SD of Detected	3.907
Minimum Non-Detect	0.0033	Minimum Non-Detect	-5.714
Maximum Non-Detect	57	Maximum Non-Detect	4.043
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	75.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.488	Shapiro Wilk Test Statistic	0.894
5% Shapiro Wilk Critical Value	0.901	5% Shapiro Wilk Critical Value	0.901
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	206.1	Mean	0.821
SD	556.5	SD	3.873
95% DL/2 (t) UCL	400.8	95% H-Stat (DL/2) UCL	802114
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.38
		SD in Log Scale	4.026
		Mean in Original Scale	204.7
		SD in Original Scale	557
		95% Percentile Bootstrap UCL	406
		95% BCA Bootstrap UCL	528.5
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.181	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1426		
nu star	6.888		
A-D Test Statistic	1.5	Nonparametric Statistics	
5% A-D Critical Value	0.898	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.898	Mean	204.8
5% K-S Critical Value	0.221	SD	545.2
Data not Gamma Distributed at 5% Significance Level		SE of Mean	114.3
		95% KM (t) UCL	400.8
Assuming Gamma Distribution		95% KM (z) UCL	392.9
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	399.7
Minimum	1.00E-09	95% KM (bootstrap t) UCL	730
Maximum	2600	95% KM (BCA) UCL	417.2
Mean	206.9	95% KM (Percentile Bootstrap) UCL	420.6
Median	1.116	95% KM (Chebyshev) UCL	703.2
SD	556.2	97.5% KM (Chebyshev) UCL	918.9
k star	0.165	99% KM (Chebyshev) UCL	1343
Theta star	1254		
Nu star	7.919	Potential UCLs to Use	
AppChi2	2.688	99% KM (Chebyshev) UCL	1343
95% Gamma Approximate UCL	609.5		

95% Adjusted Gamma UCL	661.1

Note: DL/2 is not a recommended method.

BENZENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	14
Number of Distinct Detected Data	10	Number of Non-Detect Data	10
		Percent Non-Detects	41.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0017	Minimum Detected	-6.377
Maximum Detected	4.3	Maximum Detected	1.459
Mean of Detected	0.741	Mean of Detected	-3.57
SD of Detected	1.389	SD of Detected	3.131
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	13	Maximum Non-Detect	2.565
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	24
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.615	Shapiro Wilk Test Statistic	0.781
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.896	Mean	-3.825
SD	1.829	SD	3.088
95% DL/2 (t) UCL	1.536	95% H-Stat (DL/2) UCL	126.9
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.408
		SD in Log Scale	2.616
		Mean in Original Scale	0.434
		SD in Original Scale	1.108
		95% Percentile Bootstrap UCL	0.845
		95% BCA Bootstrap UCL	0.956
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.222	Data do not follow a Discernable Distribution (0.05)	
Theta Star	3.344		
nu star	6.206		
A-D Test Statistic	1.54	Nonparametric Statistics	
5% A-D Critical Value	0.865	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.865	Mean	0.473
5% K-S Critical Value	0.252	SD	1.126
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.249
		95% KM (t) UCL	0.899
Assuming Gamma Distribution		95% KM (z) UCL	0.882
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.894
Minimum	0.0017	95% KM (bootstrap t) UCL	1.47
Maximum	4.3	95% KM (BCA) UCL	0.902
Mean	0.762	95% KM (Percentile Bootstrap) UCL	0.875
Median	0.705	95% KM (Chebyshev) UCL	1.558
SD	1.045	97.5% KM (Chebyshev) UCL	2.028
k star	0.336	99% KM (Chebyshev) UCL	2.95
Theta star	2.268		
Nu star	16.11	Potential UCLs to Use	
AppChi2	8.043	99% KM (Chebyshev) UCL	2.95
95% Gamma Approximate UCL	1.526		

95% Adjusted Gamma UCL	1.606

Note: DL/2 is not a recommended method.

CHLOROBENZENE

General Statistics			
Number of Valid Data	24	Number of Detected Data	16
Number of Distinct Detected Data	13	Number of Non-Detect Data	8
		Percent Non-Detects	33.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.001	Minimum Detected	-6.908
Maximum Detected	230	Maximum Detected	5.438
Mean of Detected	47.94	Mean of Detected	-1.74
SD of Detected	76.23	SD of Detected	5.17
Minimum Non-Detect	0.0032	Minimum Non-Detect	-5.745
Maximum Non-Detect	1.5	Maximum Non-Detect	0.405
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	18
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	75.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.682	Shapiro Wilk Test Statistic	0.764
5% Shapiro Wilk Critical Value	0.887	5% Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	31.99	Mean	-2.77
SD	65.73	SD	4.559
95% DL/2 (t) UCL	54.99	95% H-Stat (DL/2) UCL	3123916
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-3.057
		SD in Log Scale	4.629
		Mean in Original Scale	31.96
		SD in Original Scale	65.75
		95% Percentile Bootstrap UCL	54.54
		95% BCA Bootstrap UCL	61.05
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.154	Data do not follow a Discernable Distribution (0.05)	
Theta Star	310.8		
nu star	4.936		
A-D Test Statistic	1.91	Nonparametric Statistics	
5% A-D Critical Value	0.902	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.902	Mean	31.96
5% K-S Critical Value	0.24	SD	64.36
Data not Gamma Distributed at 5% Significance Level		SE of Mean	13.57
		95% KM (t) UCL	55.22
Assuming Gamma Distribution		95% KM (z) UCL	54.28
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	54.96
Minimum	0.001	95% KM (bootstrap t) UCL	64.37
Maximum	230	95% KM (BCA) UCL	56.25
Mean	45.66	95% KM (Percentile Bootstrap) UCL	54.84
Median	40.28	95% KM (Chebyshev) UCL	91.11
SD	61.66	97.5% KM (Chebyshev) UCL	116.7
k star	0.2	99% KM (Chebyshev) UCL	167
Theta star	228		
Nu star	9.611	Potential UCLs to Use Use	
AppChi2	3.7	99% KM (Chebyshev) UCL	167
95% Gamma Approximate UCL	118.6		

95% Adjusted Gamma UCL	127.4

Note: DL/2 is not a recommended method.

1,2,3-TRICHLOROBENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,3-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

METHYL MERCURY

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2,3,7,8-TCDD Equivalent

General Statistics			
Number of Valid Observations	27	Number of Distinct Observations	27
Raw Statistics		Log-transformed Statistics	
Minimum	1.254	Minimum of Log Data	0.226
Maximum	2090	Maximum of Log Data	7.645
Mean	208.3	Mean of log Data	3.921
Median	51.29	SD of log Data	1.806
SD	444.3		
Coefficient of Variation	2.134		
Skewness	3.455		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.497	Shapiro Wilk Test Statistic	0.976
Shapiro Wilk Critical Value	0.923	Shapiro Wilk Critical Value	0.923
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	354.1	95% H-UCL	926.6
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	664.7
95% Adjusted-CLT UCL	409.7	97.5% Chebyshev (MVUE) UCL	855.2
95% Modified-t UCL	363.6	99% Chebyshev (MVUE) UCL	1229
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.429	Data appear Lognormal at 5% Significance Level	
Theta Star	485.5		
nu star	23.16		
Approximate Chi Square Value (.05)	13.21	Nonparametric Statistics	
Adjusted Level of Significance	0.0401	95% CLT UCL	348.9

APPENDIX K, TABLE 3
RAGS 3.3 - GENERAL PLANT AREA - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Adjusted Chi Square Value	12.73	95% Jackknife UCL	354.1
		95% Standard Bootstrap UCL	345.6
Anderson-Darling Test Statistic	1.157	95% Bootstrap-t UCL	612.7
Anderson-Darling 5% Critical Value	0.818	95% Hall's Bootstrap UCL	810.8
Kolmogorov-Smirnov Test Statistic	0.195	95% Percentile Bootstrap UCL	356.9
Kolmogorov-Smirnov 5% Critical Value	0.179	95% BCA Bootstrap UCL	411.6
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	581
		97.5% Chebyshev(Mean, Sd) UCL	742.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1059
95% Approximate Gamma UCL	365.1		
95% Adjusted Gamma UCL	378.8		
Potential UCL to Use		95% Chebyshev (MVUE) UCL	664.7

APPENDIX K, TABLE 4
RAGS 3.4 - GENERAL PLANT AREA - INTERMEDIATE GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ALUMINUM

General Statistics

Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ALUMINUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ARSENIC

General Statistics

Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ARSENIC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BARIUM

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BARIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

COPPER

General Statistics

Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1

		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable COPPER was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

IRON

General Statistics

Number of Valid Data	4	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	2
		Percent Non-Detects	50.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable IRON was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

LEAD

General Statistics

Number of Valid Data	5	Number of Detected Data	4
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	20.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0023	Minimum Detected	-6.075
Maximum Detected	0.488	Maximum Detected	-0.717
Mean of Detected	0.124	Mean of Detected	-4.597
SD of Detected	0.243	SD of Detected	2.6
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	0.001	Maximum Non-Detect	-6.908

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.632	Shapiro Wilk Test Statistic	0.703
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0994	Mean	-5.198
SD	0.217	SD	2.622

95% DL/2 (t) UCL	0.307	95% H-Stat (DL/2) UCL	1570778
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.0679	Mean in Log Scale	-5.809
SD	0.226	SD in Log Scale	3.523
95% MLE (t) UCL	0.283	Mean in Original Scale	0.0993
95% MLE (Tiku) UCL	0.279	SD in Original Scale	0.217
		95% Percentile Bootstrap UCL	0.293
		95% BCA Bootstrap UCL	0.294
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.236	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.526		
nu star	1.889		
A-D Test Statistic	0.823	Nonparametric Statistics	
5% A-D Critical Value	0.71	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.71	Mean	0.0998
5% K-S Critical Value	0.419	SD	0.194
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.1
		95% KM (t) UCL	0.313
Assuming Gamma Distribution		95% KM (z) UCL	0.265
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.307
Minimum	1.00E-09	95% KM (bootstrap t) UCL	28.74
Maximum	0.488	95% KM (BCA) UCL	0.197
Mean	0.0993	95% KM (Percentile Bootstrap) UCL	0.294
Median	0.0023	95% KM (Chebyshev) UCL	0.537
SD	0.217	97.5% KM (Chebyshev) UCL	0.726
k star	0.19	99% KM (Chebyshev) UCL	1.097
Theta star	0.524		
Nu star	1.896	Potential UCLs to Use	
AppChi2	0.138	99% KM (Chebyshev) UCL	1.097
95% Gamma Approximate UCL	1.361		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

MANGANESE

General Statistics			
Number of Valid Data	4	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	2
		Percent Non-Detects	50.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MANGANESE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!

APPENDIX K, TABLE 4
RAGS 3.4 - GENERAL PLANT AREA - INTERMEDIATE GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

NICKEL

General Statistics

Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable NICKEL was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

VANADIUM

General Statistics

Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable VANADIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2,4-DICHLOROPHENOL

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2,4-DICHLOROPHENOL was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2-CHLOROPHENOL

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1

		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2-CHLOROPHENOL was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(G,H,I)PERYLENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(G,H,I)PERYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHRYSENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHRYSENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

INDENO(1,2,3-CD)PYRENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable INDENO(1,2,3-CD)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

NAPHTHALENE

APPENDIX K, TABLE 4
RAGS 3.4 - GENERAL PLANT AREA - INTERMEDIATE GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable NAPHTHALENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable PHENANTHRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2,4-TRICHLOROBENZENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,4-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2-DICHLOROBENZENE

General Statistics

Number of Valid Data	3	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	2
		Percent Non-Detects	66.67%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 4
RAGS 3.4 - GENERAL PLANT AREA - INTERMEDIATE GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

1,3-DICHLOROBENZENE

General Statistics

Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,3-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,4-DICHLOROBENZENE

General Statistics

Number of Valid Data	4	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	2
		Percent Non-Detects	50.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,4-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZENE

General Statistics

Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHLOROBENZENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 4
RAGS 3.4 - GENERAL PLANT AREA - INTERMEDIATE GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

CHLOROFORM

General Statistics			
Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHLOROFORM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

METHYLENE CHLORIDE

General Statistics			
Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYLENE CHLORIDE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 5
RAGS 3.5 - FORMER CHLORINATION BUILDING - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ARSENIC

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ARSENIC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHROMIUM

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHROMIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

IRON

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable IRON was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MANGANESE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!

APPENDIX K, TABLE 5
RAGS 3.5 - FORMER CHLORINATION BUILDING - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MANGANESE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

VANADIUM

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable VANADIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

HIGHLY CHLORINATED

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable HIGHLY CHLORINATED was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

TOTAL PCBs

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable TOTAL PCBs was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ACENAPHTHYLENE

General Statistics			
Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ACENAPHTHYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)ANTHRACENE

General Statistics			
Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)PYRENE

General Statistics			
Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

APPENDIX K, TABLE 5
RAGS 3.5 - FORMER CHLORINATION BUILDING - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

The data set for variable BENZO(B)FLUORANTHENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(G,H,I)PERYLENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	1

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(G,H,I)PERYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DIBENZO(A,H)ANTHRACENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DIBENZO(A,H)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

INDENO(1,2,3-CD)PYRENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable INDENO(1,2,3-CD)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!

APPENDIX K, TABLE 5
RAGS 3.5 - FORMER CHLORINATION BUILDING - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable PHENANTHRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2,4-TRICHLOROBENZENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,4-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2-DICHLOROBENZENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,4-DICHLOROBENZENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,4-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

METHYL MERCURY

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

APPENDIX K, TABLE 5
RAGS 3.5 - FORMER CHLORINATION BUILDING - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2,3,7,8-TCDD Equivalent

General Statistics			
Number of Valid Observations	16	Number of Distinct Observations	16
Raw Statistics		Log-transformed Statistics	
Minimum	20.38	Minimum of Log Data	3.014
Maximum	222967	Maximum of Log Data	12.31
Mean	18428	Mean of log Data	6.973
Median	541.1	SD of log Data	2.57
SD	55154		
Coefficient of Variation	2.993		
Skewness	3.856		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.371	Shapiro Wilk Test Statistic	0.965
Shapiro Wilk Critical Value	0.887	Shapiro Wilk Critical Value	0.887
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	42600	95% H-UCL	1170312
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	65873
95% Adjusted-CLT UCL	55312	97.5% Chebyshev (MVUE) UCL	87562
95% Modified-t UCL	44816	99% Chebyshev (MVUE) UCL	130167
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.244	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	75426		
nu star	7.818		
Approximate Chi Square Value (.05)	2.63	Nonparametric Statistics	
Adjusted Level of Significance	0.0335	95% CLT UCL	41108
Adjusted Chi Square Value	2.3	95% Jackknife UCL	42600
		95% Standard Bootstrap UCL	40138
Anderson-Darling Test Statistic	1.241	95% Bootstrap-t UCL	174048
Anderson-Darling 5% Critical Value	0.858	95% Hall's Bootstrap UCL	155168
Kolmogorov-Smirnov Test Statistic	0.234	95% Percentile Bootstrap UCL	44889
Kolmogorov-Smirnov 5% Critical Value	0.235	95% BCA Bootstrap UCL	59684
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	78531
		97.5% Chebyshev(Mean, Sd) UCL	104537
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	155622
95% Approximate Gamma UCL	54777		
95% Adjusted Gamma UCL	62643		
Potential UCL to Use		Use 95% Adjusted Gamma UCL	62643

APPENDIX K, TABLE 6
RAGS 3.6 - FORMER CHLORINATION BUILDING - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ARSENIC

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ARSENIC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHROMIUM

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHROMIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

IRON

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable IRON was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MANGANESE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!

APPENDIX K, TABLE 6
RAGS 3.6 - FORMER CHLORINATION BUILDING - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MANGANESE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

VANADIUM

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable VANADIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ACENAPHTHYLENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ACENAPHTHYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!

APPENDIX K, TABLE 6
RAGS 3.6 - FORMER CHLORINATION BUILDING - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)PYRENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(B)FLUORANTHENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(B)FLUORANTHENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(G,H,I)PERYLENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	1

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(G,H,I)PERYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DIBENZO(A,H)ANTHRACENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!

APPENDIX K, TABLE 6
RAGS 3.6 - FORMER CHLORINATION BUILDING - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DIBENZO(A,H)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

HEXACHLOROBENZENE

General Statistics			
Number of Valid Data	3	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	1
		Percent Non-Detects	33.33%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable HEXACHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable INDENO(1,2,3-CD)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics			
Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable PHENANTHRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2,4-TRICHLOROBENZENE

General Statistics			
Number of Valid Observations	3	Number of Distinct Observations	3

APPENDIX K, TABLE 6
RAGS 3.6 - FORMER CHLORINATION BUILDING - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,4-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2-DICHLOROBENZENE

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,4-DICHLOROBENZENE

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,4-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

METHYL MERCURY

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2,3,7,8-TCDD Equivalent

General Statistics

Number of Valid Observations	34	Number of Distinct Observations	34

Raw Statistics		Log-transformed Statistics	
Minimum	1.824	Minimum of Log Data	0.601

APPENDIX K, TABLE 6
RAGS 3.6 - FORMER CHLORINATION BUILDING - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Maximum	252306	Maximum of Log Data	12.44
Mean	23482	Mean of log Data	6.583
Median	450.9	SD of log Data	3.279
SD	58539		
Coefficient of Variation	2.493		
Skewness	3.222		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.462	Shapiro Wilk Test Statistic	0.949
Shapiro Wilk Critical Value	0.933	Shapiro Wilk Critical Value	0.933
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	40472	95% H-UCL	4133884
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	330211
95% Adjusted-CLT UCL	45924	97.5% Chebyshev (MVUE) UCL	440788
95% Modified-t UCL	41397	99% Chebyshev (MVUE) UCL	657995
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.211	Data appear Lognormal at 5% Significance Level	
Theta Star	111336		
nu star	14.34		
Approximate Chi Square Value (.05)	6.806	Nonparametric Statistics	
Adjusted Level of Significance	0.0422	95% CLT UCL	39995
Adjusted Chi Square Value	6.549	95% Jackknife UCL	40472
		95% Standard Bootstrap UCL	40233
Anderson-Darling Test Statistic	1.653	95% Bootstrap-t UCL	67926
Anderson-Darling 5% Critical Value	0.895	95% Hall's Bootstrap UCL	100639
Kolmogorov-Smirnov Test Statistic	0.197	95% Percentile Bootstrap UCL	40576
Kolmogorov-Smirnov 5% Critical Value	0.167	95% BCA Bootstrap UCL	47581
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	67243
		97.5% Chebyshev(Mean, Sd) UCL	86178
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	123373
95% Approximate Gamma UCL	49482		
95% Adjusted Gamma UCL	51420		
Potential UCL to Use		Use 99% Chebyshev (MVUE) UCL	657995
Recommended UCL exceeds the maximum observation			

Highly Chlorinated

General Statistics			
Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Highly Chlorinated was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Less Chlorinated

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

APPENDIX K, TABLE 6
RAGS 3.6 - FORMER CHLORINATION BUILDING - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Less Chlorinated was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Total PCBs

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Total PCBs was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 7
RAGS 3.7 - FORMER CHLORINATION BUILDING - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ARSENIC

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ARSENIC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHROMIUM

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHROMIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

IRON

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable IRON was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MANGANESE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!

APPENDIX K, TABLE 7
RAGS 3.7 - FORMER CHLORINATION BUILDING - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MANGANESE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

VANADIUM

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable VANADIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Highly Chlorinated

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Highly Chlorinated was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Less Chlorinated

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

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The data set for variable Less Chlorinated was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Total PCBs

General Statistics			
Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Total PCBs was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ALDRIN

General Statistics			
Number of Valid Data	3	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	2
		Percent Non-Detects	66.67%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ALDRIN was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ACENAPHTHYLENE

General Statistics			
Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ACENAPHTHYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)ANTHRACENE

General Statistics			
Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)PYRENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(B)FLUORANTHENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(B)FLUORANTHENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(G,H,I)PERYLENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	1

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(G,H,I)PERYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DIBENZO(A,H)ANTHRACENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!

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Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DIBENZO(A,H)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

HEXACHLOROBENZENE

General Statistics

Number of Valid Data	3	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	1
		Percent Non-Detects	33.33%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable HEXACHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

INDENO(1,2,3-CD)PYRENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable INDENO(1,2,3-CD)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable PHENANTHRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2,4-TRICHLOROBENZENE

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

APPENDIX K, TABLE 7
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Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,4-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2-DICHLOROBENZENE

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,4-DICHLOROBENZENE

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,4-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

METHYL MERCURY

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2,3,7,8-TCDD Equivalent

General Statistics

Number of Valid Observations	34	Number of Distinct Observations	34

Raw Statistics		Log-transformed Statistics	
Minimum	1.824	Minimum of Log Data	0.601

APPENDIX K, TABLE 7
RAGS 3.7 - FORMER CHLORINATION BUILDING - INTERMEDIATE SOIL
PRO-UCL OUTPUT
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Maximum	252306	Maximum of Log Data	12.44
Mean	23482	Mean of log Data	6.583
Median	450.9	SD of log Data	3.279
SD	58539		
Coefficient of Variation	2.493		
Skewness	3.222		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.462	Shapiro Wilk Test Statistic	0.949
Shapiro Wilk Critical Value	0.933	Shapiro Wilk Critical Value	0.933
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	40472	95% H-UCL	4133884
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	330211
95% Adjusted-CLT UCL	45924	97.5% Chebyshev (MVUE) UCL	440788
95% Modified-t UCL	41397	99% Chebyshev (MVUE) UCL	657995
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.211	Data appear Lognormal at 5% Significance Level	
Theta Star	111336		
nu star	14.34		
Approximate Chi Square Value (.05)	6.806	Nonparametric Statistics	
Adjusted Level of Significance	0.0422	95% CLT UCL	39995
Adjusted Chi Square Value	6.549	95% Jackknife UCL	40472
		95% Standard Bootstrap UCL	39653
Anderson-Darling Test Statistic	1.653	95% Bootstrap-t UCL	67040
Anderson-Darling 5% Critical Value	0.895	95% Hall's Bootstrap UCL	98867
Kolmogorov-Smirnov Test Statistic	0.197	95% Percentile Bootstrap UCL	41148
Kolmogorov-Smirnov 5% Critical Value	0.167	95% BCA Bootstrap UCL	46307
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	67243
		97.5% Chebyshev(Mean, Sd) UCL	86178
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	123373
95% Approximate Gamma UCL	49482		
95% Adjusted Gamma UCL	51420		
Potential UCL to Use		Use 99% Chebyshev (MVUE) UCL	657995
Recommended UCL exceeds the maximum observation			

APPENDIX K, TABLE 8
RAGS 3.8 - ONSITE DITCHES - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ARSENIC

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ARSENIC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHROMIUM

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHROMIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

COPPER

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable COPPER was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

IRON

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!

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RAGS 3.8 - ONSITE DITCHES - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable IRON was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

LEAD

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable LEAD was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MANGANESE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MANGANESE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics

Number of Valid Observations	5	Number of Distinct Observations	5

Raw Statistics		Log-transformed Statistics	
Minimum	11	Minimum of Log Data	2.398
Maximum	4780	Maximum of Log Data	8.472
Mean	1701	Mean of log Data	5.707
Median	1800	SD of log Data	2.947
SD	1951		
Coefficient of Variation	1.147		
Skewness	1.097		

Warning: A sample size of 'n' = 5 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 5 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,

the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.862	Shapiro Wilk Test Statistic	0.787
Shapiro Wilk Critical Value	0.762	Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3561	95% H-UCL	1.40E+13
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17412
95% Adjusted-CLT UCL	3594	97.5% Chebyshev (MVUE) UCL	23403
95% Modified-t UCL	3633	99% Chebyshev (MVUE) UCL	35171
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.286	Data appear Normal at 5% Significance Level	
Theta Star	5940		
nu star	2.864		
Approximate Chi Square Value (.05)	0.333	Nonparametric Statistics	
Adjusted Level of Significance	0.0086	95% CLT UCL	3136
Adjusted Chi Square Value	0.125	95% Jackknife UCL	3561
		95% Standard Bootstrap UCL	2999
Anderson-Darling Test Statistic	0.563	95% Bootstrap-t UCL	4732
Anderson-Darling 5% Critical Value	0.728	95% Hall's Bootstrap UCL	4321
Kolmogorov-Smirnov Test Statistic	0.317	95% Percentile Bootstrap UCL	3052
Kolmogorov-Smirnov 5% Critical Value	0.376	95% BCA Bootstrap UCL	3250
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5505
		97.5% Chebyshev(Mean, Sd) UCL	7151
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	10384
95% Approximate Gamma UCL	14619		
95% Adjusted Gamma UCL	39109		
Potential UCL to Use		95% Student's-t UCL	3561

NICKEL

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable NICKEL was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

VANADIUM

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable VANADIUM was not processed!

APPENDIX K, TABLE 8
RAGS 3.8 - ONSITE DITCHES - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Highly Chlorinated

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Highly Chlorinated was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Total PCBs

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Total PCBs was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ACENAPHTHYLENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ACENAPHTHYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)ANTHRACENE was not processed!

APPENDIX K, TABLE 8
RAGS 3.8 - ONSITE DITCHES - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)PYRENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(B)FLUORANTHENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(B)FLUORANTHENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(G,H,I)PERYLENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(G,H,I)PERYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DIBENZO(A,H)ANTHRACENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DIBENZO(A,H)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

INDENO(1,2,3-CD)PYRENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable INDENO(1,2,3-CD)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable PHENANTHRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

METHYL MERCURY

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2,3,7,8-TCDD Equivalent

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2.9 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 9
RAGS 3.9 - ONSITE DITCHES - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ARSENIC

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ARSENIC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHROMIUM

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHROMIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

COPPER

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable COPPER was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

IRON

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!

APPENDIX K, TABLE 9
RAGS 3.9 - ONSITE DITCHES - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable IRON was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

LEAD

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable LEAD was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MANGANESE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MANGANESE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics

Number of Valid Observations	7	Number of Distinct Observations	7

Raw Statistics		Log-transformed Statistics	
Minimum	11	Minimum of Log Data	2.398
Maximum	4780	Maximum of Log Data	8.472
Mean	1227	Mean of log Data	5.069
Median	65	SD of log Data	2.672
SD	1788		
Coefficient of Variation	1.457		
Skewness	1.57		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,

the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.751	Shapiro Wilk Test Statistic	0.824
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2539	95% H-UCL	91990952
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7942
95% Adjusted-CLT UCL	2766	97.5% Chebyshev (MVUE) UCL	10635
95% Modified-t UCL	2606	99% Chebyshev (MVUE) UCL	15926
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.285	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	4305		
nu star	3.989		
Approximate Chi Square Value (.05)	0.717	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	2338
Adjusted Chi Square Value	0.396	95% Jackknife UCL	2539
		95% Standard Bootstrap UCL	2258
Anderson-Darling Test Statistic	0.657	95% Bootstrap-t UCL	3739
Anderson-Darling 5% Critical Value	0.779	95% Hall's Bootstrap UCL	3064
Kolmogorov-Smirnov Test Statistic	0.28	95% Percentile Bootstrap UCL	2326
Kolmogorov-Smirnov 5% Critical Value	0.334	95% BCA Bootstrap UCL	2602
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4172
		97.5% Chebyshev(Mean, Sd) UCL	5446
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	7949
95% Approximate Gamma UCL	6821		
95% Adjusted Gamma UCL	12341		
Potential UCL to Use		95% Adjusted Gamma UCL	12341
Recommended UCL exceeds the maximum observation			

NICKEL

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable NICKEL was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

VANADIUM

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

APPENDIX K, TABLE 9
RAGS 3.9 - ONSITE DITCHES - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

The data set for variable VANADIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Highly Chlorinated

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.56	Minimum of Log Data	-0.58
Maximum	14	Maximum of Log Data	2.639
Mean	5.252	Mean of log Data	0.976
Median	3.105	SD of log Data	1.386
SD	5.62		
Coefficient of Variation	1.07		
Skewness	0.87		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.848	Shapiro Wilk Test Statistic	0.891
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	9.875	95% H-UCL	206.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	18.38
95% Adjusted-CLT UCL	9.897	97.5% Chebyshev (MVUE) UCL	23.97
95% Modified-t UCL	10.01	99% Chebyshev (MVUE) UCL	34.93
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.542	Data appear Normal at 5% Significance Level	
Theta Star	9.697		
nu star	6.499		
Approximate Chi Square Value (.05)	1.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	9.026
Adjusted Chi Square Value	1.135	95% Jackknife UCL	9.875
		95% Standard Bootstrap UCL	8.683
Anderson-Darling Test Statistic	0.408	95% Bootstrap-t UCL	17.35
Anderson-Darling 5% Critical Value	0.718	95% Hall's Bootstrap UCL	12.59
Kolmogorov-Smirnov Test Statistic	0.262	95% Percentile Bootstrap UCL	8.99
Kolmogorov-Smirnov 5% Critical Value	0.342	95% BCA Bootstrap UCL	9.003
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.25
		97.5% Chebyshev(Mean, Sd) UCL	19.58
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	28.08

95% Approximate Gamma UCL	17.96
95% Adjusted Gamma UCL	30.07

Potential UCL to Use		95% Student's-t UCL	9.875

Total PCBs

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.56	Minimum of Log Data	-0.58
Maximum	14	Maximum of Log Data	2.639
Mean	5.252	Mean of log Data	0.976
Median	3.105	SD of log Data	1.386
SD	5.62		
Coefficient of Variation	1.07		
Skewness	0.87		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.848	Shapiro Wilk Test Statistic	0.891
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	9.875	95% H-UCL	206.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	18.38
95% Adjusted-CLT UCL	9.897	97.5% Chebyshev (MVUE) UCL	23.97
95% Modified-t UCL	10.01	99% Chebyshev (MVUE) UCL	34.93
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.542	Data appear Normal at 5% Significance Level	
Theta Star	9.697		
nu star	6.499		
Approximate Chi Square Value (.05)	1.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	9.026
Adjusted Chi Square Value	1.135	95% Jackknife UCL	9.875
		95% Standard Bootstrap UCL	8.697
Anderson-Darling Test Statistic	0.408	95% Bootstrap-t UCL	13.11
Anderson-Darling 5% Critical Value	0.718	95% Hall's Bootstrap UCL	12.69
Kolmogorov-Smirnov Test Statistic	0.262	95% Percentile Bootstrap UCL	8.958
Kolmogorov-Smirnov 5% Critical Value	0.342	95% BCA Bootstrap UCL	9.625
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.25
		97.5% Chebyshev(Mean, Sd) UCL	19.58
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	28.08
95% Approximate Gamma UCL	17.96		

95% Adjusted Gamma UCL	30.07		
Potential UCL to Use	95% Student's-t UCL		9.875

ACENAPHTHYLENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ACENAPHTHYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)PYRENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(B)FLUORANTHENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(B)FLUORANTHENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(G,H,I)PERYLENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(G,H,I)PERYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DIBENZO(A,H)ANTHRACENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DIBENZO(A,H)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

INDENO(1,2,3-CD)PYRENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable INDENO(1,2,3-CD)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable PHENANTHRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 9
RAGS 3.9 - ONSITE DITCHES - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

1,2,3-TRICHLOROBENZENE

General Statistics			
Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,3-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2,4-TRICHLOROBENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,4-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2-DICHLOROBENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,3-DICHLOROBENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,3-DICHLOROBENZENE was not processed!

APPENDIX K, TABLE 9
RAGS 3.9 - ONSITE DITCHES - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,4-DICHLOROBENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,4-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHLOROBENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	2
		Percent Non-Detects	50.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

METHYL MERCURY

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

APPENDIX K, TABLE 9
RAGS 3.9 - ONSITE DITCHES - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2,3,7,8-TCDD Equivalent

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2,3,7,8-TCDD Equivalent was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 10
RAGS 3.10 - ONSITE DITCHES - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ARSENIC

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ARSENIC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHROMIUM

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHROMIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

COPPER

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable COPPER was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

IRON

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!

APPENDIX K, TABLE 10
RAGS 3.10 - ONSITE DITCHES - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable IRON was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

LEAD

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable LEAD was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MANGANESE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MANGANESE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics

Number of Valid Observations	7	Number of Distinct Observations	7

Raw Statistics		Log-transformed Statistics	
Minimum	11	Minimum of Log Data	2.398
Maximum	4780	Maximum of Log Data	8.472
Mean	1227	Mean of log Data	5.069
Median	65	SD of log Data	2.672
SD	1788		
Coefficient of Variation	1.457		
Skewness	1.57		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,

the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.751	Shapiro Wilk Test Statistic	0.824
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2539	95% H-UCL	91990952
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7942
95% Adjusted-CLT UCL	2766	97.5% Chebyshev (MVUE) UCL	10635
95% Modified-t UCL	2606	99% Chebyshev (MVUE) UCL	15926
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.285	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	4305		
nu star	3.989		
Approximate Chi Square Value (.05)	0.717	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	2338
Adjusted Chi Square Value	0.396	95% Jackknife UCL	2539
		95% Standard Bootstrap UCL	2249
Anderson-Darling Test Statistic	0.657	95% Bootstrap-t UCL	3731
Anderson-Darling 5% Critical Value	0.779	95% Hall's Bootstrap UCL	2946
Kolmogorov-Smirnov Test Statistic	0.28	95% Percentile Bootstrap UCL	2325
Kolmogorov-Smirnov 5% Critical Value	0.334	95% BCA Bootstrap UCL	2595
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4172
		97.5% Chebyshev(Mean, Sd) UCL	5446
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	7949
95% Approximate Gamma UCL	6821		
95% Adjusted Gamma UCL	12341		
Potential UCL to Use		Use 95% Adjusted Gamma UCL	12341
Recommended UCL exceeds the maximum observation			

NICKEL

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable NICKEL was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

VANADIUM

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

APPENDIX K, TABLE 10
RAGS 3.10 - ONSITE DITCHES - INTERMEDIATE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

The data set for variable VANADIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Highly Chlorinateda

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.56	Minimum of Log Data	-0.58
Maximum	14	Maximum of Log Data	2.639
Mean	5.252	Mean of log Data	0.976
Median	3.105	SD of log Data	1.386
SD	5.62		
Coefficient of Variation	1.07		
Skewness	0.87		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.848	Shapiro Wilk Test Statistic	0.891
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	9.875	95% H-UCL	206.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	18.38
95% Adjusted-CLT UCL	9.897	97.5% Chebyshev (MVUE) UCL	23.97
95% Modified-t UCL	10.01	99% Chebyshev (MVUE) UCL	34.93
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.542	Data appear Normal at 5% Significance Level	
Theta Star	9.697		
nu star	6.499		
Approximate Chi Square Value (.05)	1.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	9.026
Adjusted Chi Square Value	1.135	95% Jackknife UCL	9.875
		95% Standard Bootstrap UCL	8.652
Anderson-Darling Test Statistic	0.408	95% Bootstrap-t UCL	17.35
Anderson-Darling 5% Critical Value	0.718	95% Hall's Bootstrap UCL	12.42
Kolmogorov-Smirnov Test Statistic	0.262	95% Percentile Bootstrap UCL	8.883
Kolmogorov-Smirnov 5% Critical Value	0.342	95% BCA Bootstrap UCL	9.625
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.25
		97.5% Chebyshev(Mean, Sd) UCL	19.58
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	28.08

95% Approximate Gamma UCL	17.96
95% Adjusted Gamma UCL	30.07

Potential UCL to Use		95% Student's-t UCL	9.875

Total PCBsb

General Statistics

Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.56	Minimum of Log Data	-0.58
Maximum	14	Maximum of Log Data	2.639
Mean	5.252	Mean of log Data	0.976
Median	3.105	SD of log Data	1.386
SD	5.62		
Coefficient of Variation	1.07		
Skewness	0.87		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.848	Shapiro Wilk Test Statistic	0.891
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	9.875	95% H-UCL	206.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	18.38
95% Adjusted-CLT UCL	9.897	97.5% Chebyshev (MVUE) UCL	23.97
95% Modified-t UCL	10.01	99% Chebyshev (MVUE) UCL	34.93
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.542	Data appear Normal at 5% Significance Level	
Theta Star	9.697		
nu star	6.499		
Approximate Chi Square Value (.05)	1.9	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	9.026
Adjusted Chi Square Value	1.135	95% Jackknife UCL	9.875
		95% Standard Bootstrap UCL	8.737
Anderson-Darling Test Statistic	0.408	95% Bootstrap-t UCL	13.15
Anderson-Darling 5% Critical Value	0.718	95% Hall's Bootstrap UCL	12.66
Kolmogorov-Smirnov Test Statistic	0.262	95% Percentile Bootstrap UCL	8.883
Kolmogorov-Smirnov 5% Critical Value	0.342	95% BCA Bootstrap UCL	9.2
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	15.25
		97.5% Chebyshev(Mean, Sd) UCL	19.58
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	28.08
95% Approximate Gamma UCL	17.96		

95% Adjusted Gamma UCL	30.07		
Potential UCL to Use		95% Student's-t UCL	9.875

ACENAPHTHYLENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ACENAPHTHYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)PYRENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(B)FLUORANTHENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(B)FLUORANTHENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(G,H,I)PERYLENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(G,H,I)PERYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DIBENZO(A,H)ANTHRACENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DIBENZO(A,H)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

INDENO(1,2,3-CD)PYRENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable INDENO(1,2,3-CD)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable PHENANTHRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

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RAGS 3.10 - ONSITE DITCHES - INTERMEDIATE SOIL
PRO-UCL OUTPUT
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1,2,3-TRICHLOROBENZENE

General Statistics			
Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,3-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2,4-TRICHLOROBENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,4-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2-DICHLOROBENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,3-DICHLOROBENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,3-DICHLOROBENZENE was not processed!

APPENDIX K, TABLE 10
RAGS 3.10 - ONSITE DITCHES - INTERMEDIATE SOIL
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HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,4-DICHLOROBENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,4-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHLOROBENZENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	2
		Percent Non-Detects	50.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

METHYL MERCURY

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

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The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2,3,7,8-TCDD Equivalent

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2,3,7,8-TCDD Equivalent was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

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ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

2,3,7,8-TCDD Equivalent

General Statistics

Number of Valid Observations	5	Number of Distinct Observations	5

Raw Statistics		Log-transformed Statistics	
Minimum	470.9	Minimum of Log Data	6.155
Maximum	696.2	Maximum of Log Data	6.546
Mean	626.8	Mean of log Data	6.431
Median	666.1	SD of log Data	0.159
SD	90.61		
Coefficient of Variation	0.145		
Skewness	-1.847		

Warning: A sample size of 'n' = 5 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 5 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.787	Shapiro Wilk Test Statistic	0.757
Shapiro Wilk Critical Value	0.762	Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	713.2	95% H-UCL	744.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	821.6
95% Adjusted-CLT UCL	657.7	97.5% Chebyshev (MVUE) UCL	905.7
95% Modified-t UCL	707.7	99% Chebyshev (MVUE) UCL	1071
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	21.25	Data appear Normal at 5% Significance Level	
Theta Star	29.5		
nu star	212.5		
Approximate Chi Square Value (.05)	179.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0086	95% CLT UCL	693.5
Adjusted Chi Square Value	166.5	95% Jackknife UCL	713.2
		95% Standard Bootstrap UCL	686.9
Anderson-Darling Test Statistic	0.692	95% Bootstrap-t UCL	683.1
Anderson-Darling 5% Critical Value	0.678	95% Hall's Bootstrap UCL	664.1
Kolmogorov-Smirnov Test Statistic	0.322	95% Percentile Bootstrap UCL	677.9
Kolmogorov-Smirnov 5% Critical Value	0.357	95% BCA Bootstrap UCL	671.9
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	803.5
		97.5% Chebyshev(Mean, Sd) UCL	879.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1030
95% Approximate Gamma UCL	741		
95% Adjusted Gamma UCL	799.9		

Potential UCL to Use		Use 95% Student's-t UCL	713.2
Recommended UCL exceeds the maximum observation			

ACENAPHTHYLENE

General Statistics			
Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ACENAPHTHYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ALDRIN

General Statistics			
Number of Valid Data	8	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	6
		Percent Non-Detects	75.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.047	Minimum Detected	-3.058
Maximum Detected	0.12	Maximum Detected	-2.12
Mean of Detected	0.0835	Mean of Detected	-2.589
SD of Detected	0.0516	SD of Detected	0.663
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	0.41	Maximum Non-Detect	-0.892

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0985	Mean	-2.917
SD	0.0776	SD	1.484
95% DL/2 (t) UCL	0.15	95% H-Stat (DL/2) UCL	5.409

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.0653
5% K-S Critical Value	N/A	SD	0.0316
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0224
		95% KM (t) UCL	0.108
Assuming Gamma Distribution		95% KM (z) UCL	0.102
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.121
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	0.12
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.12
Median	N/A	95% KM (Chebyshev) UCL	0.163
SD	N/A	97.5% KM (Chebyshev) UCL	0.205
k star	N/A	99% KM (Chebyshev) UCL	0.288
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	0.108
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	0.12
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

ALUMINUM

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ALUMINUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ARSENIC

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ARSENIC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

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BARIUM

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BARIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZENE

General Statistics

Number of Valid Data	8	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	7
		Percent Non-Detects	87.50%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BENZENE was not processed!

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)PYRENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(B)FLUORANTHENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(B)FLUORANTHENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(G,H,I)PERYLENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(G,H,I)PERYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(K)FLUORANTHENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(K)FLUORANTHENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHROMIUMb

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHROMIUMb was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DELTA-BHC

General Statistics

Number of Valid Data	8	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	7
		Percent Non-Detects	87.50%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DELTA-BHC was not processed!

DIBENZO(A,H)ANTHRACENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DIBENZO(A,H)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ENDOSULFAN I

General Statistics

Number of Valid Data	8	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	7
		Percent Non-Detects	87.50%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable ENDOSULFAN I was not processed!

HEPTACHLOR

General Statistics

Number of Valid Data	8	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	6
		Percent Non-Detects	75.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0039	Minimum Detected	-5.547
Maximum Detected	0.12	Maximum Detected	-2.12
Mean of Detected	0.062	Mean of Detected	-3.834
SD of Detected	0.0821	SD of Detected	2.423
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	0.41	Maximum Non-Detect	-0.892

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

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Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0956	Mean	-3.036
SD	0.0802	SD	1.583
95% DL/2 (t) UCL	0.149	95% H-Stat (DL/2) UCL	17.35
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.355	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.0329
5% K-S Critical Value	N/A	SD	0.0503
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0355
		95% KM (t) UCL	0.1
Assuming Gamma Distribution		95% KM (z) UCL	0.0914
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.122
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	0.12
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.12
Median	N/A	95% KM (Chebyshev) UCL	0.188
SD	N/A	97.5% KM (Chebyshev) UCL	0.255
k star	N/A	99% KM (Chebyshev) UCL	0.387
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	99% KM (Chebyshev) UCL	0.387
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

HEXACHLOROBENZENE

General Statistics			
Number of Valid Data	8	Number of Detected Data	7
Number of Distinct Detected Data	6	Number of Non-Detect Data	1
		Percent Non-Detects	12.50%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.16	Minimum Detected	-1.833
Maximum Detected	5.1	Maximum Detected	1.629
Mean of Detected	2.619	Mean of Detected	0.352
SD of Detected	2.044	SD of Detected	1.51
Minimum Non-Detect	0.43	Minimum Non-Detect	-0.844
Maximum Non-Detect	0.43	Maximum Non-Detect	-0.844

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set

the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.897	Shapiro Wilk Test Statistic	0.774
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.318	Mean	0.116
SD	2.075	SD	1.55
95% DL/2 (t) UCL	3.708	95% H-Stat (DL/2) UCL	87.3
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.613	Mean in Log Scale	0.138
SD	1.282	SD in Log Scale	1.524
95% MLE (t) UCL	4.472	Mean in Original Scale	2.323
95% MLE (Tiku) UCL	4.696	SD in Original Scale	2.069
		95% Percentile Bootstrap UCL	3.482
		95% BCA Bootstrap UCL	3.546
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.639	Data appear Normal at 5% Significance Level	
Theta Star	4.099		
nu star	8.944		
A-D Test Statistic	0.63	Nonparametric Statistics	
5% A-D Critical Value	0.729	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.729	Mean	2.312
5% K-S Critical Value	0.32	SD	1.948
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.744
		95% KM (t) UCL	3.721
Assuming Gamma Distribution		95% KM (z) UCL	3.535
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.706
Minimum	0.16	95% KM (bootstrap t) UCL	3.771
Maximum	5.1	95% KM (BCA) UCL	3.695
Mean	2.39	95% KM (Percentile Bootstrap) UCL	3.538
Median	2.3	95% KM (Chebyshev) UCL	5.554
SD	2	97.5% KM (Chebyshev) UCL	6.956
k star	0.694	99% KM (Chebyshev) UCL	9.712
Theta star	3.445		
Nu star	11.1	Potential UCLs to Use	
AppChi2	4.639	95% KM (t) UCL	3.721
95% Gamma Approximate UCL	5.717	95% KM (Percentile Bootstrap) UCL	3.538
95% Adjusted Gamma UCL	7.283		

Note: DL/2 is not a recommended method.

Highly Chlorinateda

General Statistics			
Number of Valid Observations	8	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.78	Minimum of Log Data	-0.248
Maximum	35	Maximum of Log Data	3.555
Mean	13.27	Mean of log Data	1.844
Median	6.2	SD of log Data	1.429
SD	14.6		
Coefficient of Variation	1.1		
Skewness	0.921		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.79	Shapiro Wilk Test Statistic	0.931
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	23.06	95% H-UCL	205.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	46.34
95% Adjusted-CLT UCL	23.56	97.5% Chebyshev (MVUE) UCL	60.17
95% Modified-t UCL	23.34	99% Chebyshev (MVUE) UCL	87.35
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.584	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	22.74		
nu star	9.337		
Approximate Chi Square Value (.05)	3.532	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	21.77
Adjusted Chi Square Value	2.69	95% Jackknife UCL	23.06
		95% Standard Bootstrap UCL	21.16
Anderson-Darling Test Statistic	0.382	95% Bootstrap-t UCL	31.53
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	23.35
Kolmogorov-Smirnov Test Statistic	0.174	95% Percentile Bootstrap UCL	21.36
Kolmogorov-Smirnov 5% Critical Value	0.304	95% BCA Bootstrap UCL	22.08
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	35.78
		97.5% Chebyshev(Mean, Sd) UCL	45.52
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	64.65
95% Approximate Gamma UCL	35.09		
95% Adjusted Gamma UCL	46.07		
Potential UCL to Use		Use 95% Approximate Gamma UCL	35.09
Recommended UCL exceeds the maximum observation			

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable INDENO(1,2,3-CD)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

IRON

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

The data set for variable IRON was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

LEAD

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable LEAD was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MANGANESE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MANGANESE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics

Number of Valid Observations	8	Number of Distinct Observations	8
Raw Statistics		Log-transformed Statistics	
Minimum	4.3	Minimum of Log Data	1.459
Maximum	1880	Maximum of Log Data	7.539
Mean	664.3	Mean of log Data	5.392
Median	549.5	SD of log Data	2.258
SD	659		
Coefficient of Variation	0.992		
Skewness	0.917		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.912	Shapiro Wilk Test Statistic	0.836
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	

95% Student's-t UCL	1106	95% H-UCL	989018
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5966
95% Adjusted-CLT UCL	1128	97.5% Chebyshev (MVUE) UCL	7938
95% Modified-t UCL	1118	99% Chebyshev (MVUE) UCL	11810
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.435	Data appear Normal at 5% Significance Level	
Theta Star	1526		
nu star	6.967		
Approximate Chi Square Value (.05)	2.152	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	1048
Adjusted Chi Square Value	1.541	95% Jackknife UCL	1106
		95% Standard Bootstrap UCL	1020
Anderson-Darling Test Statistic	0.377	95% Bootstrap-t UCL	1321
Anderson-Darling 5% Critical Value	0.758	95% Hall's Bootstrap UCL	1390
Kolmogorov-Smirnov Test Statistic	0.186	95% Percentile Bootstrap UCL	1058
Kolmogorov-Smirnov 5% Critical Value	0.308	95% BCA Bootstrap UCL	1109
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1680
		97.5% Chebyshev(Mean, Sd) UCL	2119
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2982
95% Approximate Gamma UCL	2150		
95% Adjusted Gamma UCL	3003		
Potential UCL to Use		95% Student's-t UCL	1106

METHYL MERCURY

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	3

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable PHENANTHRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Total PCBsb

General Statistics			
Number of Valid Observations	8	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.78	Minimum of Log Data	-0.248
Maximum	35	Maximum of Log Data	3.555
Mean	13.27	Mean of log Data	1.844

Median	6.2	SD of log Data	1.429
SD	14.6		
Coefficient of Variation	1.1		
Skewness	0.921		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.79	Shapiro Wilk Test Statistic	0.931
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	23.06	95% H-UCL	205.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	46.34
95% Adjusted-CLT UCL	23.56	97.5% Chebyshev (MVUE) UCL	60.17
95% Modified-t UCL	23.34	99% Chebyshev (MVUE) UCL	87.35
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.584	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	22.74		
nu star	9.337		
Approximate Chi Square Value (.05)	3.532	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	21.77
Adjusted Chi Square Value	2.69	95% Jackknife UCL	23.06
		95% Standard Bootstrap UCL	21.27
Anderson-Darling Test Statistic	0.382	95% Bootstrap-t UCL	31.52
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	23.59
Kolmogorov-Smirnov Test Statistic	0.174	95% Percentile Bootstrap UCL	21.41
Kolmogorov-Smirnov 5% Critical Value	0.304	95% BCA Bootstrap UCL	23.04
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	35.78
		97.5% Chebyshev(Mean, Sd) UCL	45.52
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	64.65
95% Approximate Gamma UCL	35.09		
95% Adjusted Gamma UCL	46.07		
Potential UCL to Use		Use 95% Approximate Gamma UCL	35.09
Recommended UCL exceeds the maximum observation			

TRICHLOROETHENE

General Statistics			
Number of Valid Data	8	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	4
		Percent Non-Detects	50.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0091	Minimum Detected	-4.699
Maximum Detected	0.07	Maximum Detected	-2.659
Mean of Detected	0.035	Mean of Detected	-3.596
SD of Detected	0.026	SD of Detected	0.857
Minimum Non-Detect	0.012	Minimum Non-Detect	-4.423
Maximum Non-Detect	0.015	Maximum Non-Detect	-4.2
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	62.50%

APPENDIX K, TABLE 11
RAGS 3.11 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.959	Shapiro Wilk Test Statistic	0.987
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0208	Mean	-4.308
SD	0.0228	SD	0.947
95% DL/2 (t) UCL	0.0361	95% H-Stat (DL/2) UCL	0.0237
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.00334	Mean in Log Scale	-4.188
SD	0.0391	SD in Log Scale	0.864
95% MLE (t) UCL	0.0296	Mean in Original Scale	0.0218
95% MLE (Tiku) UCL	0.0418	SD in Original Scale	0.0221
		95% Percentile Bootstrap UCL	0.0352
		95% BCA Bootstrap UCL	0.0388
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.716	Data appear Normal at 5% Significance Level	
Theta Star	0.0489		
nu star	5.726		
A-D Test Statistic	0.193	Nonparametric Statistics	
5% A-D Critical Value	0.66	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.66	Mean	0.0221
5% K-S Critical Value	0.398	SD	0.0205
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00837
		95% KM (t) UCL	0.0379
Assuming Gamma Distribution		95% KM (z) UCL	0.0358
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0373
Minimum	0.0091	95% KM (bootstrap t) UCL	0.0385
Maximum	0.07	95% KM (BCA) UCL	0.07
Mean	0.035	95% KM (Percentile Bootstrap) UCL	0.0445
Median	0.0344	95% KM (Chebyshev) UCL	0.0586
SD	0.0195	97.5% KM (Chebyshev) UCL	0.0744
k star	2.16	99% KM (Chebyshev) UCL	0.105
Theta star	0.0162		
Nu star	34.55	Potential UCLs to Use	
AppChi2	22.11	95% KM (t) UCL	0.0379
95% Gamma Approximate UCL	0.0547	95% KM (Percentile Bootstrap) UCL	0.0445
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

VANADIUM

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable VANADIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

APPENDIX K, TABLE 11
RAGS 3.11 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 12
RAGS 3.12 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

1,2,4-TRIMETHYLBENZENE

General Statistics

Number of Valid Data	3	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	2
		Percent Non-Detects	66.67%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,4-TRIMETHYLBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,3,5-TRIMETHYLBENZENE

General Statistics

Number of Valid Data	3	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	2
		Percent Non-Detects	66.67%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,3,5-TRIMETHYLBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,4-DICHLOROBENZENE

General Statistics

Number of Valid Data	7	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	2
		Percent Non-Detects	28.57%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0041	Minimum Detected	-5.497
Maximum Detected	76	Maximum Detected	4.331
Mean of Detected	15.55	Mean of Detected	-1.218
SD of Detected	33.8	SD of Detected	3.758
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.43	Maximum Non-Detect	-0.844

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	2
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	71.43%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

APPENDIX K, TABLE 12
RAGS 3.12 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.567	Shapiro Wilk Test Statistic	0.96
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	11.14	Mean	-2.019
SD	28.61	SD	3.652
95% DL/2 (t) UCL	32.15	95% H-Stat (DL/2) UCL	3.33E+09
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.952
		SD in Log Scale	4.493
		Mean in Original Scale	11.11
		SD in Original Scale	28.62
		95% Percentile Bootstrap UCL	32.59
		95% BCA Bootstrap UCL	33.04
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.208	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	74.62		
nu star	2.084		
A-D Test Statistic	0.517	Nonparametric Statistics	
5% A-D Critical Value	0.782	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.782	Mean	11.11
5% K-S Critical Value	0.39	SD	26.5
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	11.2
		95% KM (t) UCL	32.87
Assuming Gamma Distribution		95% KM (z) UCL	29.53
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	32.13
Minimum	0.0041	95% KM (bootstrap t) UCL	8141
Maximum	76	95% KM (BCA) UCL	32.81
Mean	16.87	95% KM (Percentile Bootstrap) UCL	32.61
Median	1.6	95% KM (Chebyshev) UCL	59.92
SD	27.69	97.5% KM (Chebyshev) UCL	81.03
k star	0.238	99% KM (Chebyshev) UCL	122.5
Theta star	70.8		
Nu star	3.335	Potential UCLs to Use	
AppChi2	0.478	95% KM (Chebyshev) UCL	59.92
95% Gamma Approximate UCL	117.6		
95% Adjusted Gamma UCL	224.8		

Note: DL/2 is not a recommended method.

2,3,7,8-TCDD Equivalent

General Statistics			
Number of Valid Observations	5	Number of Distinct Observations	5
Raw Statistics		Log-transformed Statistics	
Minimum	470.9	Minimum of Log Data	6.155
Maximum	696.2	Maximum of Log Data	6.546
Mean	626.8	Mean of log Data	6.431
Median	666.1	SD of log Data	0.159
SD	90.61		
Coefficient of Variation	0.145		
Skewness	-1.847		

Warning: A sample size of 'n' = 5 may not adequate enough to compute meaningful and reliable test statistics and estimates!

APPENDIX K, TABLE 12
RAGS 3.12 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 5 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.787	Shapiro Wilk Test Statistic	0.757
Shapiro Wilk Critical Value	0.762	Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	713.2	95% H-UCL	744.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	821.6
95% Adjusted-CLT UCL	657.7	97.5% Chebyshev (MVUE) UCL	905.7
95% Modified-t UCL	707.7	99% Chebyshev (MVUE) UCL	1071
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	21.25	Data appear Normal at 5% Significance Level	
Theta Star	29.5		
nu star	212.5		
Approximate Chi Square Value (.05)	179.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0086	95% CLT UCL	693.5
Adjusted Chi Square Value	166.5	95% Jackknife UCL	713.2
		95% Standard Bootstrap UCL	687.6
Anderson-Darling Test Statistic	0.692	95% Bootstrap-t UCL	690.4
Anderson-Darling 5% Critical Value	0.678	95% Hall's Bootstrap UCL	664.1
Kolmogorov-Smirnov Test Statistic	0.322	95% Percentile Bootstrap UCL	676.5
Kolmogorov-Smirnov 5% Critical Value	0.357	95% BCA Bootstrap UCL	669
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	803.5
		97.5% Chebyshev(Mean, Sd) UCL	879.9
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1030
95% Approximate Gamma UCL	741		
95% Adjusted Gamma UCL	799.9		
Potential UCL to Use		Use 95% Student's-t UCL	713.2
Recommended UCL exceeds the maximum observation			

ALDRIN

General Statistics			
Number of Valid Data	10	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	8
		Percent Non-Detects	80.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.047	Minimum Detected	-3.058
Maximum Detected	0.12	Maximum Detected	-2.12
Mean of Detected	0.0835	Mean of Detected	-2.589
SD of Detected	0.0516	SD of Detected	0.663
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	0.41	Maximum Non-Detect	-0.892
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.

This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0855	Mean	-3.07
SD	0.0744	SD	1.397
95% DL/2 (t) UCL	0.129	95% H-Stat (DL/2) UCL	0.743
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.0592
5% K-S Critical Value	N/A	SD	0.0272
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0157
		95% KM (t) UCL	0.088
Assuming Gamma Distribution		95% KM (z) UCL	0.085
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.11
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	0.128
SD	N/A	97.5% KM (Chebyshev) UCL	0.157
k star	N/A	99% KM (Chebyshev) UCL	0.215
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	0.088
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	N/A
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

ALUMINUM

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

APPENDIX K, TABLE 12
RAGS 3.12 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ALUMINUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ARSENIC

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ARSENIC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BARIUM

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BARIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZENE

General Statistics

Number of Valid Data	10	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	8
		Percent Non-Detects	80.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.002	Minimum Detected	-6.215
Maximum Detected	7600	Maximum Detected	8.936
Mean of Detected	3800	Mean of Detected	1.361
SD of Detected	5374	SD of Detected	10.71
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.015	Maximum Non-Detect	-4.2

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	1
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	90.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.

APPENDIX K, TABLE 12
RAGS 3.12 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	760	Mean	-4.464
SD	2403	SD	4.756
95% DL/2 (t) UCL	2153	95% H-Stat (DL/2) UCL	4.13E+11
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.421	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	760
5% K-S Critical Value	N/A	SD	2280
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1020
		95% KM (t) UCL	2629
Assuming Gamma Distribution		95% KM (z) UCL	2437
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6065
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	7600
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	5205
SD	N/A	97.5% KM (Chebyshev) UCL	7128
k star	N/A	99% KM (Chebyshev) UCL	10905
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	99% KM (Chebyshev) UCL	10905
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

BENZO(A)ANTHRACENE

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)PYRENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(B)FLUORANTHENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(B)FLUORANTHENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(K)FLUORANTHENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(K)FLUORANTHENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHROMIUM

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHROMIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DIBENZO(A,H)ANTHRACENE

APPENDIX K, TABLE 12
RAGS 3.12 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DIBENZO(A,H)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ETHYLBENZENE

General Statistics			
Number of Valid Data	9	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	8
		Percent Non-Detects	88.89%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable ETHYLBENZENE was not processed!

HEPTACHLOR

General Statistics			
Number of Valid Data	10	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	8
		Percent Non-Detects	80.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0039	Minimum Detected	-5.547
Maximum Detected	0.12	Maximum Detected	-2.12
Mean of Detected	0.062	Mean of Detected	-3.834
SD of Detected	0.0821	SD of Detected	2.423
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	0.41	Maximum Non-Detect	-0.892

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

APPENDIX K, TABLE 12
RAGS 3.12 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0831	Mean	-3.166
SD	0.0761	SD	1.469
95% DL/2 (t) UCL	0.127	95% H-Stat (DL/2) UCL	1.215
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.355	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.0233
5% K-S Critical Value	N/A	SD	0.0433
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.025
		95% KM (t) UCL	0.069
Assuming Gamma Distribution		95% KM (z) UCL	0.0643
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.104
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	0.12
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	0.132
SD	N/A	97.5% KM (Chebyshev) UCL	0.179
k star	N/A	99% KM (Chebyshev) UCL	0.272
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	99% KM (Chebyshev) UCL	0.272
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

HEXACHLOROBENZENE

General Statistics			
Number of Valid Data	10	Number of Detected Data	9
Number of Distinct Detected Data	8	Number of Non-Detect Data	1
		Percent Non-Detects	10.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.087	Minimum Detected	-2.442
Maximum Detected	5.1	Maximum Detected	1.629
Mean of Detected	2.073	Mean of Detected	-0.156
SD of Detected	2.076	SD of Detected	1.671
Minimum Non-Detect	0.43	Minimum Non-Detect	-0.844
Maximum Non-Detect	0.43	Maximum Non-Detect	-0.844

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

APPENDIX K, TABLE 12
RAGS 3.12 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.839	Shapiro Wilk Test Statistic	0.838
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.887	Mean	-0.294
SD	2.043	SD	1.635
95% DL/2 (t) UCL	3.072	95% H-Stat (DL/2) UCL	33.31
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.62	Mean in Log Scale	-0.295
SD	1.282	SD in Log Scale	1.635
95% MLE (t) UCL	4.363	Mean in Original Scale	1.887
95% MLE (Tiku) UCL	4.668	SD in Original Scale	2.043
		95% Percentile Bootstrap UCL	2.941
		95% BCA Bootstrap UCL	3.001
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.531	Data appear Normal at 5% Significance Level	
Theta Star	3.906		
nu star	9.554		
A-D Test Statistic	0.67	Nonparametric Statistics	
5% A-D Critical Value	0.756	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.756	Mean	1.882
5% K-S Critical Value	0.291	SD	1.943
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.652
		95% KM (t) UCL	3.077
Assuming Gamma Distribution		95% KM (z) UCL	2.954
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.069
Minimum	0.087	95% KM (bootstrap t) UCL	3.404
Maximum	5.1	95% KM (BCA) UCL	2.882
Mean	1.916	95% KM (Percentile Bootstrap) UCL	2.877
Median	1.249	95% KM (Chebyshev) UCL	4.723
SD	2.019	97.5% KM (Chebyshev) UCL	5.952
k star	0.558	99% KM (Chebyshev) UCL	8.366
Theta star	3.431		
Nu star	11.17	Potential UCLs to Use	
AppChi2	4.683	95% KM (t) UCL	3.077
95% Gamma Approximate UCL	4.567	95% KM (Percentile Bootstrap) UCL	2.877
95% Adjusted Gamma UCL	5.375		

Note: DL/2 is not a recommended method.

Highly Chlorinateda

General Statistics			
Number of Valid Observations	8	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.78	Minimum of Log Data	-0.248
Maximum	35	Maximum of Log Data	3.555
Mean	13.27	Mean of log Data	1.844
Median	6.2	SD of log Data	1.429
SD	14.6		
Coefficient of Variation	1.1		
Skewness	0.921		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,

the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.79	Shapiro Wilk Test Statistic	0.931
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	23.06	95% H-UCL	205.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	46.34
95% Adjusted-CLT UCL	23.56	97.5% Chebyshev (MVUE) UCL	60.17
95% Modified-t UCL	23.34	99% Chebyshev (MVUE) UCL	87.35
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.584	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	22.74		
nu star	9.337		
Approximate Chi Square Value (.05)	3.532	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	21.77
Adjusted Chi Square Value	2.69	95% Jackknife UCL	23.06
		95% Standard Bootstrap UCL	21.08
Anderson-Darling Test Statistic	0.382	95% Bootstrap-t UCL	32.37
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	23.54
Kolmogorov-Smirnov Test Statistic	0.174	95% Percentile Bootstrap UCL	21.51
Kolmogorov-Smirnov 5% Critical Value	0.304	95% BCA Bootstrap UCL	22.99
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	35.78
		97.5% Chebyshev(Mean, Sd) UCL	45.52
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	64.65
95% Approximate Gamma UCL	35.09		
95% Adjusted Gamma UCL	46.07		
Potential UCL to Use		Use 95% Approximate Gamma UCL	35.09
Recommended UCL exceeds the maximum observation			

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable INDENO(1,2,3-CD)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

IRON

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable IRON was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 12
RAGS 3.12 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

LEAD

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable LEAD was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MANGANESE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MANGANESE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	10

Raw Statistics		Log-transformed Statistics	
Minimum	4.3	Minimum of Log Data	1.459
Maximum	1880	Maximum of Log Data	7.539
Mean	534.3	Mean of log Data	4.817
Median	314.5	SD of log Data	2.347
SD	642.5		
Coefficient of Variation	1.202		
Skewness	1.204		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.837	Shapiro Wilk Test Statistic	0.874
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	906.8	95% H-UCL	256055
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	4226
95% Adjusted-CLT UCL	951.2	97.5% Chebyshev (MVUE) UCL	5620
95% Modified-t UCL	919.7	99% Chebyshev (MVUE) UCL	8358
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.376	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1420		
nu star	7.526		
Approximate Chi Square Value (.05)	2.463	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	868.5

Adjusted Chi Square Value	1.99	95% Jackknife UCL	906.8
		95% Standard Bootstrap UCL	854.3
Anderson-Darling Test Statistic	0.441	95% Bootstrap-t UCL	1128
Anderson-Darling 5% Critical Value	0.788	95% Hall's Bootstrap UCL	1094
Kolmogorov-Smirnov Test Statistic	0.209	95% Percentile Bootstrap UCL	868.5
Kolmogorov-Smirnov 5% Critical Value	0.283	95% BCA Bootstrap UCL	921.5
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1420
		97.5% Chebyshev(Mean, Sd) UCL	1803
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2556
95% Approximate Gamma UCL	1632		
95% Adjusted Gamma UCL	2020		
Potential UCL to Use		Use 95% Adjusted Gamma UCL	2020

Recommended UCL exceeds the maximum observation

METHYL MERCURY

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

NAPHTHALENE

General Statistics			
Number of Valid Data	7	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	1
		Percent Non-Detects	14.29%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0017	Minimum Detected	-6.377
Maximum Detected	3200	Maximum Detected	8.071
Mean of Detected	534.2	Mean of Detected	0.239
SD of Detected	1306	SD of Detected	4.663
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.003	Maximum Non-Detect	-5.809

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.497	Shapiro Wilk Test Statistic	0.92
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	457.9	Mean	-0.724
SD	1209	SD	4.961
95% DL/2 (t) UCL	1346	95% H-Stat (DL/2) UCL	1.22E+18

Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	155.3	Mean in Log Scale	-0.754
SD	1396	SD in Log Scale	5.002
95% MLE (t) UCL	1181	Mean in Original Scale	457.9
95% MLE (Tiku) UCL	1210	SD in Original Scale	1209
		95% Percentile Bootstrap UCL	1372
		95% BCA Bootstrap UCL	1829
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.176	Data appear Lognormal at 5% Significance Level	
Theta Star	3035		
nu star	2.112		
A-D Test Statistic	0.866	Nonparametric Statistics	
5% A-D Critical Value	0.832	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.832	Mean	457.9
5% K-S Critical Value	0.367	SD	1119
Data not Gamma Distributed at 5% Significance Level		SE of Mean	463.5
		95% KM (t) UCL	1359
Assuming Gamma Distribution		95% KM (z) UCL	1220
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1346
Minimum	1.00E-09	95% KM (bootstrap t) UCL	947358
Maximum	3200	95% KM (BCA) UCL	1372
Mean	457.9	95% KM (Percentile Bootstrap) UCL	1372
Median	0.41	95% KM (Chebyshev) UCL	2478
SD	1209	97.5% KM (Chebyshev) UCL	3352
k star	0.148	99% KM (Chebyshev) UCL	5070
Theta star	3094		
Nu star	2.072	Potential UCLs to Use	
AppChi2	0.161	99% KM (Chebyshev) UCL	5070
95% Gamma Approximate UCL	5903		
95% Adjusted Gamma UCL	9603		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

SEC-BUTYLBENZENE

General Statistics			
Number of Valid Data	3	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	2
		Percent Non-Detects	66.67%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable SEC-BUTYLBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

TERT-BUTYLBENZENE

General Statistics			
Number of Valid Data	3	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	2
		Percent Non-Detects	66.67%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable TERT-BUTYLBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!

APPENDIX K, TABLE 12
RAGS 3.12 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

TOLUENE

General Statistics			
Number of Valid Data	10	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	8
		Percent Non-Detects	80.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.002	Minimum Detected	-6.215
Maximum Detected	3100	Maximum Detected	8.039
Mean of Detected	1550	Mean of Detected	0.912
SD of Detected	2192	SD of Detected	10.08
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.015	Maximum Non-Detect	-4.2

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	90.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	310	Mean	-4.554
SD	980.3	SD	4.475
95% DL/2 (t) UCL	878.3	95% H-Stat (DL/2) UCL	4.66E+08
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.415	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	310
5% K-S Critical Value	N/A	SD	930

Data not Gamma Distributed at 5% Significance Level		SE of Mean	415.9
		95% KM (t) UCL	1072
Assuming Gamma Distribution		95% KM (z) UCL	994.1
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2474
Minimum	N/A	95% KM (bootstrap t) UCL	310
Maximum	N/A	95% KM (BCA) UCL	3100
Mean	N/A	95% KM (Percentile Bootstrap) UCL	3100
Median	N/A	95% KM (Chebyshev) UCL	2123
SD	N/A	97.5% KM (Chebyshev) UCL	2907
k star	N/A	99% KM (Chebyshev) UCL	4448
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	99% KM (Chebyshev) UCL	4448
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

Total PCBsb

General Statistics

Number of Valid Observations	8	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.78	Minimum of Log Data	-0.248
Maximum	35	Maximum of Log Data	3.555
Mean	13.27	Mean of log Data	1.844
Median	6.2	SD of log Data	1.429
SD	14.6		
Coefficient of Variation	1.1		
Skewness	0.921		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.79	Shapiro Wilk Test Statistic	0.931
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	23.06	95% H-UCL	205.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	46.34
95% Adjusted-CLT UCL	23.56	97.5% Chebyshev (MVUE) UCL	60.17
95% Modified-t UCL	23.34	99% Chebyshev (MVUE) UCL	87.35
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.584	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	22.74		
nu star	9.337		
Approximate Chi Square Value (.05)	3.532	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	21.77
Adjusted Chi Square Value	2.69	95% Jackknife UCL	23.06
		95% Standard Bootstrap UCL	21.02
Anderson-Darling Test Statistic	0.382	95% Bootstrap-t UCL	30.26
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	23.33
Kolmogorov-Smirnov Test Statistic	0.174	95% Percentile Bootstrap UCL	21.41
Kolmogorov-Smirnov 5% Critical Value	0.304	95% BCA Bootstrap UCL	23.31
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	35.78

		97.5% Chebyshev(Mean, Sd) UCL	45.52
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	64.65
95% Approximate Gamma UCL	35.09		
95% Adjusted Gamma UCL	46.07		
Potential UCL to Use		Use 95% Approximate Gamma UCL	35.09
Recommended UCL exceeds the maximum observation			

TRICHLOROETHENE

General Statistics			
Number of Valid Data	10	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	5
		Percent Non-Detects	50.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0061	Minimum Detected	-5.099
Maximum Detected	0.07	Maximum Detected	-2.659
Mean of Detected	0.0292	Mean of Detected	-3.897
SD of Detected	0.0259	SD of Detected	1.001
Minimum Non-Detect	0.012	Minimum Non-Detect	-4.423
Maximum Non-Detect	7.9	Maximum Non-Detect	2.067
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.9	Shapiro Wilk Test Statistic	0.958
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.412	Mean	-3.819
SD	1.243	SD	2.022
95% DL/2 (t) UCL	1.133	95% H-Stat (DL/2) UCL	26.53
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.341
		SD in Log Scale	0.846
		Mean in Original Scale	0.019
		SD in Original Scale	0.0205
		95% Percentile Bootstrap UCL	0.0301
		95% BCA Bootstrap UCL	0.0346
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.74	Data appear Normal at 5% Significance Level	
Theta Star	0.0395		
nu star	7.397		
A-D Test Statistic	0.234	Nonparametric Statistics	
5% A-D Critical Value	0.686	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.686	Mean	0.0196
5% K-S Critical Value	0.362	SD	0.0204
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00762

		95% KM (t) UCL	0.0336
Assuming Gamma Distribution		95% KM (z) UCL	0.0322
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0331
Minimum	0.0061	95% KM (bootstrap t) UCL	0.0415
Maximum	0.07	95% KM (BCA) UCL	0.0407
Mean	0.0306	95% KM (Percentile Bootstrap) UCL	0.0368
Median	0.0288	95% KM (Chebyshev) UCL	0.0529
SD	0.0184	97.5% KM (Chebyshev) UCL	0.0672
k star	1.92	99% KM (Chebyshev) UCL	0.0955
Theta star	0.0159		
Nu star	38.41	Potential UCLs to Use	
AppChi2	25.21	95% KM (t) UCL	0.0336
95% Gamma Approximate UCL	0.0466	95% KM (Percentile Bootstrap) UCL	0.0368
95% Adjusted Gamma UCL	0.0503		

Note: DL/2 is not a recommended method.

VANADIUM

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable VANADIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

XYLENES, TOTAL

General Statistics

Number of Valid Data	9	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	7
		Percent Non-Detects	77.78%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.006	Minimum Detected	-5.116
Maximum Detected	1700	Maximum Detected	7.438
Mean of Detected	850	Mean of Detected	1.161
SD of Detected	1202	SD of Detected	8.877
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.015	Maximum Non-Detect	-4.2

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	88.89%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

APPENDIX K, TABLE 12
RAGS 3.12 - SOUTHWEST OFFSITE/OUTFALL 006 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	188.9	Mean	-4.282
SD	566.7	SD	4.452
95% DL/2 (t) UCL	540.1	95% H-Stat (DL/2) UCL	2.99E+09
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.403	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	188.9
5% K-S Critical Value	N/A	SD	534.3
Data not Gamma Distributed at 5% Significance Level		SE of Mean	251.9
		95% KM (t) UCL	657.2
Assuming Gamma Distribution		95% KM (z) UCL	603.2
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1393
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	1700
Mean	N/A	95% KM (Percentile Bootstrap) UCL	1700
Median	N/A	95% KM (Chebyshev) UCL	1287
SD	N/A	97.5% KM (Chebyshev) UCL	1762
k star	N/A	99% KM (Chebyshev) UCL	2695
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	99% KM (Chebyshev) UCL	2695
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

APPENDIX K, TABLE 13
RAGS 3.13 - NORTHWEST OFFSITE/OUTFALL 004 AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1,2,3-TRICHLOROBENZENE

General Statistics

Number of Valid Data	4	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	2
		Percent Non-Detects	50.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,3-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2,3,7,8-TCDD Equivalent

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2.14 was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZENE

General Statistics

Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Highly Chlorinated

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

APPENDIX K, TABLE 13
RAGS 3.13 - NORTHWEST OFFSITE/OUTFALL 004 AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Highly Chlorinated was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Total PCBs

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Total PCBs was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 14
RAGS 3.14 - NORTHWEST OFFSITE/OUTFALL 004 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options

From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1,2,3-TRICHLOROBENZENE

General Statistics

Number of Valid Data	5	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	2
		Percent Non-Detects	40.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.002	Minimum Detected	-6.215
Maximum Detected	7.4	Maximum Detected	2.001
Mean of Detected	2.471	Mean of Detected	-2.879
SD of Detected	4.268	SD of Detected	4.32
Minimum Non-Detect	0.0028	Minimum Non-Detect	-5.878
Maximum Non-Detect	0.0029	Maximum Non-Detect	-5.843

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	60.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.751	Shapiro Wilk Test Statistic	0.904
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.483	Mean	-4.349
SD	3.307	SD	3.658
95% DL/2 (t) UCL	4.637	95% H-Stat (DL/2) UCL	3.85E+10

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.513
		SD in Log Scale	3.787
		Mean in Original Scale	1.483
		SD in Original Scale	3.308
		95% Percentile Bootstrap UCL	4.44
		95% BCA Bootstrap UCL	4.443

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	N/A	Data appear Lognormal at 5% Significance Level
Theta Star	N/A	
nu star	N/A	

A-D Test Statistic	0.452	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	1.484
5% K-S Critical Value	N/A	SD	2.958
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.62
		95% KM (t) UCL	4.938
Assuming Gamma Distribution		95% KM (z) UCL	4.149
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.635
Minimum	N/A	95% KM (bootstrap t) UCL	1162
Maximum	N/A	95% KM (BCA) UCL	7.4
Mean	N/A	95% KM (Percentile Bootstrap) UCL	7.4
Median	N/A	95% KM (Chebyshev) UCL	8.546
SD	N/A	97.5% KM (Chebyshev) UCL	11.6
k star	N/A	99% KM (Chebyshev) UCL	17.61
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	99% KM (Chebyshev) UCL	17.61
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

1,4-DICHLOROBENZENE

General Statistics			
Number of Valid Data	5	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	1
		Percent Non-Detects	20.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0043	Minimum Detected	-5.449
Maximum Detected	2400	Maximum Detected	7.783
Mean of Detected	600	Mean of Detected	-1.164
SD of Detected	1200	SD of Detected	6.045
Minimum Non-Detect	0.0029	Minimum Non-Detect	-5.843
Maximum Non-Detect	0.0029	Maximum Non-Detect	-5.843

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.63	Shapiro Wilk Test Statistic	0.778
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	480	Mean	-2.239
SD	1073	SD	5.76
95% DL/2 (t) UCL	1503	95% H-Stat (DL/2) UCL	2.90E+38
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	323.5	Mean in Log Scale	-4.099
SD	1116	SD in Log Scale	8.395

95% MLE (t) UCL	1388	Mean in Original Scale	480
95% MLE (Tiku) UCL	1365	SD in Original Scale	1073
		95% Percentile Bootstrap UCL	1440
		95% BCA Bootstrap UCL	1440

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.193	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	3104		
nu star	1.546		
A-D Test Statistic	0.751	Nonparametric Statistics	
5% A-D Critical Value	0.775	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.775	Mean	480
5% K-S Critical Value	0.429	SD	960
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	495.7
		95% KM (t) UCL	1537
Assuming Gamma Distribution		95% KM (z) UCL	1295
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1503
Minimum	1.00E-09	95% KM (bootstrap t) UCL	59911251
Maximum	2400	95% KM (BCA) UCL	1440
Mean	480	95% KM (Percentile Bootstrap) UCL	1440
Median	0.02	95% KM (Chebyshev) UCL	2641
SD	1073	97.5% KM (Chebyshev) UCL	3576
k star	0.163	99% KM (Chebyshev) UCL	5413
Theta star	2941		
Nu star	1.632	Potential UCLs to Use	
AppChi2	0.119	95% KM (Chebyshev) UCL	2641
95% Gamma Approximate UCL	6580		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

2,3,7,8-TCDD Equivalent

General Statistics			
Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2,3,7,8-TCDD Equivalent was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZENE

General Statistics			
Number of Valid Data	5	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	4
		Percent Non-Detects	80.00%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BENZENE was not processed!

APPENDIX K, TABLE 14
RAGS 3.14 - NORTHWEST OFFSITE/OUTFALL 004 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

HEXACHLOROBENZENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable HEXACHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Highly Chlorinated

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Highly Chlorinated was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Less Chlorinated

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Less Chlorinated was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics

Number of Valid Observations	5	Number of Distinct Observations	5

Raw Statistics		Log-transformed Statistics	
Minimum	7.3	Minimum of Log Data	1.988
Maximum	160	Maximum of Log Data	5.075
Mean	55.86	Mean of log Data	3.466
Median	40	SD of log Data	1.243
SD	62.04		
Coefficient of Variation	1.111		
Skewness	1.617		

APPENDIX K, TABLE 14
RAGS 3.14 - NORTHWEST OFFSITE/OUTFALL 004 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Warning: A sample size of 'n' = 5 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 5 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.83	Shapiro Wilk Test Statistic	0.963
Shapiro Wilk Critical Value	0.762	Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	115	95% H-UCL	2835
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	183.7
95% Adjusted-CLT UCL	122.9	97.5% Chebyshev (MVUE) UCL	238.8
95% Modified-t UCL	118.4	99% Chebyshev (MVUE) UCL	347.1
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.547	Data appear Normal at 5% Significance Level	
Theta Star	102.2		
nu star	5.466		
Approximate Chi Square Value (.05)	1.373	Nonparametric Statistics	
Adjusted Level of Significance	0.0086	95% CLT UCL	101.5
Adjusted Chi Square Value	0.668	95% Jackknife UCL	115
		95% Standard Bootstrap UCL	96.35
Anderson-Darling Test Statistic	0.248	95% Bootstrap-t UCL	180.7
Anderson-Darling 5% Critical Value	0.691	95% Hall's Bootstrap UCL	295
Kolmogorov-Smirnov Test Statistic	0.214	95% Percentile Bootstrap UCL	99.86
Kolmogorov-Smirnov 5% Critical Value	0.364	95% BCA Bootstrap UCL	110.4
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	176.8
		97.5% Chebyshev(Mean, Sd) UCL	229.1
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	331.9
95% Approximate Gamma UCL	222.3		
95% Adjusted Gamma UCL	457.2		
Potential UCL to Use		95% Student's-t UCL	115

Total PCBs

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Total PCBs was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

TRICHLOROETHENE

APPENDIX K, TABLE 14
RAGS 3.14 - NORTHWEST OFFSITE/OUTFALL 004 AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics			
Number of Valid Observations	5	Number of Distinct Observations	5
Raw Statistics		Log-transformed Statistics	
Minimum	0.0074	Minimum of Log Data	-4.906
Maximum	0.57	Maximum of Log Data	-0.562
Mean	0.123	Mean of log Data	-3.729
Median	0.01	SD of log Data	1.814
SD	0.25		
Coefficient of Variation	2.022		
Skewness	2.234		

Warning: A sample size of 'n' = 5 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 5 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.569	Shapiro Wilk Test Statistic	0.726
Shapiro Wilk Critical Value	0.762	Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.362	95% H-UCL	288.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.293
95% Adjusted-CLT UCL	0.426	97.5% Chebyshev (MVUE) UCL	0.389
95% Modified-t UCL	0.38	99% Chebyshev (MVUE) UCL	0.576
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.294	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.42		
nu star	2.939		
Approximate Chi Square Value (.05)	0.355	Nonparametric Statistics	
Adjusted Level of Significance	0.0086	95% CLT UCL	0.307
Adjusted Chi Square Value	0.132	95% Jackknife UCL	0.362
		95% Standard Bootstrap UCL	0.287
Anderson-Darling Test Statistic	0.989	95% Bootstrap-t UCL	24.94
Anderson-Darling 5% Critical Value	0.725	95% Hall's Bootstrap UCL	8.419
Kolmogorov-Smirnov Test Statistic	0.424	95% Percentile Bootstrap UCL	0.345
Kolmogorov-Smirnov 5% Critical Value	0.376	95% BCA Bootstrap UCL	0.348
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.61
		97.5% Chebyshev(Mean, Sd) UCL	0.821
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	1.234
95% Approximate Gamma UCL	1.023		
95% Adjusted Gamma UCL	2.741		
Potential UCL to Use		Use 99% Chebyshev (Mean, Sd) UCL	1.234
Recommended UCL exceeds the maximum observation			

APPENDIX K, TABLE 15
RAGS 3.15 - LAKESHORE AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

2,3,7,8-TCDD Equivalent

General Statistics
Number of Valid Observations 3 Number of Distinct Observations 3

Warning: This data set only has observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2,3,7,8-TCDD Equivalent was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ACENAPHTHYLENE

General Statistics

Number of Valid Data	6	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	3
		Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.057	Minimum Detected	-2.865
Maximum Detected	2.1	Maximum Detected	0.742
Mean of Detected	0.759	Mean of Detected	-1.414
SD of Detected	1.162	SD of Detected	1.904
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	7.4	Maximum Non-Detect	2.001

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.773	Shapiro Wilk Test Statistic	0.897
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.135	Mean	-0.847
SD	1.473	SD	1.661
95% DL/2 (t) UCL	2.346	95% H-Stat (DL/2) UCL	3923

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.819

		SD in Log Scale	1.296
		Mean in Original Scale	0.435
		SD in Original Scale	0.816
		95% Percentile Bootstrap UCL	1.095
		95% BCA Bootstrap UCL	1.115
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.452	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.491
5% K-S Critical Value	N/A	SD	0.805
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.441
		95% KM (t) UCL	1.38
Assuming Gamma Distribution		95% KM (z) UCL	1.217
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.32
Minimum	N/A	95% KM (bootstrap t) UCL	12.2
Maximum	N/A	95% KM (BCA) UCL	2.1
Mean	N/A	95% KM (Percentile Bootstrap) UCL	2.1
Median	N/A	95% KM (Chebyshev) UCL	2.414
SD	N/A	97.5% KM (Chebyshev) UCL	3.246
k star	N/A	99% KM (Chebyshev) UCL	4.881
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	1.38
95% Gamma Approximate UCL	N/A	95% KM (Percentile Bootstrap) UCL	2.1
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

ALUMINUM

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	4260	Minimum of Log Data	8.357
Maximum	8790	Maximum of Log Data	9.081
Mean	6585	Mean of log Data	8.751
Median	6845	SD of log Data	0.322
SD	1979		
Coefficient of Variation	0.301		
Skewness	-0.256		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.886	Shapiro Wilk Test Statistic	0.86
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

APPENDIX K, TABLE 15
RAGS 3.15 - LAKESHORE AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8213	95% H-UCL	9221
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	10374
95% Adjusted-CLT UCL	7824	97.5% Chebyshev (MVUE) UCL	12009
95% Modified-t UCL	8199	99% Chebyshev (MVUE) UCL	15221
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.247	Data appear Normal at 5% Significance Level	
Theta Star	1054		
nu star	74.96		
Approximate Chi Square Value (.05)	56.02	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	7914
Adjusted Chi Square Value	50.15	95% Jackknife UCL	8213
		95% Standard Bootstrap UCL	7795
Anderson-Darling Test Statistic	0.444	95% Bootstrap-t UCL	8186
Anderson-Darling 5% Critical Value	0.698	95% Hall's Bootstrap UCL	7666
Kolmogorov-Smirnov Test Statistic	0.235	95% Percentile Bootstrap UCL	7768
Kolmogorov-Smirnov 5% Critical Value	0.332	95% BCA Bootstrap UCL	7738
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	10107
		97.5% Chebyshev(Mean, Sd) UCL	11631
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	14624
95% Approximate Gamma UCL	8811		
95% Adjusted Gamma UCL	9843		
Potential UCL to Use		95% Student's-t UCL	8213

ARSENIC

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	4.5	Minimum of Log Data	1.504
Maximum	13.5	Maximum of Log Data	2.603
Mean	8.3	Mean of log Data	2.046
Median	8.35	SD of log Data	0.416
SD	3.358		
Coefficient of Variation	0.405		
Skewness	0.496		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.942	Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	11.06	95% H-UCL	13.29
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.45
95% Adjusted-CLT UCL	10.85	97.5% Chebyshev (MVUE) UCL	17.1

95% Modified-t UCL	11.11	99% Chebyshev (MVUE) UCL	22.32

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.742	Data appear Normal at 5% Significance Level	
Theta Star	2.218		
nu star	44.9		
Approximate Chi Square Value (.05)	30.53	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	10.55
Adjusted Chi Square Value	26.32	95% Jackknife UCL	11.06
		95% Standard Bootstrap UCL	10.43
Anderson-Darling Test Statistic	0.26	95% Bootstrap-t UCL	11.57
Anderson-Darling 5% Critical Value	0.698	95% Hall's Bootstrap UCL	10.51
Kolmogorov-Smirnov Test Statistic	0.21	95% Percentile Bootstrap UCL	10.52
Kolmogorov-Smirnov 5% Critical Value	0.333	95% BCA Bootstrap UCL	10.42
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.28
		97.5% Chebyshev(Mean, Sd) UCL	16.86
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	21.94
95% Approximate Gamma UCL	12.21		
95% Adjusted Gamma UCL	14.16		

Potential UCL to Use		95% Student's-t UCL	11.06

BENZO(A)ANTHRACENE

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.054	Minimum of Log Data	-2.919
Maximum	11	Maximum of Log Data	2.398
Mean	3.372	Mean of log Data	0.00393
Median	0.8	SD of log Data	1.962
SD	4.605		
Coefficient of Variation	1.366		
Skewness	1.236		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.759	Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.161	95% H-UCL	5220
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	15.77
95% Adjusted-CLT UCL	7.478	97.5% Chebyshev (MVUE) UCL	20.91
95% Modified-t UCL	7.319	99% Chebyshev (MVUE) UCL	31.03
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.372	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	9.076		

nu star	4.459		
Approximate Chi Square Value (.05)	0.911	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	6.465
Adjusted Chi Square Value	0.466	95% Jackknife UCL	7.161
		95% Standard Bootstrap UCL	6.264
Anderson-Darling Test Statistic	0.382	95% Bootstrap-t UCL	43.4
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	45.56
Kolmogorov-Smirnov Test Statistic	0.282	95% Percentile Bootstrap UCL	6.28
Kolmogorov-Smirnov 5% Critical Value	0.348	95% BCA Bootstrap UCL	6.913
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	11.57
		97.5% Chebyshev(Mean, Sd) UCL	15.11
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	22.08
95% Approximate Gamma UCL	16.51		
95% Adjusted Gamma UCL	32.3		
Potential UCL to Use		95% Approximate Gamma UCL	16.51
Recommended UCL exceeds the maximum observation			

BENZO(A)PYRENE

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.051	Minimum of Log Data	-2.976
Maximum	8.9	Maximum of Log Data	2.186
Mean	2.794	Mean of log Data	-0.112
Median	0.7	SD of log Data	1.898
SD	3.731		
Coefficient of Variation	1.336		
Skewness	1.2		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.764	Shapiro Wilk Test Statistic	0.942
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5.863	95% H-UCL	2716
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	12.8
95% Adjusted-CLT UCL	6.096	97.5% Chebyshev (MVUE) UCL	16.96
95% Modified-t UCL	5.987	99% Chebyshev (MVUE) UCL	25.13
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.386	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	7.239		
nu star	4.631		
Approximate Chi Square Value (.05)	0.986	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	5.299
Adjusted Chi Square Value	0.512	95% Jackknife UCL	5.863

		95% Standard Bootstrap UCL	5.026
Anderson-Darling Test Statistic	0.383	95% Bootstrap-t UCL	30.89
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	33.55
Kolmogorov-Smirnov Test Statistic	0.263	95% Percentile Bootstrap UCL	5.2
Kolmogorov-Smirnov 5% Critical Value	0.348	95% BCA Bootstrap UCL	5.665
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	9.433
		97.5% Chebyshev(Mean, Sd) UCL	12.31
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	17.95
95% Approximate Gamma UCL	13.13		
95% Adjusted Gamma UCL	25.26		
Potential UCL to Use		95% Approximate Gamma UCL	13.13
Recommended UCL exceeds the maximum observation			

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.089	Minimum of Log Data	-2.419
Maximum	12	Maximum of Log Data	2.485
Mean	4.367	Mean of log Data	0.412
Median	1.18	SD of log Data	1.842
SD	5.551		
Coefficient of Variation	1.271		
Skewness	0.957		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.726	Shapiro Wilk Test Statistic	0.916
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8.933	95% H-UCL	2897
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19.93
95% Adjusted-CLT UCL	9.04	97.5% Chebyshev (MVUE) UCL	26.37
95% Modified-t UCL	9.08	99% Chebyshev (MVUE) UCL	39.01
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.403	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	10.83		
nu star	4.838		
Approximate Chi Square Value (.05)	1.078	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	8.094
Adjusted Chi Square Value	0.571	95% Jackknife UCL	8.933
		95% Standard Bootstrap UCL	7.726
Anderson-Darling Test Statistic	0.466	95% Bootstrap-t UCL	43.91
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	62.45
Kolmogorov-Smirnov Test Statistic	0.273	95% Percentile Bootstrap UCL	8.008

Kolmogorov-Smirnov 5% Critical Value	0.347	95% BCA Bootstrap UCL	8.133
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.24
		97.5% Chebyshev(Mean, Sd) UCL	18.52
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	26.91
95% Approximate Gamma UCL	19.6		
95% Adjusted Gamma UCL	36.99		
Potential UCL to Use		95% Approximate Gamma UCL	19.6
Recommended UCL exceeds the maximum observation			

BENZO(G,H,I)PERYLENE

General Statistics			
Number of Valid Data	6	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	1
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.4	Minimum Detected	-0.916
Maximum Detected	3.4	Maximum Detected	1.224
Mean of Detected	1.44	Mean of Detected	-0.0473
SD of Detected	1.381	SD of Detected	1.021
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.802	Shapiro Wilk Test Statistic	0.82
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.23	Mean	-0.325
SD	1.338	SD	1.139
95% DL/2 (t) UCL	2.331	95% H-Stat (DL/2) UCL	4.549
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.117	Mean in Log Scale	-0.467
SD	1.369	SD in Log Scale	1.375
95% MLE (t) UCL	2.243	Mean in Original Scale	1.213
95% MLE (Tiku) UCL	2.221	SD in Original Scale	1.355
		95% Percentile Bootstrap UCL	2.1
		95% BCA Bootstrap UCL	2.181
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.676	Data appear Normal at 5% Significance Level	
Theta Star	2.131		
nu star	6.759		
A-D Test Statistic	0.584	Nonparametric Statistics	
5% A-D Critical Value	0.688	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.688	Mean	1.267
5% K-S Critical Value	0.362	SD	1.192
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.544
		95% KM (t) UCL	2.363

Assuming Gamma Distribution		95% KM (z) UCL	2.162
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.341
Minimum	1.00E-09	95% KM (bootstrap t) UCL	12.11
Maximum	3.4	95% KM (BCA) UCL	2.13
Mean	1.2	95% KM (Percentile Bootstrap) UCL	2.13
Median	0.5	95% KM (Chebyshev) UCL	3.639
SD	1.368	97.5% KM (Chebyshev) UCL	4.665
k star	0.211	99% KM (Chebyshev) UCL	6.681
Theta star	5.682		
Nu star	2.534	Potential UCLs to	
AppChi2	0.249	95% KM (t) UCL	2.363
95% Gamma Approximate UCL	12.21	95% KM (Percentile Bootstrap) UCL	2.13
95% Adjusted Gamma UCL	26.27		

Note: DL/2 is not a recommended method.

BENZO(K)FLUORANTHENE

General Statistics			
Number of Valid Data	6	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	1
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.21	Minimum Detected	-1.561
Maximum Detected	4.3	Maximum Detected	1.459
Mean of Detected	1.728	Mean of Detected	-0.149
SD of Detected	1.928	SD of Detected	1.39
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.797	Shapiro Wilk Test Statistic	0.865
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.47	Mean	-0.41
SD	1.836	SD	1.398
95% DL/2 (t) UCL	2.981	95% H-Stat (DL/2) UCL	12.44
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.424	Mean in Log Scale	-0.359
SD	2.813	SD in Log Scale	1.346
95% MLE (t) UCL	2.739	Mean in Original Scale	1.481
95% MLE (Tiku) UCL	3.273	SD in Original Scale	1.828
		95% Percentile Bootstrap UCL	2.672
		95% BCA Bootstrap UCL	2.8
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.472	Data appear Normal at 5% Significance Level	
Theta Star	3.663		
nu star	4.718		
A-D Test Statistic	0.517	Nonparametric Statistics	

5% A-D Critical Value	0.696	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.696	Mean	1.483
5% K-S Critical Value	0.366	SD	1.667
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.761
		95% KM (t) UCL	3.016
Assuming Gamma Distribution		95% KM (z) UCL	2.734
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.985
Minimum	0.21	95% KM (bootstrap t) UCL	15.1
Maximum	4.3	95% KM (BCA) UCL	2.77
Mean	1.5	95% KM (Percentile Bootstrap) UCL	2.8
Median	0.445	95% KM (Chebyshev) UCL	4.8
SD	1.813	97.5% KM (Chebyshev) UCL	6.235
k star	0.532	99% KM (Chebyshev) UCL	9.054
Theta star	2.819		
Nu star	6.384	Potential UCLs to	
AppChi2	1.839	95% KM (t) UCL	3.016
95% Gamma Approximate UCL	5.207	95% KM (Percentile Bootstrap) UCL	2.8
95% Adjusted Gamma UCL	8.775		

Note: DL/2 is not a recommended method.

CHROMIUM

General Statistics

Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	20.9	Minimum of Log Data	3.04
Maximum	56.4	Maximum of Log Data	4.032
Mean	33.25	Mean of log Data	3.444
Median	28.05	SD of log Data	0.369
SD	13.33		
Coefficient of Variation	0.401		
Skewness	1.266		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.873	Shapiro Wilk Test Statistic	0.932
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	44.22	95% H-UCL	49.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	54.85
95% Adjusted-CLT UCL	45.21	97.5% Chebyshev (MVUE) UCL	64.25
95% Modified-t UCL	44.69	99% Chebyshev (MVUE) UCL	82.71
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.372	Data appear Normal at 5% Significance Level	
Theta Star	7.605		
nu star	52.47		
Approximate Chi Square Value (.05)	36.83	Nonparametric Statistics	

Adjusted Level of Significance	0.0122	95% CLT UCL	42.2
Adjusted Chi Square Value	32.16	95% Jackknife UCL	44.22
		95% Standard Bootstrap UCL	41.47
Anderson-Darling Test Statistic	0.36	95% Bootstrap-t UCL	64.65
Anderson-Darling 5% Critical Value	0.698	95% Hall's Bootstrap UCL	98.61
Kolmogorov-Smirnov Test Statistic	0.227	95% Percentile Bootstrap UCL	41.92
Kolmogorov-Smirnov 5% Critical Value	0.333	95% BCA Bootstrap UCL	43.52
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	56.98
		97.5% Chebyshev(Mean, Sd) UCL	67.24
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	87.41
95% Approximate Gamma UCL	47.37		
95% Adjusted Gamma UCL	54.24		
Potential UCL to Use		95% Student's-t UCL	44.22

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	6	Number of Detected Data	5
Number of Distinct Detected Data	4	Number of Non-Detect Data	1
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	1.2	Maximum Detected	0.182
Mean of Detected	0.562	Mean of Detected	-1.124
SD of Detected	0.583	SD of Detected	1.195
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.698	Shapiro Wilk Test Statistic	0.735
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.498	Mean	-1.222
SD	0.544	SD	1.096
95% DL/2 (t) UCL	0.946	95% H-Stat (DL/2) UCL	4.783
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.238
		SD in Log Scale	1.105
		Mean in Original Scale	0.496
		SD in Original Scale	0.546
		95% Percentile Bootstrap UCL	0.85
		95% BCA Bootstrap UCL	0.851
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.553	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.017		
nu star	5.527		
A-D Test Statistic	0.838	Nonparametric Statistics	

5% A-D Critical Value	0.691	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.691	Mean	0.491
5% K-S Critical Value	0.364	SD	0.501
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.229
		95% KM (t) UCL	0.952
Assuming Gamma Distribution		95% KM (z) UCL	0.868
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.943
Minimum	0.12	95% KM (bootstrap t) UCL	13.93
Maximum	1.2	95% KM (BCA) UCL	0.847
Mean	0.537	95% KM (Percentile Bootstrap) UCL	0.847
Median	0.281	95% KM (Chebyshev) UCL	1.489
SD	0.525	97.5% KM (Chebyshev) UCL	1.92
k star	0.721	99% KM (Chebyshev) UCL	2.768
Theta star	0.744		
Nu star	8.658	Potential UCLs to	
AppChi2	3.122	97.5% KM (Chebyshev) UCL	1.92
95% Gamma Approximate UCL	1.489		
95% Adjusted Gamma UCL	2.267		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

ENDOSULFAN I

General Statistics			
Number of Valid Data	6	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	5
		Percent Non-Detects	83.33%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable ENDOSULFAN I was not processed!

Highly Chlorinateda

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	5
Raw Statistics		Log-transformed Statistics	
Minimum	0.027	Minimum of Log Data	-3.612
Maximum	3.7	Maximum of Log Data	1.308
Mean	0.713	Mean of log Data	-2.264
Median	0.032	SD of log Data	2.07
SD	1.473		
Coefficient of Variation	2.067		
Skewness	2.378		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics
Normal Distribution Test Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.568	Shapiro Wilk Test Statistic	0.738
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.925	95% H-UCL	1400
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.91
95% Adjusted-CLT UCL	2.326	97.5% Chebyshev (MVUE) UCL	2.54
95% Modified-t UCL	2.022	99% Chebyshev (MVUE) UCL	3.776
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.286	Data do not follow a Discernable Distribution (0.05)	
Theta Star	2.495		
nu star	3.429		
Approximate Chi Square Value (.05)	0.51	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	1.702
Adjusted Chi Square Value	0.235	95% Jackknife UCL	1.925
		95% Standard Bootstrap UCL	1.622
Anderson-Darling Test Statistic	0.969	95% Bootstrap-t UCL	309.6
Anderson-Darling 5% Critical Value	0.759	95% Hall's Bootstrap UCL	133.9
Kolmogorov-Smirnov Test Statistic	0.397	95% Percentile Bootstrap UCL	1.864
Kolmogorov-Smirnov 5% Critical Value	0.355	95% BCA Bootstrap UCL	2.008
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.335
		97.5% Chebyshev(Mean, Sd) UCL	4.47
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.698
95% Approximate Gamma UCL	4.793		
95% Adjusted Gamma UCL	10.41		
Potential UCL to Use		95% Hall's Bootstrap UCL	133.9

Recommended UCL exceeds the maximum observation
In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	6	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	1
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.34	Minimum Detected	-1.079
Maximum Detected	3.4	Maximum Detected	1.224
Mean of Detected	1.426	Mean of Detected	-0.152
SD of Detected	1.465	SD of Detected	1.14
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.771	Shapiro Wilk Test Statistic	0.77
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.218	Mean	-0.413

SD	1.405	SD	1.203
95% DL/2 (t) UCL	2.374	95% H-Stat (DL/2) UCL	18.05
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.853	Mean in Log Scale	-0.388
SD	1.705	SD in Log Scale	1.172
95% MLE (t) UCL	2.255	Mean in Original Scale	1.223
95% MLE (Tiku) UCL	2.357	SD in Original Scale	1.401
		95% Percentile Bootstrap UCL	2.123
		95% BCA Bootstrap UCL	2.132
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.583	Data appear Normal at 5% Significance Level	
Theta Star	2.447		
nu star	5.827		
A-D Test Statistic	0.718	Nonparametric Statistics	
5% A-D Critical Value	0.69	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.69	Mean	1.245
5% K-S Critical Value	0.364	SD	1.263
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.576
		95% KM (t) UCL	2.406
Assuming Gamma Distribution		95% KM (z) UCL	2.193
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.381
Minimum	0.122	95% KM (bootstrap t) UCL	37.77
Maximum	3.4	95% KM (BCA) UCL	2.273
Mean	1.209	95% KM (Percentile Bootstrap) UCL	2.257
Median	0.395	95% KM (Chebyshev) UCL	3.757
SD	1.414	97.5% KM (Chebyshev) UCL	4.844
k star	0.551	99% KM (Chebyshev) UCL	6.979
Theta star	2.194		
Nu star	6.61	Potential UCLs to	
AppChi2	1.959	95% KM (t) UCL	2.406
95% Gamma Approximate UCL	4.078	95% KM (Percentile Bootstrap) UCL	2.257
95% Adjusted Gamma UCL	6.785		

Note: DL/2 is not a recommended method.

IRON

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	5
Raw Statistics		Log-transformed Statistics	
Minimum	13000	Minimum of Log Data	9.473
Maximum	19000	Maximum of Log Data	9.852
Mean	15283	Mean of log Data	9.622
Median	14250	SD of log Data	0.169
SD	2673		
Coefficient of Variation	0.175		
Skewness	0.746		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

APPENDIX K, TABLE 15
RAGS 3.15 - LAKESHORE AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.826	Shapiro Wilk Test Statistic	0.836
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	17482	95% H-UCL	17859
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19887
95% Adjusted-CLT UCL	17434	97.5% Chebyshev (MVUE) UCL	21881
95% Modified-t UCL	17538	99% Chebyshev (MVUE) UCL	25797
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	20.63	Data appear Normal at 5% Significance Level	
Theta Star	740.7		
nu star	247.6		
Approximate Chi Square Value (.05)	212.2	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	17078
Adjusted Chi Square Value	200.3	95% Jackknife UCL	17482
		95% Standard Bootstrap UCL	16932
Anderson-Darling Test Statistic	0.564	95% Bootstrap-t UCL	21676
Anderson-Darling 5% Critical Value	0.697	95% Hall's Bootstrap UCL	19785
Kolmogorov-Smirnov Test Statistic	0.252	95% Percentile Bootstrap UCL	17000
Kolmogorov-Smirnov 5% Critical Value	0.332	95% BCA Bootstrap UCL	17050
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20040
		97.5% Chebyshev(Mean, Sd) UCL	22099
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	26142
95% Approximate Gamma UCL	17836		
95% Adjusted Gamma UCL	18897		
Potential UCL to Use		95% Student's-t UCL	17482

MANGANESE

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	300	Minimum of Log Data	5.704
Maximum	397	Maximum of Log Data	5.984
Mean	359.8	Mean of log Data	5.881
Median	363	SD of log Data	0.108
SD	37.62		
Coefficient of Variation	0.105		
Skewness	-0.674		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.917	Shapiro Wilk Test Statistic	0.908
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	390.8	95% H-UCL	395.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	428.9
95% Adjusted-CLT UCL	380.6	97.5% Chebyshev (MVUE) UCL	458.8
95% Modified-t UCL	390.1	99% Chebyshev (MVUE) UCL	517.4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	52.92	Data appear Normal at 5% Significance Level	
Theta Star	6.8		
nu star	635		
Approximate Chi Square Value (.05)	577.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	385.1
Adjusted Chi Square Value	557.6	95% Jackknife UCL	390.8
		95% Standard Bootstrap UCL	382.5
Anderson-Darling Test Statistic	0.328	95% Bootstrap-t UCL	386.1
Anderson-Darling 5% Critical Value	0.696	95% Hall's Bootstrap UCL	380.3
Kolmogorov-Smirnov Test Statistic	0.197	95% Percentile Bootstrap UCL	382.2
Kolmogorov-Smirnov 5% Critical Value	0.332	95% BCA Bootstrap UCL	379.2
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	426.8
		97.5% Chebyshev(Mean, Sd) UCL	455.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	512.6
95% Approximate Gamma UCL	395.6		
95% Adjusted Gamma UCL	409.8		
Potential UCL to Use		95% Student's-t UCL	390.8

MERCURY

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	5
Raw Statistics		Log-transformed Statistics	
Minimum	0.17	Minimum of Log Data	-1.772
Maximum	3.2	Maximum of Log Data	1.163
Mean	0.903	Mean of log Data	-0.771
Median	0.29	SD of log Data	1.211
SD	1.205		
Coefficient of Variation	1.334		
Skewness	1.87		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.712	Shapiro Wilk Test Statistic	0.844
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.895	95% H-UCL	13.41
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2.517
95% Adjusted-CLT UCL	2.114	97.5% Chebyshev (MVUE) UCL	3.254

95% Modified-t UCL	1.958	99% Chebyshev (MVUE) UCL	4.7

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.549	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.644		
nu star	6.593		
Approximate Chi Square Value (.05)	1.95	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	1.713
Adjusted Chi Square Value	1.171	95% Jackknife UCL	1.895
		95% Standard Bootstrap UCL	1.633
Anderson-Darling Test Statistic	0.638	95% Bootstrap-t UCL	11.33
Anderson-Darling 5% Critical Value	0.718	95% Hall's Bootstrap UCL	8.693
Kolmogorov-Smirnov Test Statistic	0.325	95% Percentile Bootstrap UCL	1.737
Kolmogorov-Smirnov 5% Critical Value	0.342	95% BCA Bootstrap UCL	1.93
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.048
		97.5% Chebyshev(Mean, Sd) UCL	3.977
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	5.8
95% Approximate Gamma UCL	3.054		
95% Adjusted Gamma UCL	5.086		

Potential UCL to Use		95% Approximate Gamma UCL	3.054

PHENANTHRENE

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.06	Minimum of Log Data	-2.813
Maximum	27	Maximum of Log Data	3.296
Mean	5.242	Mean of log Data	-0.0356
Median	1.03	SD of log Data	2.075
SD	10.68		
Coefficient of Variation	2.038		
Skewness	2.424		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.56	Shapiro Wilk Test Statistic	0.973
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	14.03	95% H-UCL	13668
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17.88
95% Adjusted-CLT UCL	17.03	97.5% Chebyshev (MVUE) UCL	23.78
95% Modified-t UCL	14.75	99% Chebyshev (MVUE) UCL	35.35
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.306	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	17.11		

nu star	3.676		
Approximate Chi Square Value (.05)	0.598	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	12.42
Adjusted Chi Square Value	0.282	95% Jackknife UCL	14.03
		95% Standard Bootstrap UCL	11.8
Anderson-Darling Test Statistic	0.526	95% Bootstrap-t UCL	105.2
Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL	70.12
Kolmogorov-Smirnov Test Statistic	0.31	95% Percentile Bootstrap UCL	13.8
Kolmogorov-Smirnov 5% Critical Value	0.353	95% BCA Bootstrap UCL	14.24
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	24.25
		97.5% Chebyshev(Mean, Sd) UCL	32.48
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	48.64
95% Approximate Gamma UCL	32.22		
95% Adjusted Gamma UCL	68.35		
Potential UCL to Use		95% Adjusted Gamma UCL	68.35
Recommended UCL exceeds the maximum observation			

Total PCBsb

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	5
Raw Statistics		Log-transformed Statistics	
Minimum	0.027	Minimum of Log Data	-3.612
Maximum	3.7	Maximum of Log Data	1.308
Mean	0.713	Mean of log Data	-2.264
Median	0.032	SD of log Data	2.07
SD	1.473		
Coefficient of Variation	2.067		
Skewness	2.378		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.568	Shapiro Wilk Test Statistic	0.738
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.925	95% H-UCL	1400
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.91
95% Adjusted-CLT UCL	2.326	97.5% Chebyshev (MVUE) UCL	2.54
95% Modified-t UCL	2.022	99% Chebyshev (MVUE) UCL	3.776
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.286	Data do not follow a Discernable Distribution (0.05)	
Theta Star	2.495		
nu star	3.429		
Approximate Chi Square Value (.05)	0.51	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	1.702
Adjusted Chi Square Value	0.235	95% Jackknife UCL	1.925

		95% Standard Bootstrap UCL	1.611
Anderson-Darling Test Statistic	0.969	95% Bootstrap-t UCL	270.8
Anderson-Darling 5% Critical Value	0.759	95% Hall's Bootstrap UCL	167.9
Kolmogorov-Smirnov Test Statistic	0.397	95% Percentile Bootstrap UCL	1.865
Kolmogorov-Smirnov 5% Critical Value	0.355	95% BCA Bootstrap UCL	2.476
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.335
		97.5% Chebyshev(Mean, Sd) UCL	4.47
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.698
95% Approximate Gamma UCL	4.793		
95% Adjusted Gamma UCL	10.41		

Potential UCL to Use		95% Hall's Bootstrap UCL	167.9

Recommended UCL exceeds the maximum observation
In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL

VANADIUM

General Statistics

Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	13.2	Minimum of Log Data	2.58
Maximum	22.5	Maximum of Log Data	3.114
Mean	17.57	Mean of log Data	2.852
Median	17.5	SD of log Data	0.183
SD	3.192		
Coefficient of Variation	0.182		
Skewness	0.303		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.984	Shapiro Wilk Test Statistic	0.989
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	20.19	95% H-UCL	20.82
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	23.28
95% Adjusted-CLT UCL	19.88	97.5% Chebyshev (MVUE) UCL	25.76
95% Modified-t UCL	20.22	99% Chebyshev (MVUE) UCL	30.62
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	18.25	Data appear Normal at 5% Significance Level	
Theta Star	0.962		
nu star	219		
Approximate Chi Square Value (.05)	185.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	19.71
Adjusted Chi Square Value	174.7	95% Jackknife UCL	20.19
		95% Standard Bootstrap UCL	19.52
Anderson-Darling Test Statistic	0.177	95% Bootstrap-t UCL	20.56
Anderson-Darling 5% Critical Value	0.697	95% Hall's Bootstrap UCL	20.33

Kolmogorov-Smirnov Test Statistic	0.144	95% Percentile Bootstrap UCL	19.58
Kolmogorov-Smirnov 5% Critical Value	0.332	95% BCA Bootstrap UCL	19.57
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	23.25
		97.5% Chebyshev(Mean, Sd) UCL	25.71
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	30.53
95% Approximate Gamma UCL	20.71		
95% Adjusted Gamma UCL	22.03		
Potential UCL to Use		95% Student's-t UCL	20.19

ZINC

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	29.8	Minimum of Log Data	3.395
Maximum	125	Maximum of Log Data	4.828
Mean	71.45	Mean of log Data	4.157
Median	65.35	SD of log Data	0.531
SD	35.61		
Coefficient of Variation	0.498		
Skewness	0.471		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.943	Shapiro Wilk Test Statistic	0.953
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	100.7	95% H-UCL	140
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	139.3
95% Adjusted-CLT UCL	98.35	97.5% Chebyshev (MVUE) UCL	168.6
95% Modified-t UCL	101.2	99% Chebyshev (MVUE) UCL	226
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.426	Data appear Normal at 5% Significance Level	
Theta Star	29.45		
nu star	29.11		
Approximate Chi Square Value (.05)	17.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	95.36
Adjusted Chi Square Value	14.7	95% Jackknife UCL	100.7
		95% Standard Bootstrap UCL	93.59
Anderson-Darling Test Statistic	0.272	95% Bootstrap-t UCL	114.4
Anderson-Darling 5% Critical Value	0.699	95% Hall's Bootstrap UCL	98.11
Kolmogorov-Smirnov Test Statistic	0.233	95% Percentile Bootstrap UCL	95.07
Kolmogorov-Smirnov 5% Critical Value	0.333	95% BCA Bootstrap UCL	93.6
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	134.8
		97.5% Chebyshev(Mean, Sd) UCL	162.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	216.1

95% Approximate Gamma UCL	116.9
95% Adjusted Gamma UCL	141.5

Potential UCL to Use	95% Student's-t UCL	100.7

APPENDIX K, TABLE 16
RAGS 3.16 - LAKESHORE AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

2,3,7,8-TCDD Equivalent

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2,3,7,8-TCDD Equivalent was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ACENAPHTHYLENE

General Statistics

Number of Valid Data	6	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	3
		Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.057	Minimum Detected	-2.865
Maximum Detected	2.1	Maximum Detected	0.742
Mean of Detected	0.759	Mean of Detected	-1.414
SD of Detected	1.162	SD of Detected	1.904
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	7.4	Maximum Non-Detect	2.001

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.773	Shapiro Wilk Test Statistic	0.897
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.135	Mean	-0.847
SD	1.473	SD	1.661
95% DL/2 (t) UCL	2.346	95% H-Stat (DL/2) UCL	2663

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.819

		SD in Log Scale	1.296
		Mean in Original Scale	0.435
		SD in Original Scale	0.816
		95% Percentile Bootstrap UCL	1.09
		95% BCA Bootstrap UCL	1.115

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.452	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.491
5% K-S Critical Value	N/A	SD	0.805
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.441
		95% KM (t) UCL	1.38
Assuming Gamma Distribution		95% KM (z) UCL	1.217
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.32
Minimum	N/A	95% KM (bootstrap t) UCL	12.2
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	2.1
Median	N/A	95% KM (Chebyshev) UCL	2.414
SD	N/A	97.5% KM (Chebyshev) UCL	3.246
k star	N/A	99% KM (Chebyshev) UCL	4.881
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	1.38
95% Gamma Approximate UCL	N/A	95% KM (Percentile Bootstrap) UCL	2.1
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

ALUMINUM

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	4260	Minimum of Log Data	8.357
Maximum	8790	Maximum of Log Data	9.081
Mean	6585	Mean of log Data	8.751
Median	6845	SD of log Data	0.322
SD	1979		
Coefficient of Variation	0.301		
Skewness	-0.256		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.886	Shapiro Wilk Test Statistic	0.86
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

APPENDIX K, TABLE 16
RAGS 3.16 - LAKESHORE AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8213	95% H-UCL	9221
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	10374
95% Adjusted-CLT UCL	7824	97.5% Chebyshev (MVUE) UCL	12009
95% Modified-t UCL	8199	99% Chebyshev (MVUE) UCL	15221
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.247	Data appear Normal at 5% Significance Level	
Theta Star	1054		
nu star	74.96		
Approximate Chi Square Value (.05)	56.02	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	7914
Adjusted Chi Square Value	50.15	95% Jackknife UCL	8213
		95% Standard Bootstrap UCL	7817
Anderson-Darling Test Statistic	0.444	95% Bootstrap-t UCL	8188
Anderson-Darling 5% Critical Value	0.698	95% Hall's Bootstrap UCL	7686
Kolmogorov-Smirnov Test Statistic	0.235	95% Percentile Bootstrap UCL	7790
Kolmogorov-Smirnov 5% Critical Value	0.332	95% BCA Bootstrap UCL	7747
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	10107
		97.5% Chebyshev(Mean, Sd) UCL	11631
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	14624
95% Approximate Gamma UCL	8811		
95% Adjusted Gamma UCL	9843		
Potential UCL to Use		95% Student's-t UCL	8213

ARSENIC

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	4.5	Minimum of Log Data	1.504
Maximum	13.5	Maximum of Log Data	2.603
Mean	8.3	Mean of log Data	2.046
Median	8.35	SD of log Data	0.416
SD	3.358		
Coefficient of Variation	0.405		
Skewness	0.496		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.942	Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	11.06	95% H-UCL	13.29
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.45
95% Adjusted-CLT UCL	10.85	97.5% Chebyshev (MVUE) UCL	17.1

95% Modified-t UCL	11.11	99% Chebyshev (MVUE) UCL	22.32
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.742	Data appear Normal at 5% Significance Level	
Theta Star	2.218		
nu star	44.9		
Approximate Chi Square Value (.05)	30.53	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	10.55
Adjusted Chi Square Value	26.32	95% Jackknife UCL	11.06
		95% Standard Bootstrap UCL	10.33
Anderson-Darling Test Statistic	0.26	95% Bootstrap-t UCL	11.93
Anderson-Darling 5% Critical Value	0.698	95% Hall's Bootstrap UCL	10.66
Kolmogorov-Smirnov Test Statistic	0.21	95% Percentile Bootstrap UCL	10.52
Kolmogorov-Smirnov 5% Critical Value	0.333	95% BCA Bootstrap UCL	10.55
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.28
		97.5% Chebyshev(Mean, Sd) UCL	16.86
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	21.94
95% Approximate Gamma UCL	12.21		
95% Adjusted Gamma UCL	14.16		
Potential UCL to Use		95% Student's-t UCL	11.06

BENZO(A)ANTHRACENE

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.054	Minimum of Log Data	-2.919
Maximum	11	Maximum of Log Data	2.398
Mean	3.372	Mean of log Data	0.00393
Median	0.8	SD of log Data	1.962
SD	4.605		
Coefficient of Variation	1.366		
Skewness	1.236		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.759	Shapiro Wilk Test Statistic	0.946
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.161	95% H-UCL	5220
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	15.77
95% Adjusted-CLT UCL	7.478	97.5% Chebyshev (MVUE) UCL	20.91
95% Modified-t UCL	7.319	99% Chebyshev (MVUE) UCL	31.03
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.372	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	9.076		

nu star	4.459		
Approximate Chi Square Value (.05)	0.911	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	6.465
Adjusted Chi Square Value	0.466	95% Jackknife UCL	7.161
		95% Standard Bootstrap UCL	6.17
Anderson-Darling Test Statistic	0.382	95% Bootstrap-t UCL	43.43
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	42.34
Kolmogorov-Smirnov Test Statistic	0.282	95% Percentile Bootstrap UCL	6.333
Kolmogorov-Smirnov 5% Critical Value	0.348	95% BCA Bootstrap UCL	6.859
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	11.57
		97.5% Chebyshev(Mean, Sd) UCL	15.11
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	22.08
95% Approximate Gamma UCL	16.51		
95% Adjusted Gamma UCL	32.3		
Potential UCL to Use		95% Approximate Gamma UCL	16.51
Recommended UCL exceeds the maximum observation			

BENZO(A)PYRENE

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.051	Minimum of Log Data	-2.976
Maximum	8.9	Maximum of Log Data	2.186
Mean	2.794	Mean of log Data	-0.112
Median	0.7	SD of log Data	1.898
SD	3.731		
Coefficient of Variation	1.336		
Skewness	1.2		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.764	Shapiro Wilk Test Statistic	0.942
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5.863	95% H-UCL	2716
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	12.8
95% Adjusted-CLT UCL	6.096	97.5% Chebyshev (MVUE) UCL	16.96
95% Modified-t UCL	5.987	99% Chebyshev (MVUE) UCL	25.13
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.386	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	7.239		
nu star	4.631		
Approximate Chi Square Value (.05)	0.986	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	5.299
Adjusted Chi Square Value	0.512	95% Jackknife UCL	5.863

		95% Standard Bootstrap UCL	5.085
Anderson-Darling Test Statistic	0.383	95% Bootstrap-t UCL	30.89
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	31.08
Kolmogorov-Smirnov Test Statistic	0.263	95% Percentile Bootstrap UCL	5.2
Kolmogorov-Smirnov 5% Critical Value	0.348	95% BCA Bootstrap UCL	5.605
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	9.433
		97.5% Chebyshev(Mean, Sd) UCL	12.31
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	17.95
95% Approximate Gamma UCL	13.13		
95% Adjusted Gamma UCL	25.26		
Potential UCL to Use		95% Approximate Gamma UCL	13.13
Recommended UCL exceeds the maximum observation			

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.089	Minimum of Log Data	-2.419
Maximum	12	Maximum of Log Data	2.485
Mean	4.367	Mean of log Data	0.412
Median	1.18	SD of log Data	1.842
SD	5.551		
Coefficient of Variation	1.271		
Skewness	0.957		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.726	Shapiro Wilk Test Statistic	0.916
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8.933	95% H-UCL	2897
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19.93
95% Adjusted-CLT UCL	9.04	97.5% Chebyshev (MVUE) UCL	26.37
95% Modified-t UCL	9.08	99% Chebyshev (MVUE) UCL	39.01
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.403	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	10.83		
nu star	4.838		
Approximate Chi Square Value (.05)	1.078	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	8.094
Adjusted Chi Square Value	0.571	95% Jackknife UCL	8.933
		95% Standard Bootstrap UCL	7.858
Anderson-Darling Test Statistic	0.466	95% Bootstrap-t UCL	43.91
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	63.32
Kolmogorov-Smirnov Test Statistic	0.273	95% Percentile Bootstrap UCL	8.025

Kolmogorov-Smirnov 5% Critical Value	0.347	95% BCA Bootstrap UCL	8.133
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.24
		97.5% Chebyshev(Mean, Sd) UCL	18.52
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	26.91
95% Approximate Gamma UCL	19.6		
95% Adjusted Gamma UCL	36.99		
Potential UCL to Use		95% Approximate Gamma UCL	19.6
Recommended UCL exceeds the maximum observation			

BENZO(G,H,I)PERYLENE

General Statistics			
Number of Valid Data	6	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	1
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.4	Minimum Detected	-0.916
Maximum Detected	3.4	Maximum Detected	1.224
Mean of Detected	1.44	Mean of Detected	-0.0473
SD of Detected	1.381	SD of Detected	1.021
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.802	Shapiro Wilk Test Statistic	0.82
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.23	Mean	-0.325
SD	1.338	SD	1.139
95% DL/2 (t) UCL	2.331	95% H-Stat (DL/2) UCL	13.37
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.117	Mean in Log Scale	-0.467
SD	1.369	SD in Log Scale	1.375
95% MLE (t) UCL	2.243	Mean in Original Scale	1.213
95% MLE (Tiku) UCL	2.221	SD in Original Scale	1.355
		95% Percentile Bootstrap UCL	2.1
		95% BCA Bootstrap UCL	2.235
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.676	Data appear Normal at 5% Significance Level	
Theta Star	2.131		
nu star	6.759		
A-D Test Statistic	0.584	Nonparametric Statistics	
5% A-D Critical Value	0.688	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.688	Mean	1.267
5% K-S Critical Value	0.362	SD	1.192
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.544
		95% KM (t) UCL	2.363

Assuming Gamma Distribution		95% KM (z) UCL	2.162
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.341
Minimum	1.00E-09	95% KM (bootstrap t) UCL	12.07
Maximum	3.4	95% KM (BCA) UCL	2.237
Mean	1.2	95% KM (Percentile Bootstrap) UCL	2.233
Median	0.5	95% KM (Chebyshev) UCL	3.639
SD	1.368	97.5% KM (Chebyshev) UCL	4.665
k star	0.211	99% KM (Chebyshev) UCL	6.681
Theta star	5.682		
Nu star	2.534	Potential UCLs to	
AppChi2	0.249	95% KM (t) UCL	2.363
95% Gamma Approximate UCL	12.21	95% KM (Percentile Bootstrap) UCL	2.233
95% Adjusted Gamma UCL	26.27		

Note: DL/2 is not a recommended method.

BENZO(K)FLUORANTHENE

General Statistics			
Number of Valid Data	6	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	1
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.21	Minimum Detected	-1.561
Maximum Detected	4.3	Maximum Detected	1.459
Mean of Detected	1.728	Mean of Detected	-0.149
SD of Detected	1.928	SD of Detected	1.39
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.797	Shapiro Wilk Test Statistic	0.865
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.47	Mean	-0.41
SD	1.836	SD	1.398
95% DL/2 (t) UCL	2.981	95% H-Stat (DL/2) UCL	43.83
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.424	Mean in Log Scale	-0.359
SD	2.813	SD in Log Scale	1.346
95% MLE (t) UCL	2.739	Mean in Original Scale	1.481
95% MLE (Tiku) UCL	3.273	SD in Original Scale	1.828
		95% Percentile Bootstrap UCL	2.662
		95% BCA Bootstrap UCL	2.791
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.472	Data appear Normal at 5% Significance Level	
Theta Star	3.663		
nu star	4.718		
A-D Test Statistic	0.517	Nonparametric Statistics	

5% A-D Critical Value	0.696	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.696	Mean	1.483
5% K-S Critical Value	0.366	SD	1.667
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.761
		95% KM (t) UCL	3.016
Assuming Gamma Distribution		95% KM (z) UCL	2.734
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.985
Minimum	0.21	95% KM (bootstrap t) UCL	16.04
Maximum	4.3	95% KM (BCA) UCL	2.823
Mean	1.5	95% KM (Percentile Bootstrap) UCL	2.785
Median	0.445	95% KM (Chebyshev) UCL	4.8
SD	1.813	97.5% KM (Chebyshev) UCL	6.235
k star	0.532	99% KM (Chebyshev) UCL	9.054
Theta star	2.819		
Nu star	6.384	Potential UCLs to	
AppChi2	1.839	95% KM (t) UCL	3.016
95% Gamma Approximate UCL	5.207	95% KM (Percentile Bootstrap) UCL	2.785
95% Adjusted Gamma UCL	8.775		

Note: DL/2 is not a recommended method.

CHROMIUM

General Statistics

Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	20.9	Minimum of Log Data	3.04
Maximum	56.4	Maximum of Log Data	4.032
Mean	33.25	Mean of log Data	3.444
Median	28.05	SD of log Data	0.369
SD	13.33		
Coefficient of Variation	0.401		
Skewness	1.266		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.873	Shapiro Wilk Test Statistic	0.932
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	44.22	95% H-UCL	49.4
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	54.85
95% Adjusted-CLT UCL	45.21	97.5% Chebyshev (MVUE) UCL	64.25
95% Modified-t UCL	44.69	99% Chebyshev (MVUE) UCL	82.71
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.372	Data appear Normal at 5% Significance Level	
Theta Star	7.605		
nu star	52.47		
Approximate Chi Square Value (.05)	36.83	Nonparametric Statistics	

Adjusted Level of Significance	0.0122	95% CLT UCL	42.2
Adjusted Chi Square Value	32.16	95% Jackknife UCL	44.22
		95% Standard Bootstrap UCL	41.64
Anderson-Darling Test Statistic	0.36	95% Bootstrap-t UCL	64.76
Anderson-Darling 5% Critical Value	0.698	95% Hall's Bootstrap UCL	99.18
Kolmogorov-Smirnov Test Statistic	0.227	95% Percentile Bootstrap UCL	41.1
Kolmogorov-Smirnov 5% Critical Value	0.333	95% BCA Bootstrap UCL	43.35
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	56.98
		97.5% Chebyshev(Mean, Sd) UCL	67.24
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	87.41
95% Approximate Gamma UCL	47.37		
95% Adjusted Gamma UCL	54.24		
Potential UCL to Use		95% Student's-t UCL	44.22

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	6	Number of Detected Data	5
Number of Distinct Detected Data	4	Number of Non-Detect Data	1
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	1.2	Maximum Detected	0.182
Mean of Detected	0.562	Mean of Detected	-1.124
SD of Detected	0.583	SD of Detected	1.195
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.698	Shapiro Wilk Test Statistic	0.735
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.498	Mean	-1.222
SD	0.544	SD	1.096
95% DL/2 (t) UCL	0.946	95% H-Stat (DL/2) UCL	4.783
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.238
		SD in Log Scale	1.105
		Mean in Original Scale	0.496
		SD in Original Scale	0.546
		95% Percentile Bootstrap UCL	0.848
		95% BCA Bootstrap UCL	0.852
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.553	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1.017		
nu star	5.527		
A-D Test Statistic	0.838	Nonparametric Statistics	

5% A-D Critical Value	0.691	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.691	Mean	0.491
5% K-S Critical Value	0.364	SD	0.501
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.229
		95% KM (t) UCL	0.952
Assuming Gamma Distribution		95% KM (z) UCL	0.868
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.943
Minimum	0.12	95% KM (bootstrap t) UCL	12.64
Maximum	1.2	95% KM (BCA) UCL	0.848
Mean	0.537	95% KM (Percentile Bootstrap) UCL	0.847
Median	0.281	95% KM (Chebyshev) UCL	1.489
SD	0.525	97.5% KM (Chebyshev) UCL	1.92
k star	0.721	99% KM (Chebyshev) UCL	2.768
Theta star	0.744		
Nu star	8.658	Potential UCLs to	
AppChi2	3.122	97.5% KM (Chebyshev) UCL	1.92
95% Gamma Approximate UCL	1.489		
95% Adjusted Gamma UCL	2.267		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

ENDOSULFAN I

General Statistics			
Number of Valid Data	6	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	5
		Percent Non-Detects	83.33%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable ENDOSULFAN I was not processed!

Highly Chlorinateda

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	5
Raw Statistics		Log-transformed Statistics	
Minimum	0.027	Minimum of Log Data	-3.612
Maximum	3.7	Maximum of Log Data	1.308
Mean	0.713	Mean of log Data	-2.264
Median	0.032	SD of log Data	2.07
SD	1.473		
Coefficient of Variation	2.067		
Skewness	2.378		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics
Normal Distribution Test Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.568	Shapiro Wilk Test Statistic	0.738
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.925	95% H-UCL	1400
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.91
95% Adjusted-CLT UCL	2.326	97.5% Chebyshev (MVUE) UCL	2.54
95% Modified-t UCL	2.022	99% Chebyshev (MVUE) UCL	3.776
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.286	Data do not follow a Discernable Distribution (0.05)	
Theta Star	2.495		
nu star	3.429		
Approximate Chi Square Value (.05)	0.51	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	1.702
Adjusted Chi Square Value	0.235	95% Jackknife UCL	1.925
		95% Standard Bootstrap UCL	1.594
Anderson-Darling Test Statistic	0.969	95% Bootstrap-t UCL	292.6
Anderson-Darling 5% Critical Value	0.759	95% Hall's Bootstrap UCL	132.7
Kolmogorov-Smirnov Test Statistic	0.397	95% Percentile Bootstrap UCL	1.864
Kolmogorov-Smirnov 5% Critical Value	0.355	95% BCA Bootstrap UCL	2.08
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.335
		97.5% Chebyshev(Mean, Sd) UCL	4.47
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.698
95% Approximate Gamma UCL	4.793		
95% Adjusted Gamma UCL	10.41		
Potential UCL to Use		95% Hall's Bootstrap UCL	132.7

Recommended UCL exceeds the maximum observation
In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	6	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	1
		Percent Non-Detects	16.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.34	Minimum Detected	-1.079
Maximum Detected	3.4	Maximum Detected	1.224
Mean of Detected	1.426	Mean of Detected	-0.152
SD of Detected	1.465	SD of Detected	1.14
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.771	Shapiro Wilk Test Statistic	0.77
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.218	Mean	-0.413

SD	1.405	SD	1.203
95% DL/2 (t) UCL	2.374	95% H-Stat (DL/2) UCL	18.05
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.853	Mean in Log Scale	-0.388
SD	1.705	SD in Log Scale	1.172
95% MLE (t) UCL	2.255	Mean in Original Scale	1.223
95% MLE (Tiku) UCL	2.357	SD in Original Scale	1.401
		95% Percentile Bootstrap UCL	2.14
		95% BCA Bootstrap UCL	2.237
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.583	Data appear Normal at 5% Significance Level	
Theta Star	2.447		
nu star	5.827		
A-D Test Statistic	0.718	Nonparametric Statistics	
5% A-D Critical Value	0.69	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.69	Mean	1.245
5% K-S Critical Value	0.364	SD	1.263
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.576
		95% KM (t) UCL	2.406
Assuming Gamma Distribution		95% KM (z) UCL	2.193
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.381
Minimum	0.122	95% KM (bootstrap t) UCL	38.83
Maximum	3.4	95% KM (BCA) UCL	2.257
Mean	1.209	95% KM (Percentile Bootstrap) UCL	2.14
Median	0.395	95% KM (Chebyshev) UCL	3.757
SD	1.414	97.5% KM (Chebyshev) UCL	4.844
k star	0.551	99% KM (Chebyshev) UCL	6.979
Theta star	2.194		
Nu star	6.61	Potential UCLs to	
AppChi2	1.959	95% KM (t) UCL	2.406
95% Gamma Approximate UCL	4.078	95% KM (Percentile Bootstrap) UCL	2.14
95% Adjusted Gamma UCL	6.785		

Note: DL/2 is not a recommended method.

IRON

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	5
Raw Statistics		Log-transformed Statistics	
Minimum	13000	Minimum of Log Data	9.473
Maximum	19000	Maximum of Log Data	9.852
Mean	15283	Mean of log Data	9.622
Median	14250	SD of log Data	0.169
SD	2673		
Coefficient of Variation	0.175		
Skewness	0.746		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.826	Shapiro Wilk Test Statistic	0.836
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	17482	95% H-UCL	17859
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19887
95% Adjusted-CLT UCL	17434	97.5% Chebyshev (MVUE) UCL	21881
95% Modified-t UCL	17538	99% Chebyshev (MVUE) UCL	25797
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	20.63	Data appear Normal at 5% Significance Level	
Theta Star	740.7		
nu star	247.6		
Approximate Chi Square Value (.05)	212.2	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	17078
Adjusted Chi Square Value	200.3	95% Jackknife UCL	17482
		95% Standard Bootstrap UCL	16923
Anderson-Darling Test Statistic	0.564	95% Bootstrap-t UCL	21676
Anderson-Darling 5% Critical Value	0.697	95% Hall's Bootstrap UCL	19785
Kolmogorov-Smirnov Test Statistic	0.252	95% Percentile Bootstrap UCL	17050
Kolmogorov-Smirnov 5% Critical Value	0.332	95% BCA Bootstrap UCL	17050
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20040
		97.5% Chebyshev(Mean, Sd) UCL	22099
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	26142
95% Approximate Gamma UCL	17836		
95% Adjusted Gamma UCL	18897		
Potential UCL to Use		95% Student's-t UCL	17482

MANGANESE

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	300	Minimum of Log Data	5.704
Maximum	397	Maximum of Log Data	5.984
Mean	359.8	Mean of log Data	5.881
Median	363	SD of log Data	0.108
SD	37.62		
Coefficient of Variation	0.105		
Skewness	-0.674		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.917	Shapiro Wilk Test Statistic	0.908
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	390.8	95% H-UCL	395.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	428.9
95% Adjusted-CLT UCL	380.6	97.5% Chebyshev (MVUE) UCL	458.8
95% Modified-t UCL	390.1	99% Chebyshev (MVUE) UCL	517.4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	52.92	Data appear Normal at 5% Significance Level	
Theta Star	6.8		
nu star	635		
Approximate Chi Square Value (.05)	577.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	385.1
Adjusted Chi Square Value	557.6	95% Jackknife UCL	390.8
		95% Standard Bootstrap UCL	382.9
Anderson-Darling Test Statistic	0.328	95% Bootstrap-t UCL	386
Anderson-Darling 5% Critical Value	0.696	95% Hall's Bootstrap UCL	379.8
Kolmogorov-Smirnov Test Statistic	0.197	95% Percentile Bootstrap UCL	382
Kolmogorov-Smirnov 5% Critical Value	0.332	95% BCA Bootstrap UCL	379
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	426.8
		97.5% Chebyshev(Mean, Sd) UCL	455.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	512.6
95% Approximate Gamma UCL	395.6		
95% Adjusted Gamma UCL	409.8		
Potential UCL to Use		95% Student's-t UCL	390.8

MERCURY

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	5
Raw Statistics		Log-transformed Statistics	
Minimum	0.17	Minimum of Log Data	-1.772
Maximum	3.2	Maximum of Log Data	1.163
Mean	0.903	Mean of log Data	-0.771
Median	0.29	SD of log Data	1.211
SD	1.205		
Coefficient of Variation	1.334		
Skewness	1.87		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.712	Shapiro Wilk Test Statistic	0.844
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.895	95% H-UCL	13.41
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2.517
95% Adjusted-CLT UCL	2.114	97.5% Chebyshev (MVUE) UCL	3.254

95% Modified-t UCL	1.958	99% Chebyshev (MVUE) UCL	4.7
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.549	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.644		
nu star	6.593		
Approximate Chi Square Value (.05)	1.95	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	1.713
Adjusted Chi Square Value	1.171	95% Jackknife UCL	1.895
		95% Standard Bootstrap UCL	1.644
Anderson-Darling Test Statistic	0.638	95% Bootstrap-t UCL	11.33
Anderson-Darling 5% Critical Value	0.718	95% Hall's Bootstrap UCL	9.05
Kolmogorov-Smirnov Test Statistic	0.325	95% Percentile Bootstrap UCL	1.708
Kolmogorov-Smirnov 5% Critical Value	0.342	95% BCA Bootstrap UCL	1.902
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.048
		97.5% Chebyshev(Mean, Sd) UCL	3.977
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	5.8
95% Approximate Gamma UCL	3.054		
95% Adjusted Gamma UCL	5.086		
Potential UCL to Use		95% Approximate Gamma UCL	3.054

PHENANTHRENE

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.06	Minimum of Log Data	-2.813
Maximum	27	Maximum of Log Data	3.296
Mean	5.242	Mean of log Data	-0.0356
Median	1.03	SD of log Data	2.075
SD	10.68		
Coefficient of Variation	2.038		
Skewness	2.424		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.56	Shapiro Wilk Test Statistic	0.973
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	14.03	95% H-UCL	13668
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17.88
95% Adjusted-CLT UCL	17.03	97.5% Chebyshev (MVUE) UCL	23.78
95% Modified-t UCL	14.75	99% Chebyshev (MVUE) UCL	35.35
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.306	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	17.11		

nu star	3.676		
Approximate Chi Square Value (.05)	0.598	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	12.42
Adjusted Chi Square Value	0.282	95% Jackknife UCL	14.03
		95% Standard Bootstrap UCL	11.86
Anderson-Darling Test Statistic	0.526	95% Bootstrap-t UCL	113.1
Anderson-Darling 5% Critical Value	0.753	95% Hall's Bootstrap UCL	75.31
Kolmogorov-Smirnov Test Statistic	0.31	95% Percentile Bootstrap UCL	13.85
Kolmogorov-Smirnov 5% Critical Value	0.353	95% BCA Bootstrap UCL	14.34
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	24.25
		97.5% Chebyshev(Mean, Sd) UCL	32.48
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	48.64
95% Approximate Gamma UCL	32.22		
95% Adjusted Gamma UCL	68.35		
Potential UCL to Use		95% Adjusted Gamma UCL	68.35
Recommended UCL exceeds the maximum observation			

Total PCBsb

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	5
Raw Statistics		Log-transformed Statistics	
Minimum	0.027	Minimum of Log Data	-3.612
Maximum	3.7	Maximum of Log Data	1.308
Mean	0.713	Mean of log Data	-2.264
Median	0.032	SD of log Data	2.07
SD	1.473		
Coefficient of Variation	2.067		
Skewness	2.378		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.568	Shapiro Wilk Test Statistic	0.738
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.925	95% H-UCL	1400
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	1.91
95% Adjusted-CLT UCL	2.326	97.5% Chebyshev (MVUE) UCL	2.54
95% Modified-t UCL	2.022	99% Chebyshev (MVUE) UCL	3.776
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.286	Data do not follow a Discernable Distribution (0.05)	
Theta Star	2.495		
nu star	3.429		
Approximate Chi Square Value (.05)	0.51	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	1.702
Adjusted Chi Square Value	0.235	95% Jackknife UCL	1.925

		95% Standard Bootstrap UCL	1.606
Anderson-Darling Test Statistic	0.969	95% Bootstrap-t UCL	309.6
Anderson-Darling 5% Critical Value	0.759	95% Hall's Bootstrap UCL	125
Kolmogorov-Smirnov Test Statistic	0.397	95% Percentile Bootstrap UCL	1.865
Kolmogorov-Smirnov 5% Critical Value	0.355	95% BCA Bootstrap UCL	1.938
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.335
		97.5% Chebyshev(Mean, Sd) UCL	4.47
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6.698
95% Approximate Gamma UCL	4.793		
95% Adjusted Gamma UCL	10.41		

Potential UCL to Use		95% Hall's Bootstrap UCL	125

Recommended UCL exceeds the maximum observation
In Case Bootstrap t and/or Hall's Bootstrap yields an unreasonably large UCL value, use 97.5% or 99% Chebyshev (Mean, Sd) UCL

VANADIUM

General Statistics

Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	13.2	Minimum of Log Data	2.58
Maximum	22.5	Maximum of Log Data	3.114
Mean	17.57	Mean of log Data	2.852
Median	17.5	SD of log Data	0.183
SD	3.192		
Coefficient of Variation	0.182		
Skewness	0.303		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.984	Shapiro Wilk Test Statistic	0.989
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	20.19	95% H-UCL	20.82
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	23.28
95% Adjusted-CLT UCL	19.88	97.5% Chebyshev (MVUE) UCL	25.76
95% Modified-t UCL	20.22	99% Chebyshev (MVUE) UCL	30.62
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	18.25	Data appear Normal at 5% Significance Level	
Theta Star	0.962		
nu star	219		
Approximate Chi Square Value (.05)	185.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	19.71
Adjusted Chi Square Value	174.7	95% Jackknife UCL	20.19
		95% Standard Bootstrap UCL	19.51
Anderson-Darling Test Statistic	0.177	95% Bootstrap-t UCL	20.43
Anderson-Darling 5% Critical Value	0.697	95% Hall's Bootstrap UCL	20.38

Kolmogorov-Smirnov Test Statistic	0.144	95% Percentile Bootstrap UCL	19.5
Kolmogorov-Smirnov 5% Critical Value	0.332	95% BCA Bootstrap UCL	19.58
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	23.25
		97.5% Chebyshev(Mean, Sd) UCL	25.71
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	30.53
95% Approximate Gamma UCL	20.71		
95% Adjusted Gamma UCL	22.03		
Potential UCL to Use		95% Student's-t UCL	20.19

ZINC

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	29.8	Minimum of Log Data	3.395
Maximum	125	Maximum of Log Data	4.828
Mean	71.45	Mean of log Data	4.157
Median	65.35	SD of log Data	0.531
SD	35.61		
Coefficient of Variation	0.498		
Skewness	0.471		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.943	Shapiro Wilk Test Statistic	0.953
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	100.7	95% H-UCL	140
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	139.3
95% Adjusted-CLT UCL	98.35	97.5% Chebyshev (MVUE) UCL	168.6
95% Modified-t UCL	101.2	99% Chebyshev (MVUE) UCL	226
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.426	Data appear Normal at 5% Significance Level	
Theta Star	29.45		
nu star	29.11		
Approximate Chi Square Value (.05)	17.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	95.36
Adjusted Chi Square Value	14.7	95% Jackknife UCL	100.7
		95% Standard Bootstrap UCL	93.57
Anderson-Darling Test Statistic	0.272	95% Bootstrap-t UCL	106.1
Anderson-Darling 5% Critical Value	0.699	95% Hall's Bootstrap UCL	98.25
Kolmogorov-Smirnov Test Statistic	0.233	95% Percentile Bootstrap UCL	95.07
Kolmogorov-Smirnov 5% Critical Value	0.333	95% BCA Bootstrap UCL	95.12
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	134.8
		97.5% Chebyshev(Mean, Sd) UCL	162.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	216.1

95% Approximate Gamma UCL	116.9
95% Adjusted Gamma UCL	141.5

Potential UCL to Use	95% Student's-t UCL	100.7

APPENDIX K, TABLE 17
RAGS 3.17 - LAKESHORE AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1,2,4-TRICHLOROBENZENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,4-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2-DICHLOROBENZENE

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,3-DICHLOROBENZENE

General Statistics

Number of Valid Data	4	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	2
		Percent Non-Detects	50.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,3-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,4-DICHLOROBENZENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,4-DICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2,4-DICHLOROPHENOL

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2,4-DICHLOROPHENOL was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2-CHLOROPHENOL

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2-CHLOROPHENOL was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

2-METHYLNAPHTHALENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2-METHYLNAPHTHALENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

4-CHLORO-3-METHYLPHENOL

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1

		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 4-CHLORO-3-METHYLPHENOL was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

4-METHYLPHENOL

General Statistics

Number of Valid Observations	2	Number of Distinct Observations	2

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 4-METHYLPHENOL was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ARSENIC

General Statistics

Number of Valid Data	4	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	2
		Percent Non-Detects	50.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ARSENIC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BARIUM

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BARIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BERYLLIUM

General Statistics

Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BERYLLIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CARBON DISULFIDE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CARBON DISULFIDE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHLOROBENZENE

General Statistics

Number of Valid Data	4	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	2
		Percent Non-Detects	50.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHROMIUM

General Statistics

Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHROMIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

IRON

General Statistics

Number of Valid Data	3	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	2
		Percent Non-Detects	66.67%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable IRON was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MANGANESE

General Statistics

Number of Valid Data	3	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	2
		Percent Non-Detects	66.67%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MANGANESE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics

Number of Valid Data	6	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	1
		Percent Non-Detects	16.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.80E-04	Minimum Detected	-7.642
Maximum Detected	0.0089	Maximum Detected	-4.722
Mean of Detected	0.00343	Mean of Detected	-6.395
SD of Detected	0.00395	SD of Detected	1.393
Minimum Non-Detect	2.00E-04	Minimum Non-Detect	-8.517
Maximum Non-Detect	2.00E-04	Maximum Non-Detect	-8.517

APPENDIX K, TABLE 17
RAGS 3.17 - LAKESHORE AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
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Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.784	Shapiro Wilk Test Statistic	0.812
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00288	Mean	-6.865
SD	0.00379	SD	1.695
95% DL/2 (t) UCL	0.00599	95% H-Stat (DL/2) UCL	0.282
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.00249	Mean in Log Scale	-6.964
SD	0.00394	SD in Log Scale	1.87
95% MLE (t) UCL	0.00573	Mean in Original Scale	0.00287
95% MLE (Tiku) UCL	0.00568	SD in Original Scale	0.00379
		95% Percentile Bootstrap UCL	0.00531
		95% BCA Bootstrap UCL	0.0057
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.461	Data appear Normal at 5% Significance Level	
Theta Star	0.00744		
nu star	4.614		
A-D Test Statistic	0.63	Nonparametric Statistics	
5% A-D Critical Value	0.696	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.696	Mean	0.00294
5% K-S Critical Value	0.366	SD	0.00341
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00156
		95% KM (t) UCL	0.00608
Assuming Gamma Distribution		95% KM (z) UCL	0.0055
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00601
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0616
Maximum	0.0089	95% KM (BCA) UCL	0.00568
Mean	0.00286	95% KM (Percentile Bootstrap) UCL	0.00568
Median	6.95E-04	95% KM (Chebyshev) UCL	0.00972
SD	0.0038	97.5% KM (Chebyshev) UCL	0.0127
k star	0.233	99% KM (Chebyshev) UCL	0.0184
Theta star	0.0123		
Nu star	2.795	Potential UCLs to Use Use	
AppChi2	0.314	95% KM (t) UCL	0.00608
95% Gamma Approximate UCL	0.0254	95% KM (Percentile Bootstrap) UCL	0.00568
95% Adjusted Gamma UCL	0.0565		

Note: DL/2 is not a recommended method.

NAPHTHALENE

General Statistics			
Number of Valid Observations	2	Number of Distinct Observations	2

APPENDIX K, TABLE 17
RAGS 3.17 - LAKESHORE AREA - SHALLOW GROUND WATER
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Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable NAPHTHALENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics

Number of Valid Data	2	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	1
		Percent Non-Detects	50.00%

Warning: This data set only has 2 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable PHENANTHRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

TOLUENE

General Statistics

Number of Valid Data	4	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	2
		Percent Non-Detects	50.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable TOLUENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

VANADIUM

General Statistics

Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable VANADIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 18
RAGS 3.18 - TRIBUTARY 5A - SEDIMENT
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

2,3,7,8-TCDD Equivalent

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2,3,7,8-TCDD Equivalent was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ACENAPHTHYLENE

General Statistics

Number of Valid Data	7	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	5
		Percent Non-Detects	71.43%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.21	Minimum Detected	-1.561
Maximum Detected	0.51	Maximum Detected	-0.673
Mean of Detected	0.36	Mean of Detected	-1.117
SD of Detected	0.212	SD of Detected	0.627
Minimum Non-Detect	0.39	Minimum Non-Detect	-0.942
Maximum Non-Detect	1.3	Maximum Non-Detect	0.262

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

APPENDIX K, TABLE 18
RAGS 3.18 - TRIBUTARY 5A - SEDIMENT
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.385	Mean	-1.073
SD	0.197	SD	0.53
95% DL/2 (t) UCL	0.53	95% H-Stat (DL/2) UCL	1.362
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.285
5% K-S Critical Value	N/A	SD	0.13
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0919
		95% KM (t) UCL	0.463
Assuming Gamma Distribution		95% KM (z) UCL	0.436
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.523
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	0.51
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.51
Median	N/A	95% KM (Chebyshev) UCL	0.685
SD	N/A	97.5% KM (Chebyshev) UCL	0.859
k star	N/A	99% KM (Chebyshev) UCL	1.199
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	0.463
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	0.51
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

ALUMINUM

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	857	Minimum of Log Data	6.753
Maximum	11600	Maximum of Log Data	9.359
Mean	4115	Mean of log Data	8.044
Median	2820	SD of log Data	0.808
SD	3558		
Coefficient of Variation	0.865		
Skewness	1.914		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.795	Shapiro Wilk Test Statistic	0.97
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	6729	95% H-UCL	12306
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	9557
95% Adjusted-CLT UCL	7367	97.5% Chebyshev (MVUE) UCL	11924
95% Modified-t UCL	6891	99% Chebyshev (MVUE) UCL	16575
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.209	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3405		
nu star	16.92		
Approximate Chi Square Value (.05)	8.615	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	6327
Adjusted Chi Square Value	6.903	95% Jackknife UCL	6729
		95% Standard Bootstrap UCL	6135
Anderson-Darling Test Statistic	0.309	95% Bootstrap-t UCL	9556
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	15894
Kolmogorov-Smirnov Test Statistic	0.176	95% Percentile Bootstrap UCL	6332
Kolmogorov-Smirnov 5% Critical Value	0.315	95% BCA Bootstrap UCL	7074
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	9977
		97.5% Chebyshev(Mean, Sd) UCL	12514
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	17496
95% Approximate Gamma UCL	8082		
95% Adjusted Gamma UCL	10087		
Potential UCL to Use		95% Approximate Gamma UCL	8082

ANTIMONY

General Statistics			
Number of Valid Data	7	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	3
		Percent Non-Detects	42.86%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.2	Minimum Detected	0.182
Maximum Detected	38.5	Maximum Detected	3.651
Mean of Detected	18.25	Mean of Detected	2.004
SD of Detected	19.4	SD of Detected	1.797
Minimum Non-Detect	0.96	Minimum Non-Detect	-0.0408
Maximum Non-Detect	31.8	Maximum Non-Detect	3.459
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	85.71%

Warning: There are only 4 Distinct Detected Values in this data

APPENDIX K, TABLE 18
RAGS 3.18 - TRIBUTARY 5A - SEDIMENT
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.824	Shapiro Wilk Test Statistic	0.83
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	12.98	Mean	1.488
SD	16.01	SD	1.759
95% DL/2 (t) UCL	24.73	95% H-Stat (DL/2) UCL	2058
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.986
		SD in Log Scale	1.918
		Mean in Original Scale	10.85
		SD in Original Scale	16.54
		95% Percentile Bootstrap UCL	20.61
		95% BCA Bootstrap UCL	22.3
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.335	Data appear Normal at 5% Significance Level	
Theta Star	54.42		
nu star	2.683		
A-D Test Statistic	0.524	Nonparametric Statistics	
5% A-D Critical Value	0.673	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.673	Mean	11.88
5% K-S Critical Value	0.407	SD	15.47
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	7.084
		95% KM (t) UCL	25.64
Assuming Gamma Distribution		95% KM (z) UCL	23.53
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	24.96
Minimum	1.2	95% KM (bootstrap t) UCL	21.92
Maximum	38.5	95% KM (BCA) UCL	33.29
Mean	16.81	95% KM (Percentile Bootstrap) UCL	32.24
Median	14.93	95% KM (Chebyshev) UCL	42.76
SD	14.25	97.5% KM (Chebyshev) UCL	56.12
k star	0.698	99% KM (Chebyshev) UCL	82.37
Theta star	24.09		
Nu star	9.769	Potential UCLs to	
AppChi2	3.798	95% KM (t) UCL	25.64
95% Gamma Approximate UCL	43.24	95% KM (Percentile Bootstrap) UCL	32.24
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

ARSENIC

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

APPENDIX K, TABLE 18
RAGS 3.18 - TRIBUTARY 5A - SEDIMENT
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

The data set for variable ARSENIC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BARIUM

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	73.5	Minimum of Log Data	4.297
Maximum	1450	Maximum of Log Data	7.279
Mean	361.4	Mean of log Data	5.347
Median	194	SD of log Data	1.036
SD	490.3		
Coefficient of Variation	1.357		
Skewness	2.422		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.632	Shapiro Wilk Test Statistic	0.899
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	721.5	95% H-UCL	1794
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	881.1
95% Adjusted-CLT UCL	847.5	97.5% Chebyshev (MVUE) UCL	1122
95% Modified-t UCL	749.8	99% Chebyshev (MVUE) UCL	1595
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.699	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	517.3		
nu star	9.779		
Approximate Chi Square Value (.05)	3.804	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	666.2
Adjusted Chi Square Value	2.767	95% Jackknife UCL	721.5
		95% Standard Bootstrap UCL	639
Anderson-Darling Test Statistic	0.614	95% Bootstrap-t UCL	1620
Anderson-Darling 5% Critical Value	0.727	95% Hall's Bootstrap UCL	1877
Kolmogorov-Smirnov Test Statistic	0.286	95% Percentile Bootstrap UCL	714.4
Kolmogorov-Smirnov 5% Critical Value	0.319	95% BCA Bootstrap UCL	766
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1169
		97.5% Chebyshev(Mean, Sd) UCL	1519
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	2205

95% Approximate Gamma UCL	928.9
95% Adjusted Gamma UCL	1277

Potential UCL to Use		95% Approximate Gamma UCL	928.9

BENZENE

General Statistics			
Number of Valid Data	10	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	7
		Percent Non-Detects	70.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.4	Minimum Detected	1.482
Maximum Detected	25	Maximum Detected	3.219
Mean of Detected	16.13	Mean of Detected	2.548
SD of Detected	10.59	SD of Detected	0.934
Minimum Non-Detect	0.006	Minimum Non-Detect	-5.116
Maximum Non-Detect	0.036	Maximum Non-Detect	-3.324

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	70.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.945	Shapiro Wilk Test Statistic	0.865
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.845	Mean	-2.845
SD	9.253	SD	3.791
95% DL/2 (t) UCL	10.21	95% H-Stat (DL/2) UCL	3625471

Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	16.9	Mean in Log Scale	0.0562
SD	8.651	SD in Log Scale	1.864
95% MLE (t) UCL	21.92	Mean in Original Scale	5.149
95% MLE (Tiku) UCL	25.95	SD in Original Scale	9.081
		95% Percentile Bootstrap UCL	10.1
		95% BCA Bootstrap UCL	11.94

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		

A-D Test Statistic	0.404	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	7.92

5% K-S Critical Value	N/A	SD	7.167
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2.776
		95% KM (t) UCL	13.01
Assuming Gamma Distribution		95% KM (z) UCL	12.49
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	17.63
Minimum	N/A	95% KM (bootstrap t) UCL	9.716
Maximum	N/A	95% KM (BCA) UCL	25
Mean	N/A	95% KM (Percentile Bootstrap) UCL	25
Median	N/A	95% KM (Chebyshev) UCL	20.02
SD	N/A	97.5% KM (Chebyshev) UCL	25.25
k star	N/A	99% KM (Chebyshev) UCL	35.54
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	13.01
95% Gamma Approximate UCL	N/A	95% KM (Percentile Bootstrap) UCL	25
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Data	7	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	2
		Percent Non-Detects	28.57%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.21	Minimum Detected	-1.561
Maximum Detected	6.1	Maximum Detected	1.808
Mean of Detected	2.014	Mean of Detected	-0.234
SD of Detected	2.616	SD of Detected	1.595
Minimum Non-Detect	1.2	Minimum Non-Detect	0.182
Maximum Non-Detect	1.3	Maximum Non-Detect	0.262

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	71.43%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.783	Shapiro Wilk Test Statistic	0.812
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.617	Mean	-0.301
SD	2.241	SD	1.308
95% DL/2 (t) UCL	3.263	95% H-Stat (DL/2) UCL	10.17

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.504
		SD in Log Scale	1.381
		Mean in Original Scale	1.526

		SD in Original Scale	2.293
		95% Percentile Bootstrap UCL	2.785
		95% BCA Bootstrap UCL	3.21

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.395	Data appear Normal at 5% Significance Level	
Theta Star	5.102		
nu star	3.948		
A-D Test Statistic	0.6	Nonparametric Statistics	
5% A-D Critical Value	0.703	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.703	Mean	1.512
5% K-S Critical Value	0.369	SD	2.131
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.901
		95% KM (t) UCL	3.262
Assuming Gamma Distribution		95% KM (z) UCL	2.993
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.203
Minimum	0.21	95% KM (bootstrap t) UCL	43.48
Maximum	6.1	95% KM (BCA) UCL	3.2
Mean	2.037	95% KM (Percentile Bootstrap) UCL	3.191
Median	2.094	95% KM (Chebyshev) UCL	5.438
SD	2.136	97.5% KM (Chebyshev) UCL	7.137
k star	0.598	99% KM (Chebyshev) UCL	10.47
Theta star	3.409		
Nu star	8.365	Potential UCLs to	
AppChi2	2.948	95% KM (t) UCL	3.262
95% Gamma Approximate UCL	5.779	95% KM (Percentile Bootstrap) UCL	3.191
95% Adjusted Gamma UCL	8.24		

Note: DL/2 is not a recommended method.

BENZO(A)PYRENE

General Statistics			
Number of Valid Data	7	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	1
		Percent Non-Detects	14.29%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.16	Minimum Detected	-1.833
Maximum Detected	4.6	Maximum Detected	1.526
Mean of Detected	1.412	Mean of Detected	-0.533
SD of Detected	1.89	SD of Detected	1.441
Minimum Non-Detect	1.5	Minimum Non-Detect	0.405
Maximum Non-Detect	1.5	Maximum Non-Detect	0.405

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.73	Shapiro Wilk Test Statistic	0.804
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	

DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.317	Mean	-0.498
SD	1.743	SD	1.319
95% DL/2 (t) UCL	2.598	95% H-Stat (DL/2) UCL	33.81
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.633
		SD in Log Scale	1.342
		Mean in Original Scale	1.252
		SD in Original Scale	1.777
		95% Percentile Bootstrap UCL	2.477
		95% BCA Bootstrap UCL	2.519
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.456	Data appear Lognormal at 5% Significance Level	
Theta Star	3.095		
nu star	5.473		
A-D Test Statistic	0.791	Nonparametric Statistics	
5% A-D Critical Value	0.725	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.725	Mean	1.245
5% K-S Critical Value	0.345	SD	1.649
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.683
		95% KM (t) UCL	2.572
Assuming Gamma Distribution		95% KM (z) UCL	2.368
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.553
Minimum	0.16	95% KM (bootstrap t) UCL	27.75
Maximum	4.6	95% KM (BCA) UCL	2.267
Mean	1.319	95% KM (Percentile Bootstrap) UCL	2.464
Median	0.32	95% KM (Chebyshev) UCL	4.221
SD	1.743	97.5% KM (Chebyshev) UCL	5.509
k star	0.536	99% KM (Chebyshev) UCL	8.039
Theta star	2.459		
Nu star	7.511	Potential UCLs to	
AppChi2	2.455	97.5% KM (Chebyshev) UCL	5.509
95% Gamma Approximate UCL	4.036		
95% Adjusted Gamma UCL	5.918		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Data	7	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	2
		Percent Non-Detects	28.57%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.36	Minimum Detected	-1.022
Maximum Detected	11	Maximum Detected	2.398
Mean of Detected	3.496	Mean of Detected	0.294
SD of Detected	4.677	SD of Detected	1.604
Minimum Non-Detect	1.3	Minimum Non-Detect	0.262
Maximum Non-Detect	2.1	Maximum Non-Detect	0.742
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	71.43%

Warning: There are only 5 Detected Values in this data

APPENDIX K, TABLE 18
RAGS 3.18 - TRIBUTARY 5A - SEDIMENT
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.772	Shapiro Wilk Test Statistic	0.799
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.74	Mean	0.155
SD	4.032	SD	1.338
95% DL/2 (t) UCL	5.702	95% H-Stat (DL/2) UCL	38.5
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.0251
		SD in Log Scale	1.388
		Mean in Original Scale	2.647
		SD in Original Scale	4.085
		95% Percentile Bootstrap UCL	4.978
		95% BCA Bootstrap UCL	6.343
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.389	Data appear Normal at 5% Significance Level	
Theta Star	8.986		
nu star	3.89		
A-D Test Statistic	0.63	Nonparametric Statistics	
5% A-D Critical Value	0.704	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.704	Mean	2.619
5% K-S Critical Value	0.369	SD	3.797
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	1.605
		95% KM (t) UCL	5.737
Assuming Gamma Distribution		95% KM (z) UCL	5.259
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.632
Minimum	0.36	95% KM (bootstrap t) UCL	142.2
Maximum	11	95% KM (BCA) UCL	5.611
Mean	3.54	95% KM (Percentile Bootstrap) UCL	5.629
Median	3.649	95% KM (Chebyshev) UCL	9.614
SD	3.819	97.5% KM (Chebyshev) UCL	12.64
k star	0.586	99% KM (Chebyshev) UCL	18.59
Theta star	6.037		
Nu star	8.209	Potential UCLs to	
AppChi2	2.856	95% KM (t) UCL	5.737
95% Gamma Approximate UCL	10.17	95% KM (Percentile Bootstrap) UCL	5.629
95% Adjusted Gamma UCL	14.57		
Note: DL/2 is not a recommended method.			

BENZO(G,H,I)PERYLENE

General Statistics			
Number of Valid Data	7	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	2
		Percent Non-Detects	28.57%
Raw Statistics		Log-transformed Statistics	

APPENDIX K, TABLE 18
RAGS 3.18 - TRIBUTARY 5A - SEDIMENT
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Minimum Detected	0.14	Minimum Detected	-1.966
Maximum Detected	4.4	Maximum Detected	1.482
Mean of Detected	1.358	Mean of Detected	-0.666
SD of Detected	1.859	SD of Detected	1.607
Minimum Non-Detect	1.3	Minimum Non-Detect	0.262
Maximum Non-Detect	1.8	Maximum Non-Detect	0.588

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	71.43%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.763	Shapiro Wilk Test Statistic	0.799
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.191	Mean	-0.552
SD	1.546	SD	1.33
95% DL/2 (t) UCL	2.327	95% H-Stat (DL/2) UCL	122.6
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.935
		SD in Log Scale	1.39
		Mean in Original Scale	1.027
		SD in Original Scale	1.62
		95% Percentile Bootstrap UCL	1.993
		95% BCA Bootstrap UCL	2.48
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.386	Data appear Normal at 5% Significance Level	
Theta Star	3.52		
nu star	3.858		
A-D Test Statistic	0.63	Nonparametric Statistics	
5% A-D Critical Value	0.704	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.704	Mean	1.017
5% K-S Critical Value	0.369	SD	1.506
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.636
		95% KM (t) UCL	2.253
Assuming Gamma Distribution		95% KM (z) UCL	2.063
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.211
Minimum	0.14	95% KM (bootstrap t) UCL	63.59
Maximum	4.4	95% KM (BCA) UCL	2.229
Mean	1.375	95% KM (Percentile Bootstrap) UCL	1.989
Median	1.419	95% KM (Chebyshev) UCL	3.79
SD	1.519	97.5% KM (Chebyshev) UCL	4.99
k star	0.58	99% KM (Chebyshev) UCL	7.348
Theta star	2.372		
Nu star	8.119	Potential UCLs to	
AppChi2	2.804	95% KM (t) UCL	2.253
95% Gamma Approximate UCL	3.983	95% KM (Percentile Bootstrap) UCL	1.989

95% Adjusted Gamma UCL	5.722

Note: DL/2 is not a recommended method.

BENZO(K)FLUORANTHENE

General Statistics

Number of Valid Data	7	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	2
		Percent Non-Detects	28.57%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	4.2	Maximum Detected	1.435
Mean of Detected	1.424	Mean of Detected	-0.496
SD of Detected	1.772	SD of Detected	1.552
Minimum Non-Detect	0.91	Minimum Non-Detect	-0.0943
Maximum Non-Detect	1.3	Maximum Non-Detect	0.262

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	71.43%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.814	Shapiro Wilk Test Statistic	0.913
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.175	Mean	-0.528
SD	1.509	SD	1.273
95% DL/2 (t) UCL	2.284	95% H-Stat (DL/2) UCL	16.56

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.769
		SD in Log Scale	1.351
		Mean in Original Scale	1.084
		SD in Original Scale	1.559
		95% Percentile Bootstrap UCL	2.166
		95% BCA Bootstrap UCL	2.241

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.417	Data appear Normal at 5% Significance Level	
Theta Star	3.412		
nu star	4.174		

A-D Test Statistic	0.385	Nonparametric Statistics	
5% A-D Critical Value	0.7	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.7	Mean	1.086
5% K-S Critical Value	0.367	SD	1.444
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.611
		95% KM (t) UCL	2.274

Assuming Gamma Distribution		95% KM (z) UCL	2.091
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.236
Minimum	0.12	95% KM (bootstrap t) UCL	8.584
Maximum	4.2	95% KM (BCA) UCL	2.2
Mean	1.433	95% KM (Percentile Bootstrap) UCL	2.2
Median	1.455	95% KM (Chebyshev) UCL	3.751
SD	1.447	97.5% KM (Chebyshev) UCL	4.904
k star	0.642	99% KM (Chebyshev) UCL	7.17
Theta star	2.232		
Nu star	8.985	Potential UCLs to	
AppChi2	3.318	95% KM (t) UCL	2.274
95% Gamma Approximate UCL	3.88	95% KM (Percentile Bootstrap) UCL	2.2
95% Adjusted Gamma UCL	5.438		

Note: DL/2 is not a recommended method.

CHROMIUM

General Statistics

Number of Valid Observations	7	Number of Distinct Observations	7

Raw Statistics		Log-transformed Statistics	
Minimum	33.8	Minimum of Log Data	3.52
Maximum	12400	Maximum of Log Data	9.425
Mean	2750	Mean of log Data	6.528
Median	704	SD of log Data	2.15
SD	4413		
Coefficient of Variation	1.604		
Skewness	2.282		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.674	Shapiro Wilk Test Statistic	0.938
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5991	95% H-UCL	3904113
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14923
95% Adjusted-CLT UCL	7031	97.5% Chebyshev (MVUE) UCL	19839
95% Modified-t UCL	6231	99% Chebyshev (MVUE) UCL	29495

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.359	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	7655		
nu star	5.03		
Approximate Chi Square Value (.05)	1.166	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	5494

Adjusted Chi Square Value	0.701	95% Jackknife UCL	5991
		95% Standard Bootstrap UCL	5194
Anderson-Darling Test Statistic	0.262	95% Bootstrap-t UCL	14037
Anderson-Darling 5% Critical Value	0.758	95% Hall's Bootstrap UCL	14984
Kolmogorov-Smirnov Test Statistic	0.166	95% Percentile Bootstrap UCL	5770
Kolmogorov-Smirnov 5% Critical Value	0.329	95% BCA Bootstrap UCL	6395
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	10020
		97.5% Chebyshev(Mean, Sd) UCL	13166
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	19345
95% Approximate Gamma UCL	11864		
95% Adjusted Gamma UCL	19739		
Potential UCL to Use		95% Adjusted Gamma UCL	19739
Recommended UCL exceeds the maximum observation			

COBALT

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	5.73	Minimum of Log Data	1.746
Maximum	5460	Maximum of Log Data	8.605
Mean	963.5	Mean of log Data	5.016
Median	125	SD of log Data	2.304
SD	1995		
Coefficient of Variation	2.07		
Skewness	2.581		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.547	Shapiro Wilk Test Statistic	0.97
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2428	95% H-UCL	3034879
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	4191
95% Adjusted-CLT UCL	2989	97.5% Chebyshev (MVUE) UCL	5586
95% Modified-t UCL	2551	99% Chebyshev (MVUE) UCL	8326
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.301	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3196		
nu star	4.22		
Approximate Chi Square Value (.05)	0.811	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	2204

Adjusted Chi Square Value	0.457	95% Jackknife UCL	2428
		95% Standard Bootstrap UCL	2112
Anderson-Darling Test Statistic	0.436	95% Bootstrap-t UCL	10890
Anderson-Darling 5% Critical Value	0.774	95% Hall's Bootstrap UCL	9328
Kolmogorov-Smirnov Test Statistic	0.256	95% Percentile Bootstrap UCL	2437
Kolmogorov-Smirnov 5% Critical Value	0.333	95% BCA Bootstrap UCL	2532
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4250
		97.5% Chebyshev(Mean, Sd) UCL	5672
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8465
95% Approximate Gamma UCL	5016		
95% Adjusted Gamma UCL	8895		
Potential UCL to Use		95% Adjusted Gamma UCL	8895
Recommended UCL exceeds the maximum observation			

COPPER

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	49.6	Minimum of Log Data	3.904
Maximum	453	Maximum of Log Data	6.116
Mean	175	Mean of log Data	4.844
Median	91.3	SD of log Data	0.857
SD	153.2		
Coefficient of Variation	0.875		
Skewness	1.209		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.832	Shapiro Wilk Test Statistic	0.913
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	287.5	95% H-UCL	581.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	416.2
95% Adjusted-CLT UCL	298.5	97.5% Chebyshev (MVUE) UCL	521.8
95% Modified-t UCL	291.9	99% Chebyshev (MVUE) UCL	729.4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.071	Data appear Normal at 5% Significance Level	
Theta Star	163.4		
nu star	14.99		
Approximate Chi Square Value (.05)	7.257	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	270.2

Adjusted Chi Square Value	5.711	95% Jackknife UCL	287.5
		95% Standard Bootstrap UCL	261.5
Anderson-Darling Test Statistic	0.43	95% Bootstrap-t UCL	449.8
Anderson-Darling 5% Critical Value	0.719	95% Hall's Bootstrap UCL	377.5
Kolmogorov-Smirnov Test Statistic	0.262	95% Percentile Bootstrap UCL	267.6
Kolmogorov-Smirnov 5% Critical Value	0.316	95% BCA Bootstrap UCL	286.8
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	427.4
		97.5% Chebyshev(Mean, Sd) UCL	536.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	751.2
95% Approximate Gamma UCL	361.6		
95% Adjusted Gamma UCL	459.4		
Potential UCL to Use		95% Student's-t UCL	287.5

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	5	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	3
		Percent Non-Detects	60.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.45	Minimum Detected	-0.799
Maximum Detected	1.1	Maximum Detected	0.0953
Mean of Detected	0.775	Mean of Detected	-0.352
SD of Detected	0.46	SD of Detected	0.632
Minimum Non-Detect	0.42	Minimum Non-Detect	-0.868
Maximum Non-Detect	1.3	Maximum Non-Detect	0.262
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.602	Mean	-0.641
SD	0.327	SD	0.607
95% DL/2 (t) UCL	0.914	95% H-Stat (DL/2) UCL	1.881
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A

SD in Log Scale	N/A
Mean in Original Scale	N/A
SD in Original Scale	N/A
95% Percentile Bootstrap UCL	N/A
95% BCA Bootstrap UCL	N/A

Gamma Distribution Test with Detected Values Only	
k star (bias corrected)	N/A
Theta Star	N/A
nu star	N/A
A-D Test Statistic	0.359
5% A-D Critical Value	N/A
K-S Test Statistic	N/A
5% K-S Critical Value	N/A
Data not Gamma Distributed at 5% Significance Level	
Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	N/A
Maximum	N/A
Mean	N/A
Median	N/A
SD	N/A
k star	N/A
Theta star	N/A
Nu star	N/A
AppChi2	N/A
95% Gamma Approximate UCL	N/A
95% Adjusted Gamma UCL	N/A

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only	
Data do not follow a Discernable Distribution (0.05)	
Nonparametric Statistics	
Kaplan-Meier (KM) Method	
Mean	0.667
SD	0.306
SE of Mean	0.25
95% KM (t) UCL	1.2
95% KM (z) UCL	1.078
95% KM (jackknife) UCL	1.312
95% KM (bootstrap t) UCL	Infinity
95% KM (BCA) UCL	1.1
95% KM (Percentile Bootstrap) UCL	1.1
95% KM (Chebyshev) UCL	1.757
97.5% KM (Chebyshev) UCL	2.229
99% KM (Chebyshev) UCL	3.156
Potential UCLs to	
95% KM (t) UCL	1.2
95% KM (% Bootstrap) UCL	1.1

Highly Chlorinated

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.069	Minimum of Log Data	-2.674
Maximum	5.6	Maximum of Log Data	1.723
Mean	1.182	Mean of log Data	-1.017
Median	0.385	SD of log Data	1.613
SD	2.175		
Coefficient of Variation	1.84		
Skewness	2.394		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.586	Shapiro Wilk Test Statistic	0.912
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2.972	95% H-UCL	124.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.446
95% Adjusted-CLT UCL	3.57	97.5% Chebyshev (MVUE) UCL	4.53
95% Modified-t UCL	3.116	99% Chebyshev (MVUE) UCL	6.66
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.377	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.138		
nu star	4.521		
Approximate Chi Square Value (.05)	0.938	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	2.643
Adjusted Chi Square Value	0.482	95% Jackknife UCL	2.972
		95% Standard Bootstrap UCL	2.486
Anderson-Darling Test Statistic	0.613	95% Bootstrap-t UCL	12.5
Anderson-Darling 5% Critical Value	0.734	95% Hall's Bootstrap UCL	11.75
Kolmogorov-Smirnov Test Statistic	0.332	95% Percentile Bootstrap UCL	2.917
Kolmogorov-Smirnov 5% Critical Value	0.348	95% BCA Bootstrap UCL	3.082
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.053
		97.5% Chebyshev(Mean, Sd) UCL	6.728
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	10.02
95% Approximate Gamma UCL	5.699		
95% Adjusted Gamma UCL	11.08		
Potential UCL to Use		95% Approximate Gamma UCL	5.699
Recommended UCL exceeds the maximum observation			

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	7	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	1
		Percent Non-Detects	14.29%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	3.6	Maximum Detected	1.281
Mean of Detected	1.243	Mean of Detected	-0.568
SD of Detected	1.404	SD of Detected	1.502
Minimum Non-Detect	1.3	Minimum Non-Detect	0.262
Maximum Non-Detect	1.3	Maximum Non-Detect	0.262

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.844	Shapiro Wilk Test Statistic	0.859
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788

APPENDIX K, TABLE 18
RAGS 3.18 - TRIBUTARY 5A - SEDIMENT
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.159	Mean	-0.549
SD	1.301	SD	1.372
95% DL/2 (t) UCL	2.114	95% H-Stat (DL/2) UCL	21.65
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.979	Mean in Log Scale	-0.731
SD	1.519	SD in Log Scale	1.437
95% MLE (t) UCL	2.095	Mean in Original Scale	1.092
95% MLE (Tiku) UCL	2.491	SD in Original Scale	1.343
		95% Percentile Bootstrap UCL	1.966
		95% BCA Bootstrap UCL	2.083
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.491	Data appear Normal at 5% Significance Level	
Theta Star	2.532		
nu star	5.894		
A-D Test Statistic	0.472	Nonparametric Statistics	
5% A-D Critical Value	0.721	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.721	Mean	1.088
5% K-S Critical Value	0.343	SD	1.247
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.516
		95% KM (t) UCL	2.091
Assuming Gamma Distribution		95% KM (z) UCL	1.937
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.077
Minimum	0.12	95% KM (bootstrap t) UCL	2.559
Maximum	3.6	95% KM (BCA) UCL	2.017
Mean	1.123	95% KM (Percentile Bootstrap) UCL	1.911
Median	0.398	95% KM (Chebyshev) UCL	3.338
SD	1.321	97.5% KM (Chebyshev) UCL	4.311
k star	0.556	99% KM (Chebyshev) UCL	6.224
Theta star	2.017		
Nu star	7.79	Potential UCLs to	
AppChi2	2.614	95% KM (t) UCL	2.091
95% Gamma Approximate UCL	3.345	95% KM (Percentile Bootstrap) UCL	1.911
95% Adjusted Gamma UCL	4.858		

Note: DL/2 is not a recommended method.

IRON

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	12600	Minimum of Log Data	9.441
Maximum	229000	Maximum of Log Data	12.34
Mean	66743	Mean of log Data	10.66
Median	32800	SD of log Data	0.979
SD	76849		
Coefficient of Variation	1.151		
Skewness	2.028		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!

APPENDIX K, TABLE 18
RAGS 3.18 - TRIBUTARY 5A - SEDIMENT
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.727	Shapiro Wilk Test Statistic	0.952
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	123185	95% H-UCL	293816
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	164733
95% Adjusted-CLT UCL	138307	97.5% Chebyshev (MVUE) UCL	208807
95% Modified-t UCL	126895	99% Chebyshev (MVUE) UCL	295382
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.808	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	82566		
nu star	11.32		
Approximate Chi Square Value (.05)	4.781	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	114520
Adjusted Chi Square Value	3.583	95% Jackknife UCL	123185
		95% Standard Bootstrap UCL	112737
Anderson-Darling Test Statistic	0.456	95% Bootstrap-t UCL	347756
Anderson-Darling 5% Critical Value	0.724	95% Hall's Bootstrap UCL	379815
Kolmogorov-Smirnov Test Statistic	0.261	95% Percentile Bootstrap UCL	115729
Kolmogorov-Smirnov 5% Critical Value	0.318	95% BCA Bootstrap UCL	132743
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	193353
		97.5% Chebyshev(Mean, Sd) UCL	248137
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	355750
95% Approximate Gamma UCL	157996		
95% Adjusted Gamma UCL	210796		
Potential UCL to Use		95% Approximate Gamma UCL	157996

LEAD

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	3.7	Minimum of Log Data	1.308
Maximum	4100	Maximum of Log Data	8.319
Mean	740	Mean of log Data	5.137
Median	154	SD of log Data	2.078
SD	1486		
Coefficient of Variation	2.009		
Skewness	2.61		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 18
RAGS 3.18 - TRIBUTARY 5A - SEDIMENT
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.529	Shapiro Wilk Test Statistic	0.895
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1832	95% H-UCL	554803
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3321
95% Adjusted-CLT UCL	2256	97.5% Chebyshev (MVUE) UCL	4409
95% Modified-t UCL	1924	99% Chebyshev (MVUE) UCL	6545
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.347	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	2131		
nu star	4.861		
Approximate Chi Square Value (.05)	1.088	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	1664
Adjusted Chi Square Value	0.646	95% Jackknife UCL	1832
		95% Standard Bootstrap UCL	1610
Anderson-Darling Test Statistic	0.661	95% Bootstrap-t UCL	9582
Anderson-Darling 5% Critical Value	0.761	95% Hall's Bootstrap UCL	7441
Kolmogorov-Smirnov Test Statistic	0.331	95% Percentile Bootstrap UCL	1836
Kolmogorov-Smirnov 5% Critical Value	0.33	95% BCA Bootstrap UCL	2396
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3189
		97.5% Chebyshev(Mean, Sd) UCL	4249
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	6330
95% Approximate Gamma UCL	3305		
95% Adjusted Gamma UCL	5566		
Potential UCL to Use		95% Adjusted Gamma UCL	5566
Recommended UCL exceeds the maximum observation			

MANGANESE

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	153	Minimum of Log Data	5.03
Maximum	1520	Maximum of Log Data	7.326
Mean	782.1	Mean of log Data	6.266
Median	619	SD of log Data	1.04
SD	628.3		
Coefficient of Variation	0.803		
Skewness	0.201		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.818	Shapiro Wilk Test Statistic	0.835
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1244	95% H-UCL	4556
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	2220
95% Adjusted-CLT UCL	1192	97.5% Chebyshev (MVUE) UCL	2827
95% Modified-t UCL	1247	99% Chebyshev (MVUE) UCL	4020
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.899	Data appear Normal at 5% Significance Level	
Theta Star	870.2		
nu star	12.58		
Approximate Chi Square Value (.05)	5.614	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	1173
Adjusted Chi Square Value	4.291	95% Jackknife UCL	1244
		95% Standard Bootstrap UCL	1149
Anderson-Darling Test Statistic	0.59	95% Bootstrap-t UCL	1295
Anderson-Darling 5% Critical Value	0.722	95% Hall's Bootstrap UCL	1043
Kolmogorov-Smirnov Test Statistic	0.258	95% Percentile Bootstrap UCL	1149
Kolmogorov-Smirnov 5% Critical Value	0.317	95% BCA Bootstrap UCL	1190
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	1817
		97.5% Chebyshev(Mean, Sd) UCL	2265
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	3145
95% Approximate Gamma UCL	1753		
95% Adjusted Gamma UCL	2293		
Potential UCL to Use		95% Student's-t UCL	1244

METHYL MERCURY

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

NICKEL

General Statistics			
Number of Valid Observations	4	Number of Distinct Observations	4

APPENDIX K, TABLE 18
RAGS 3.18 - TRIBUTARY 5A - SEDIMENT
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable NICKEL was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.26	Minimum of Log Data	-1.347
Maximum	5.5	Maximum of Log Data	1.705
Mean	1.819	Mean of log Data	0.00795
Median	0.84	SD of log Data	1.191
SD	2.058		
Coefficient of Variation	1.132		
Skewness	1.298		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.789	Shapiro Wilk Test Statistic	0.926
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.33	95% H-UCL	16.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5.261
95% Adjusted-CLT UCL	3.506	97.5% Chebyshev (MVUE) UCL	6.767
95% Modified-t UCL	3.394	99% Chebyshev (MVUE) UCL	9.727
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.655	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.774		
nu star	9.177		
Approximate Chi Square Value (.05)	3.434	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	3.098
Adjusted Chi Square Value	2.462	95% Jackknife UCL	3.33
		95% Standard Bootstrap UCL	3.019
Anderson-Darling Test Statistic	0.409	95% Bootstrap-t UCL	7.729
Anderson-Darling 5% Critical Value	0.728	95% Hall's Bootstrap UCL	11
Kolmogorov-Smirnov Test Statistic	0.198	95% Percentile Bootstrap UCL	3.1
Kolmogorov-Smirnov 5% Critical Value	0.32	95% BCA Bootstrap UCL	3.286

Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.209
		97.5% Chebyshev(Mean, Sd) UCL	6.676
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	9.558
95% Approximate Gamma UCL	4.86		
95% Adjusted Gamma UCL	6.778		
Potential UCL to Use		95% Approximate Gamma UCL	4.86

SELENIUM

General Statistics			
Number of Valid Data	7	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	4
		Percent Non-Detects	57.14%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	4.4	Minimum Detected	1.482
Maximum Detected	42.5	Maximum Detected	3.75
Mean of Detected	20.77	Mean of Detected	2.655
SD of Detected	19.61	SD of Detected	1.136
Minimum Non-Detect	1.16	Minimum Non-Detect	0.148
Maximum Non-Detect	4.68	Maximum Non-Detect	1.543
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	71.43%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk Test Statistic	0.996
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	9.631	Mean	1.206
SD	15.39	SD	1.561
95% DL/2 (t) UCL	20.94	95% H-Stat (DL/2) UCL	104.3
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.837
		SD in Log Scale	1.834
		Mean in Original Scale	9.249
		SD in Original Scale	15.63
		95% Percentile Bootstrap UCL	19.12
		95% BCA Bootstrap UCL	24.5
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		

APPENDIX K, TABLE 18
RAGS 3.18 - TRIBUTARY 5A - SEDIMENT
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

A-D Test Statistic	0.247	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	11.41
5% K-S Critical Value	N/A	SD	13.25
Data not Gamma Distributed at 5% Significance Level		SE of Mean	6.132
		95% KM (t) UCL	23.33
Assuming Gamma Distribution		95% KM (z) UCL	21.5
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	22.88
Minimum	N/A	95% KM (bootstrap t) UCL	22.72
Maximum	N/A	95% KM (BCA) UCL	42.5
Mean	N/A	95% KM (Percentile Bootstrap) UCL	42.5
Median	N/A	95% KM (Chebyshev) UCL	38.14
SD	N/A	97.5% KM (Chebyshev) UCL	49.71
k star	N/A	99% KM (Chebyshev) UCL	72.42
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	23.33
95% Gamma Approximate UCL	N/A	95% KM (Percentile Bootstrap) UCL	42.5
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Total PCBs

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.069	Minimum of Log Data	-2.674
Maximum	5.6	Maximum of Log Data	1.723
Mean	1.182	Mean of log Data	-1.017
Median	0.385	SD of log Data	1.613
SD	2.175		
Coefficient of Variation	1.84		
Skewness	2.394		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.586	Shapiro Wilk Test Statistic	0.912
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2.972	95% H-UCL	124.1
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.446
95% Adjusted-CLT UCL	3.57	97.5% Chebyshev (MVUE) UCL	4.53
95% Modified-t UCL	3.116	99% Chebyshev (MVUE) UCL	6.66

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.377	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.138		
nu star	4.521		
Approximate Chi Square Value (.05)	0.938	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	2.643
Adjusted Chi Square Value	0.482	95% Jackknife UCL	2.972
		95% Standard Bootstrap UCL	2.525
Anderson-Darling Test Statistic	0.613	95% Bootstrap-t UCL	12.56
Anderson-Darling 5% Critical Value	0.734	95% Hall's Bootstrap UCL	11.81
Kolmogorov-Smirnov Test Statistic	0.332	95% Percentile Bootstrap UCL	2.862
Kolmogorov-Smirnov 5% Critical Value	0.348	95% BCA Bootstrap UCL	3.082
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.053
		97.5% Chebyshev(Mean, Sd) UCL	6.728
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	10.02
95% Approximate Gamma UCL	5.699		
95% Adjusted Gamma UCL	11.08		
Potential UCL to Use		95% Approximate Gamma UCL	5.699
Recommended UCL exceeds the maximum observation			

VANADIUM

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	27.3	Minimum of Log Data	3.307
Maximum	9670	Maximum of Log Data	9.177
Mean	1713	Mean of log Data	5.794
Median	278	SD of log Data	2.023
SD	3529		
Coefficient of Variation	2.06		
Skewness	2.585		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.544	Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4305	95% H-UCL	708522
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	5884
95% Adjusted-CLT UCL	5299	97.5% Chebyshev (MVUE) UCL	7803
95% Modified-t UCL	4522	99% Chebyshev (MVUE) UCL	11571

APPENDIX K, TABLE 18
RAGS 3.18 - TRIBUTARY 5A - SEDIMENT
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.323	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	5304		
nu star	4.522		
Approximate Chi Square Value (.05)	0.938	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	3907
Adjusted Chi Square Value	0.543	95% Jackknife UCL	4305
		95% Standard Bootstrap UCL	3685
Anderson-Darling Test Statistic	0.532	95% Bootstrap-t UCL	18921
Anderson-Darling 5% Critical Value	0.768	95% Hall's Bootstrap UCL	16886
Kolmogorov-Smirnov Test Statistic	0.281	95% Percentile Bootstrap UCL	4292
Kolmogorov-Smirnov 5% Critical Value	0.331	95% BCA Bootstrap UCL	5573
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7526
		97.5% Chebyshev(Mean, Sd) UCL	10042
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	14983
95% Approximate Gamma UCL	8258		
95% Adjusted Gamma UCL	14278		
Potential UCL to Use		95% Adjusted Gamma UCL	14278
Recommended UCL exceeds the maximum observation			

APPENDIX K, TABLE 19
RAGS 3.19 - TRIBUTARY 5A - SURFACE WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1,4-DICHLOROBENZENE

General Statistics

Number of Valid Data	7	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	6
		Percent Non-Detects	85.71%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable 1,4-DICHLOROBENZENE was not processed!

ANTIMONY

General Statistics

Number of Valid Data	11	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	9
		Percent Non-Detects	81.82%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0026	Minimum Detected	-5.952
Maximum Detected	0.003	Maximum Detected	-5.809
Mean of Detected	0.0028	Mean of Detected	-5.881
SD of Detected	2.83E-04	SD of Detected	0.101
Minimum Non-Detect	0.0025	Minimum Non-Detect	-5.991
Maximum Non-Detect	0.05	Maximum Non-Detect	-2.996

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00801	Mean	-5.721
SD	0.0109	SD	1.342

95% DL/2 (t) UCL	0.014	95% H-Stat (DL/2) UCL	0.0375

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.00265
5% K-S Critical Value	N/A	SD	1.32E-04
Data not Gamma Distributed at 5% Significance Level		SE of Mean	6.61E-05
		95% KM (t) UCL	0.00277
Assuming Gamma Distribution		95% KM (z) UCL	0.00276
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00292
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	0.003
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.003
Median	N/A	95% KM (Chebyshev) UCL	0.00294
SD	N/A	97.5% KM (Chebyshev) UCL	0.00306
k star	N/A	99% KM (Chebyshev) UCL	0.00331
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	0.00277
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	0.003
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

ARSENIC

General Statistics			
Number of Valid Data	11	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	6
		Percent Non-Detects	54.55%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0024	Minimum Detected	-6.032
Maximum Detected	0.0082	Maximum Detected	-4.804
Mean of Detected	0.00482	Mean of Detected	-5.423
SD of Detected	0.00226	SD of Detected	0.471
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.0025	Maximum Non-Detect	-5.991
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	63.64%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic	0.955	Shapiro Wilk Test Statistic	0.994
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00285	Mean	-6.131
SD	0.00237	SD	0.744
95% DL/2 (t) UCL	0.00414	95% H-Stat (DL/2) UCL	0.00406
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.00562	Mean in Log Scale	-6.035
SD	0.00181	SD in Log Scale	0.719
95% MLE (t) UCL	0.00661	Mean in Original Scale	0.00303
95% MLE (Tiku) UCL	0.00723	SD in Original Scale	0.00227
		95% Percentile Bootstrap UCL	0.0042
		95% BCA Bootstrap UCL	0.00437
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	2.478	Data appear Normal at 5% Significance Level	
Theta Star	0.00194		
nu star	24.78		
A-D Test Statistic	0.182	Nonparametric Statistics	
5% A-D Critical Value	0.68	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.68	Mean	0.0035
5% K-S Critical Value	0.358	SD	0.00182
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	6.13E-04
		95% KM (t) UCL	0.00461
Assuming Gamma Distribution		95% KM (z) UCL	0.00451
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00454
Minimum	0.0024	95% KM (bootstrap t) UCL	0.00484
Maximum	0.0082	95% KM (BCA) UCL	0.00602
Mean	0.00488	95% KM (Percentile Bootstrap) UCL	0.00507
Median	0.00473	95% KM (Chebyshev) UCL	0.00617
SD	0.00147	97.5% KM (Chebyshev) UCL	0.00733
k star	8.744	99% KM (Chebyshev) UCL	0.0096
Theta star	5.58E-04		
Nu star	192.4	Potential UCLs to Use	
AppChi2	161.3	95% KM (t) UCL	0.00461
95% Gamma Approximate UCL	0.00582	95% KM (Percentile Bootstrap) UCL	0.00507
95% Adjusted Gamma UCL	0.006		
Note: DL/2 is not a recommended method.			

BARIUM

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	11
Raw Statistics		Log-transformed Statistics	
Minimum	0.0229	Minimum of Log Data	-3.777
Maximum	0.317	Maximum of Log Data	-1.149
Mean	0.0708	Mean of log Data	-2.948
Median	0.0481	SD of log Data	0.686
SD	0.0829		
Coefficient of Variation	1.17		
Skewness	3.138		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.513	Shapiro Wilk Test Statistic	0.82
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	

APPENDIX K, TABLE 19
RAGS 3.19 - TRIBUTARY 5A - SURFACE WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.116	95% H-UCL	0.113
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.125
95% Adjusted-CLT UCL	0.137	97.5% Chebyshev (MVUE) UCL	0.151
95% Modified-t UCL	0.12	99% Chebyshev (MVUE) UCL	0.203
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.38	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0513		
nu star	30.36		
Approximate Chi Square Value (.05)	18.77	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	0.112
Adjusted Chi Square Value	17.3	95% Jackknife UCL	0.116
		95% Standard Bootstrap UCL	0.109
Anderson-Darling Test Statistic	1.325	95% Bootstrap-t UCL	0.261
Anderson-Darling 5% Critical Value	0.74	95% Hall's Bootstrap UCL	0.308
Kolmogorov-Smirnov Test Statistic	0.312	95% Percentile Bootstrap UCL	0.12
Kolmogorov-Smirnov 5% Critical Value	0.259	95% BCA Bootstrap UCL	0.142
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.18
		97.5% Chebyshev(Mean, Sd) UCL	0.227
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.319
95% Approximate Gamma UCL	0.115		
95% Adjusted Gamma UCL	0.124		
Potential UCL to Use		95% Chebyshev (Mean, Sd) UCL	0.18

BENZENE

General Statistics			
Number of Valid Data	10	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	2
		Percent Non-Detects	20.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	6	Minimum Detected	1.792
Maximum Detected	110	Maximum Detected	4.7
Mean of Detected	40.88	Mean of Detected	3.385
SD of Detected	35.22	SD of Detected	0.898
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	10	Maximum Non-Detect	2.303

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.823	Shapiro Wilk Test Statistic	0.951
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	33.7	Mean	3.03
SD	34.55	SD	1.09
95% DL/2 (t) UCL	53.73	95% H-Stat (DL/2) UCL	83.48
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	26.78	Mean in Log Scale	3.073
SD	41.55	SD in Log Scale	1.037

95% MLE (t) UCL	50.86	Mean in Original Scale	33.98
95% MLE (Tiku) UCL	52.2	SD in Original Scale	34.3
		95% Percentile Bootstrap UCL	52.98
		95% BCA Bootstrap UCL	55.9
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.135	Data appear Normal at 5% Significance Level	
Theta Star	36		
nu star	18.16		
A-D Test Statistic	0.362	Nonparametric Statistics	
5% A-D Critical Value	0.727	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.727	Mean	33.9
5% K-S Critical Value	0.298	SD	32.61
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	11.02
		95% KM (t) UCL	54.11
Assuming Gamma Distribution		95% KM (z) UCL	52.03
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	53.09
Minimum	1.483	95% KM (bootstrap t) UCL	82.36
Maximum	110	95% KM (BCA) UCL	55.9
Mean	34.35	95% KM (Percentile Bootstrap) UCL	53
Median	25	95% KM (Chebyshev) UCL	81.95
SD	34.12	97.5% KM (Chebyshev) UCL	102.7
k star	0.838	99% KM (Chebyshev) UCL	143.6
Theta star	41.01		
Nu star	16.75	Potential UCLs to Use	
AppChi2	8.496	95% KM (t) UCL	54.11
95% Gamma Approximate UCL	67.73	95% KM (Percentile Bootstrap) UCL	53
95% Adjusted Gamma UCL	76.77		

Note: DL/2 is not a recommended method.

BIS(2-ETHYLHEXYL)PHTHALATE

General Statistics			
Number of Valid Data	7	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	6
		Percent Non-Detects	85.71%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BIS(2-ETHYLHEXYL)PHTHALATE was not processed!

BROMODICHLOROMETHANE

General Statistics			
Number of Valid Data	7	Number of Detected Data	5
Number of Distinct Detected Data	2	Number of Non-Detect Data	2
		Percent Non-Detects	28.57%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	2	Maximum Detected	0.693
Mean of Detected	1.8	Mean of Detected	0.555
SD of Detected	0.447	SD of Detected	0.31
Minimum Non-Detect	5	Minimum Non-Detect	1.609
Maximum Non-Detect	10	Maximum Non-Detect	2.303
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

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HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.552	Shapiro Wilk Test Statistic	0.552
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.357	Mean	0.757
SD	1.249	SD	0.473
95% DL/2 (t) UCL	3.274	95% H-Stat (DL/2) UCL	5.646
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.555
		SD in Log Scale	0.253
		Mean in Original Scale	1.783
		SD in Original Scale	0.366
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	6.211	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.29		
nu star	62.11		
A-D Test Statistic	1.335	Nonparametric Statistics	
5% A-D Critical Value	0.679	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.679	Mean	1.8
5% K-S Critical Value	0.357	SD	0.4
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.2
		95% KM (t) UCL	2.189
Assuming Gamma Distribution		95% KM (z) UCL	2.129
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.202
Minimum	1	95% KM (bootstrap t) UCL	2.068
Maximum	2	95% KM (BCA) UCL	2
Mean	1.814	95% KM (Percentile Bootstrap) UCL	2
Median	2	95% KM (Chebyshev) UCL	2.672
SD	0.366	97.5% KM (Chebyshev) UCL	3.049
k star	12.18	99% KM (Chebyshev) UCL	3.79
Theta star	0.149		
Nu star	170.5	Potential UCLs to Use	
AppChi2	141.3	95% KM (BCA) UCL	2
95% Gamma Approximate UCL	2.188		
95% Adjusted Gamma UCL	2.32		

Note: DL/2 is not a recommended method.

CHLOROFORM

General Statistics

Number of Valid Observations	10	Number of Distinct Observations	7

APPENDIX K, TABLE 19
RAGS 3.19 - TRIBUTARY 5A - SURFACE WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Raw Statistics		Log-transformed Statistics	
Minimum	2	Minimum of Log Data	0.693
Maximum	16	Maximum of Log Data	2.773
Mean	8.3	Mean of log Data	1.937
Median	7	SD of log Data	0.672
SD	4.809		
Coefficient of Variation	0.579		
Skewness	0.481		

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.902	Shapiro Wilk Test Statistic	0.924
Shapiro Wilk Critical Value	0.842	Shapiro Wilk Critical Value	0.842
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	11.09	95% H-UCL	15.16
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16.54
95% Adjusted-CLT UCL	11.05	97.5% Chebyshev (MVUE) UCL	20.03
95% Modified-t UCL	11.13	99% Chebyshev (MVUE) UCL	26.89
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.127	Data appear Normal at 5% Significance Level	
Theta Star	3.901		
nu star	42.55		
Approximate Chi Square Value (.05)	28.59	Nonparametric Statistics	
Adjusted Level of Significance	0.0267	95% CLT UCL	10.8
Adjusted Chi Square Value	26.62	95% Jackknife UCL	11.09
		95% Standard Bootstrap UCL	10.65
Anderson-Darling Test Statistic	0.372	95% Bootstrap-t UCL	11.37
Anderson-Darling 5% Critical Value	0.732	95% Hall's Bootstrap UCL	10.78
Kolmogorov-Smirnov Test Statistic	0.179	95% Percentile Bootstrap UCL	10.7
Kolmogorov-Smirnov 5% Critical Value	0.269	95% BCA Bootstrap UCL	11
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.93
		97.5% Chebyshev(Mean, Sd) UCL	17.8
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	23.43
95% Approximate Gamma UCL	12.35		
95% Adjusted Gamma UCL	13.27		

Potential UCL to Use		95% Student's-t UCL	11.09

CHROMIUM

General Statistics			
Number of Valid Data	11	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	3
		Percent Non-Detects	27.27%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.004	Minimum Detected	-5.521
Maximum Detected	0.055	Maximum Detected	-2.9
Mean of Detected	0.016	Mean of Detected	-4.513
SD of Detected	0.0168	SD of Detected	0.899
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.005	Maximum Non-Detect	-5.298

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	5
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	54.55%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

APPENDIX K, TABLE 19
RAGS 3.19 - TRIBUTARY 5A - SURFACE WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.727	Shapiro Wilk Test Statistic	0.922
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0121	Mean	-5.043
SD	0.0156	SD	1.196
95% DL/2 (t) UCL	0.0206	95% H-Stat (DL/2) UCL	0.0343
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.00118	Mean in Log Scale	-5.015
SD	0.0257	SD in Log Scale	1.161
95% MLE (t) UCL	0.0152	Mean in Original Scale	0.0122
95% MLE (Tiku) UCL	0.0195	SD in Original Scale	0.0156
		95% Percentile Bootstrap UCL	0.0202
		95% BCA Bootstrap UCL	0.0247
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.997	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0161		
nu star	15.96		
A-D Test Statistic	0.443	Nonparametric Statistics	
5% A-D Critical Value	0.729	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.729	Mean	0.0128
5% K-S Critical Value	0.299	SD	0.0144
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00466
		95% KM (t) UCL	0.0212
Assuming Gamma Distribution		95% KM (z) UCL	0.0204
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.021
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.032
Maximum	0.055	95% KM (BCA) UCL	0.0218
Mean	0.0126	95% KM (Percentile Bootstrap) UCL	0.021
Median	0.0089	95% KM (Chebyshev) UCL	0.0331
SD	0.0155	97.5% KM (Chebyshev) UCL	0.0419
k star	0.23	99% KM (Chebyshev) UCL	0.0591
Theta star	0.0547		
Nu star	5.052	Potential UCLs to Use	
AppChi2	1.176	95% KM (Chebyshev) UCL	0.0331
95% Gamma Approximate UCL	0.0539		
95% Adjusted Gamma UCL	0.0702		
Note: DL/2 is not a recommended method.			

COBALT

General Statistics			
Number of Valid Data	11	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	3
		Percent Non-Detects	27.27%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0031	Minimum Detected	-5.776
Maximum Detected	0.36	Maximum Detected	-1.022
Mean of Detected	0.0501	Mean of Detected	-4.691
SD of Detected	0.125	SD of Detected	1.529
Minimum Non-Detect	0.0017	Minimum Non-Detect	-6.377
Maximum Non-Detect	0.005	Maximum Non-Detect	-5.298

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PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	54.55%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.435	Shapiro Wilk Test Statistic	0.653
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0368	Mean	-5.242
SD	0.107	SD	1.613
95% DL/2 (t) UCL	0.0954	95% H-Stat (DL/2) UCL	0.131
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.39
		SD in Log Scale	1.784
		Mean in Original Scale	0.0367
		SD in Original Scale	0.107
		95% Percentile Bootstrap UCL	0.101
		95% BCA Bootstrap UCL	0.134
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.327	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.153		
nu star	5.227		
A-D Test Statistic	1.891	Nonparametric Statistics	
5% A-D Critical Value	0.782	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.782	Mean	0.0373
5% K-S Critical Value	0.313	SD	0.102
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0329
		95% KM (t) UCL	0.0969
Assuming Gamma Distribution		95% KM (z) UCL	0.0914
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0956
Minimum	1.00E-09	95% KM (bootstrap t) UCL	2.631
Maximum	0.36	95% KM (BCA) UCL	0.102
Mean	0.0364	95% KM (Percentile Bootstrap) UCL	0.102
Median	0.0043	95% KM (Chebyshev) UCL	0.181
SD	0.107	97.5% KM (Chebyshev) UCL	0.243
k star	0.159	99% KM (Chebyshev) UCL	0.365
Theta star	0.229		
Nu star	3.503	Potential UCLs to Use	
AppChi2	0.536	99% KM (Chebyshev) UCL	0.365
95% Gamma Approximate UCL	0.238		
95% Adjusted Gamma UCL	0.333		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

DELTA-BHC

General Statistics

Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3

		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DELTA-BHC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DIELDRIN

General Statistics

Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DIELDRIN was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MANGANESE

General Statistics

Number of Valid Observations	11	Number of Distinct Observations	11

Raw Statistics		Log-transformed Statistics	
Minimum	0.0095	Minimum of Log Data	-4.656
Maximum	0.198	Maximum of Log Data	-1.619
Mean	0.0575	Mean of log Data	-3.301
Median	0.0391	SD of log Data	0.977
SD	0.0615		
Coefficient of Variation	1.069		
Skewness	1.74		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.742	Shapiro Wilk Test Statistic	0.952
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0911	95% H-UCL	0.148
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.132
95% Adjusted-CLT UCL	0.0984	97.5% Chebyshev (MVUE) UCL	0.165
95% Modified-t UCL	0.0927	99% Chebyshev (MVUE) UCL	0.23

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.98	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0587		
nu star	21.56		
Approximate Chi Square Value (.05)	12.01	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	0.088
Adjusted Chi Square Value	10.86	95% Jackknife UCL	0.0911
		95% Standard Bootstrap UCL	0.0863
Anderson-Darling Test Statistic	0.465	95% Bootstrap-t UCL	0.151
Anderson-Darling 5% Critical Value	0.747	95% Hall's Bootstrap UCL	0.282
Kolmogorov-Smirnov Test Statistic	0.218	95% Percentile Bootstrap UCL	0.0891
Kolmogorov-Smirnov 5% Critical Value	0.261	95% BCA Bootstrap UCL	0.096

Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.138
		97.5% Chebyshev(Mean, Sd) UCL	0.173
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.242
95% Approximate Gamma UCL	0.103		
95% Adjusted Gamma UCL	0.114		
Potential UCL to Use		95% Approximate Gamma UCL	0.103

METHYL MERCURY

General Statistics

Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

NAPHTHALENE

General Statistics

Number of Valid Data	7	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	6
		Percent Non-Detects	85.71%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable NAPHTHALENE was not processed!

NICKEL

General Statistics

Number of Valid Data	11	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	2
		Percent Non-Detects	18.18%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.001	Minimum Detected	-6.908
Maximum Detected	0.999	Maximum Detected	-0.001
Mean of Detected	0.171	Mean of Detected	-3.267
SD of Detected	0.315	SD of Detected	2.231
Minimum Non-Detect	0.0092	Minimum Non-Detect	-4.689
Maximum Non-Detect	0.015	Maximum Non-Detect	-4.2
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	5
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	45.45%

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

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PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.543	Shapiro Wilk Test Statistic	0.891
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.141	Mean	-3.607
SD	0.29	SD	2.137
95% DL/2 (t) UCL	0.299	95% H-Stat (DL/2) UCL	12.12
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-3.697
		SD in Log Scale	2.212
		Mean in Original Scale	0.14
		SD in Original Scale	0.29
		95% Percentile Bootstrap UCL	0.31
		95% BCA Bootstrap UCL	0.4
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.363	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.471		
nu star	6.53		
A-D Test Statistic	0.546	Nonparametric Statistics	
5% A-D Critical Value	0.783	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.783	Mean	0.14
5% K-S Critical Value	0.297	SD	0.276
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0884
		95% KM (t) UCL	0.3
Assuming Gamma Distribution		95% KM (z) UCL	0.286
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.299
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.728
Maximum	0.999	95% KM (BCA) UCL	0.327
Mean	0.14	95% KM (Percentile Bootstrap) UCL	0.306
Median	0.068	95% KM (Chebyshev) UCL	0.526
SD	0.29	97.5% KM (Chebyshev) UCL	0.692
k star	0.183	99% KM (Chebyshev) UCL	1.02
Theta star	0.762		
Nu star	4.035	Potential UCLs to Use	
AppChi2	0.735	95% KM (Chebyshev) UCL	0.526
95% Gamma Approximate UCL	0.767		
95% Adjusted Gamma UCL	1.043		

Note: DL/2 is not a recommended method.

N-NITROSODIPHENYLAMINE

General Statistics

Number of Valid Data	7	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	6
		Percent Non-Detects	85.71%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable N-NITROSODIPHENYLAMINE was not processed!

PENTACHLOROPHENOL

General Statistics

Number of Valid Data	7	Number of Detected Data	1

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PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Number of Distinct Detected Data	1	Number of Non-Detect Data	6
		Percent Non-Detects	85.71%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PENTACHLOROPHENOL was not processed!

VANADIUM

General Statistics			
Number of Valid Observations	11	Number of Distinct Observations	10
Raw Statistics		Log-transformed Statistics	
Minimum	0.0024	Minimum of Log Data	-6.032
Maximum	0.352	Maximum of Log Data	-1.044
Mean	0.0399	Mean of log Data	-4.787
Median	0.006	SD of log Data	1.486
SD	0.104		
Coefficient of Variation	2.608		
Skewness	3.26		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.41	Shapiro Wilk Test Statistic	0.795
Shapiro Wilk Critical Value	0.85	Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0967	95% H-UCL	0.165
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0658
95% Adjusted-CLT UCL	0.124	97.5% Chebyshev (MVUE) UCL	0.085
95% Modified-t UCL	0.102	99% Chebyshev (MVUE) UCL	0.123
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.364	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.109		
nu star	8.015		
Approximate Chi Square Value (.05)	2.744	Nonparametric Statistics	
Adjusted Level of Significance	0.0278	95% CLT UCL	0.0915
Adjusted Chi Square Value	2.267	95% Jackknife UCL	0.0967
		95% Standard Bootstrap UCL	0.0904
Anderson-Darling Test Statistic	1.829	95% Bootstrap-t UCL	1.27
Anderson-Darling 5% Critical Value	0.797	95% Hall's Bootstrap UCL	0.516
Kolmogorov-Smirnov Test Statistic	0.361	95% Percentile Bootstrap UCL	0.101
Kolmogorov-Smirnov 5% Critical Value	0.272	95% BCA Bootstrap UCL	0.134
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.177
		97.5% Chebyshev(Mean, Sd) UCL	0.236
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.352
95% Approximate Gamma UCL	0.117		
95% Adjusted Gamma UCL	0.141		
Potential UCL to Use		99% Chebyshev (Mean, Sd) UCL	0.352

APPENDIX K, TABLE 20
RAGS 3.20 - PETROLEUM STORAGE AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ACENAPHTHYLENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	3

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ACENAPHTHYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ARSENIC

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable ARSENIC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZENE

General Statistics

Number of Valid Data	4	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	1
		Percent Non-Detects	25.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

APPENDIX K, TABLE 20
RAGS 3.20 - PETROLEUM STORAGE AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(A)PYRENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(A)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(B)FLUORANTHENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(B)FLUORANTHENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(G,H,I)PERYLENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(G,H,I)PERYLENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

BENZO(K)FLUORANTHENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!

APPENDIX K, TABLE 20
RAGS 3.20 - PETROLEUM STORAGE AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable BENZO(K)FLUORANTHENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

CHROMIUM

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable CHROMIUM was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DELTA-BHC

General Statistics

Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DELTA-BHC was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

DIBENZO(A,H)ANTHRACENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DIBENZO(A,H)ANTHRACENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Highly Chlorinated

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!

Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Highly Chlorinated was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

INDENO(1,2,3-CD)PYRENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable INDENO(1,2,3-CD)PYRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

IRON

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable IRON was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MANGANESE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable MANGANESE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

MERCURY

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

APPENDIX K, TABLE 20
RAGS 3.20 - PETROLEUM STORAGE AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

The data set for variable MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

METHYL MERCURY

General Statistics

Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable PHENANTHRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Total PCBs

General Statistics

Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Total PCBs was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

VANADIUM

General Statistics

Number of Valid Observations	4	Number of Distinct Observations	4

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable VANADIUM was not processed!

APPENDIX K, TABLE 20
RAGS 3.20 - PETROLEUM STORAGE AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 21
RAGS 3.21 - PETROLEUM STORAGE AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

ACENAPHTHYLENE

General Statistics

Number of Valid Data	8	Number of Detected Data	5
Number of Distinct Detected Data	4	Number of Non-Detect Data	3
		Percent Non-Detects	37.50%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.082	Minimum Detected	-2.501
Maximum Detected	0.69	Maximum Detected	-0.371
Mean of Detected	0.278	Mean of Detected	-1.523
SD of Detected	0.237	SD of Detected	0.762
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.4	Maximum Non-Detect	-0.916

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	87.50%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.762	Shapiro Wilk Test Statistic	0.924
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.244	Mean	-1.582
SD	0.185	SD	0.582
95% DL/2 (t) UCL	0.368	95% H-Stat (DL/2) UCL	0.827

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.619
		SD in Log Scale	0.612
		Mean in Original Scale	0.239
		SD in Original Scale	0.189
		95% Percentile Bootstrap UCL	0.363
		95% BCA Bootstrap UCL	0.392

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	1.013	Data appear Normal at 5% Significance Level
Theta Star	0.275	
nu star	10.13	

A-D Test Statistic	0.469	Nonparametric Statistics

5% A-D Critical Value	0.684	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.684	Mean	0.24
5% K-S Critical Value	0.36	SD	0.178
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0727
		95% KM (t) UCL	0.378
Assuming Gamma Distribution		95% KM (z) UCL	0.359
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.374
Minimum	0.082	95% KM (bootstrap t) UCL	0.529
Maximum	0.69	95% KM (BCA) UCL	0.371
Mean	0.277	95% KM (Percentile Bootstrap) UCL	0.362
Median	0.239	95% KM (Chebyshev) UCL	0.557
SD	0.179	97.5% KM (Chebyshev) UCL	0.694
k star	2.221	99% KM (Chebyshev) UCL	0.963
Theta star	0.125		
Nu star	35.54	Potential UCLs to	
AppChi2	22.9	95% KM (t) UCL	0.378
95% Gamma Approximate UCL	0.43	95% KM (Percentile Bootstrap) UCL	0.362
95% Adjusted Gamma UCL	0.484		

Note: DL/2 is not a recommended method.

ALUMINUM

General Statistics			
Number of Valid Observations	8	Number of Distinct Observations	8
Raw Statistics		Log-transformed Statistics	
Minimum	4210	Minimum of Log Data	8.345
Maximum	15200	Maximum of Log Data	9.629
Mean	6809	Mean of log Data	8.749
Median	5945	SD of log Data	0.381
SD	3464		
Coefficient of Variation	0.509		
Skewness	2.582		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.607	Shapiro Wilk Test Statistic	0.736
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	9129	95% H-UCL	9264
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	10684
95% Adjusted-CLT UCL	10018	97.5% Chebyshev (MVUE) UCL	12401
95% Modified-t UCL	9316	99% Chebyshev (MVUE) UCL	15775
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.25	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1602		
nu star	68		
Approximate Chi Square Value (.05)	50.02	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	8823
Adjusted Chi Square Value	46.15	95% Jackknife UCL	9129

		95% Standard Bootstrap UCL	8705
Anderson-Darling Test Statistic	1.239	95% Bootstrap-t UCL	14418
Anderson-Darling 5% Critical Value	0.718	95% Hall's Bootstrap UCL	20165
Kolmogorov-Smirnov Test Statistic	0.392	95% Percentile Bootstrap UCL	9081
Kolmogorov-Smirnov 5% Critical Value	0.295	95% BCA Bootstrap UCL	10224
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	12148
		97.5% Chebyshev(Mean, Sd) UCL	14458
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	18996
95% Approximate Gamma UCL	9256		
95% Adjusted Gamma UCL	10034		
Potential UCL to Use		95% Student's-t UCL	9129
		or 95% Modified-t UCL	9316

ARSENIC

General Statistics			
Number of Valid Observations	8	Number of Distinct Observations	8
Raw Statistics		Log-transformed Statistics	
Minimum	3.5	Minimum of Log Data	1.253
Maximum	67.6	Maximum of Log Data	4.214
Mean	23.78	Mean of log Data	2.732
Median	18.95	SD of log Data	1.064
SD	22.02		
Coefficient of Variation	0.926		
Skewness	1.244		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.877	Shapiro Wilk Test Statistic	0.954
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	38.52	95% H-UCL	114.5
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	65.8
95% Adjusted-CLT UCL	40.24	97.5% Chebyshev (MVUE) UCL	83.63
95% Modified-t UCL	39.09	99% Chebyshev (MVUE) UCL	118.6
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.887	Data appear Normal at 5% Significance Level	
Theta Star	26.8		
nu star	14.19		
Approximate Chi Square Value (.05)	6.705	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	36.58
Adjusted Chi Square Value	5.457	95% Jackknife UCL	38.52
		95% Standard Bootstrap UCL	35.76
Anderson-Darling Test Statistic	0.209	95% Bootstrap-t UCL	47.59
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	99.81
Kolmogorov-Smirnov Test Statistic	0.161	95% Percentile Bootstrap UCL	35.99
Kolmogorov-Smirnov 5% Critical Value	0.3	95% BCA Bootstrap UCL	39.28
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	57.71

		97.5% Chebyshev(Mean, Sd) UCL	72.39
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	101.2
95% Approximate Gamma UCL	50.33		
95% Adjusted Gamma UCL	61.84		
Potential UCL to Use		95% Student's-t UCL	38.52

BENZENE

General Statistics			
Number of Valid Data	8	Number of Detected Data	7
Number of Distinct Detected Data	6	Number of Non-Detect Data	1
		Percent Non-Detects	12.50%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.003	Minimum Detected	-5.809
Maximum Detected	0.14	Maximum Detected	-1.966
Mean of Detected	0.0691	Mean of Detected	-3.369
SD of Detected	0.06	SD of Detected	1.56
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	0.011	Maximum Non-Detect	-4.51

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.853	Shapiro Wilk Test Statistic	0.852
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0612	Mean	-3.598
SD	0.0599	SD	1.584
95% DL/2 (t) UCL	0.101	95% H-Stat (DL/2) UCL	2.845
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.0435	Mean in Log Scale	-3.595
SD	0.0795	SD in Log Scale	1.58
95% MLE (t) UCL	0.0968	Mean in Original Scale	0.0612
95% MLE (Tiku) UCL	0.103	SD in Original Scale	0.0599
		95% Percentile Bootstrap UCL	0.0946
		95% BCA Bootstrap UCL	0.0936
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.578	Data appear Normal at 5% Significance Level	
Theta Star	0.12		
nu star	8.094		
A-D Test Statistic	0.528	Nonparametric Statistics	
5% A-D Critical Value	0.733	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.733	Mean	0.0611
5% K-S Critical Value	0.321	SD	0.0561
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0214

		95% KM (t) UCL	0.102
Assuming Gamma Distribution		95% KM (z) UCL	0.0964
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.101
Minimum	0.003	95% KM (bootstrap t) UCL	0.107
Maximum	0.14	95% KM (BCA) UCL	0.0988
Mean	0.0622	95% KM (Percentile Bootstrap) UCL	0.0965
Median	0.052	95% KM (Chebyshev) UCL	0.155
SD	0.0589	97.5% KM (Chebyshev) UCL	0.195
k star	0.606	99% KM (Chebyshev) UCL	0.274
Theta star	0.103		
Nu star	9.703	Potential UCLs to	
AppChi2	3.757	95% KM (t) UCL	0.102
95% Gamma Approximate UCL	0.161	95% KM (Percentile Bootstrap) UCL	0.0965
95% Adjusted Gamma UCL	0.21		

Note: DL/2 is not a recommended method.

BENZO(A)ANTHRACENE

General Statistics

Number of Valid Observations	8	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.051	Minimum of Log Data	-2.976
Maximum	7.3	Maximum of Log Data	1.988
Mean	2.374	Mean of log Data	0.179
Median	1.6	SD of log Data	1.568
SD	2.417		
Coefficient of Variation	1.018		
Skewness	1.425		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.855	Shapiro Wilk Test Statistic	0.903
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.993	95% H-UCL	75.98
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	10.83
95% Adjusted-CLT UCL	4.24	97.5% Chebyshev (MVUE) UCL	14.15
95% Modified-t UCL	4.065	99% Chebyshev (MVUE) UCL	20.66
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.62	Data appear Normal at 5% Significance Level	
Theta Star	3.83		
nu star	9.917		
Approximate Chi Square Value (.05)	3.89	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	3.78
Adjusted Chi Square Value	2.995	95% Jackknife UCL	3.993
		95% Standard Bootstrap UCL	3.66
Anderson-Darling Test Statistic	0.217	95% Bootstrap-t UCL	6.013
Anderson-Darling 5% Critical Value	0.741	95% Hall's Bootstrap UCL	12.55
Kolmogorov-Smirnov Test Statistic	0.175	95% Percentile Bootstrap UCL	3.806

Kolmogorov-Smirnov 5% Critical Value	0.303	95% BCA Bootstrap UCL	4.135
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	6.099
		97.5% Chebyshev(Mean, Sd) UCL	7.711
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	10.88
95% Approximate Gamma UCL	6.052		
95% Adjusted Gamma UCL	7.859		
Potential UCL to Use		95% Student's-t UCL	3.993

BENZO(A)PYRENE

General Statistics			
Number of Valid Data	8	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	1
		Percent Non-Detects	12.50%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.29	Minimum Detected	-1.238
Maximum Detected	7	Maximum Detected	1.946
Mean of Detected	2.466	Mean of Detected	0.436
SD of Detected	2.366	SD of Detected	1.131
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.875	Shapiro Wilk Test Statistic	0.968
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.18	Mean	0.167
SD	2.334	SD	1.294
95% DL/2 (t) UCL	3.744	95% H-Stat (DL/2) UCL	14
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.785	Mean in Log Scale	0.206
SD	2.693	SD in Log Scale	1.232
95% MLE (t) UCL	3.589	Mean in Original Scale	2.188
95% MLE (Tiku) UCL	3.645	SD in Original Scale	2.327
		95% Percentile Bootstrap UCL	3.513
		95% BCA Bootstrap UCL	4.103
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.787	Data appear Normal at 5% Significance Level	
Theta Star	3.134		
nu star	11.02		
A-D Test Statistic	0.168	Nonparametric Statistics	
5% A-D Critical Value	0.725	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.725	Mean	2.194

5% K-S Critical Value	0.319	SD	2.171
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.829
		95% KM (t) UCL	3.765
Assuming Gamma Distribution		95% KM (z) UCL	3.558
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.741
Minimum	1.00E-09	95% KM (bootstrap t) UCL	5.092
Maximum	7	95% KM (BCA) UCL	3.75
Mean	2.158	95% KM (Percentile Bootstrap) UCL	3.588
Median	1.5	95% KM (Chebyshev) UCL	5.808
SD	2.357	97.5% KM (Chebyshev) UCL	7.372
k star	0.233	99% KM (Chebyshev) UCL	10.44
Theta star	9.245		
Nu star	3.734	Potential UCLs to	
AppChi2	0.619	95% KM (t) UCL	3.765
95% Gamma Approximate UCL	13	95% KM (Percentile Bootstrap) UCL	3.588
95% Adjusted Gamma UCL	21.66		

Note: DL/2 is not a recommended method.

BENZO(B)FLUORANTHENE

General Statistics

Number of Valid Observations	8	Number of Distinct Observations	8
Raw Statistics		Log-transformed Statistics	
Minimum	0.062	Minimum of Log Data	-2.781
Maximum	10	Maximum of Log Data	2.303
Mean	3.364	Mean of log Data	0.474
Median	2.45	SD of log Data	1.645
SD	3.367		
Coefficient of Variation	1.001		
Skewness	1.187		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.894	Shapiro Wilk Test Statistic	0.918
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5.62	95% H-UCL	151.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16.37
95% Adjusted-CLT UCL	5.856	97.5% Chebyshev (MVUE) UCL	21.45
95% Modified-t UCL	5.703	99% Chebyshev (MVUE) UCL	31.42
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.585	Data appear Normal at 5% Significance Level	
Theta Star	5.748		
nu star	9.363		
Approximate Chi Square Value (.05)	3.548	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	5.322
Adjusted Chi Square Value	2.704	95% Jackknife UCL	5.62
		95% Standard Bootstrap UCL	5.217
Anderson-Darling Test Statistic	0.145	95% Bootstrap-t UCL	7.249

Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	7.399
Kolmogorov-Smirnov Test Statistic	0.137	95% Percentile Bootstrap UCL	5.238
Kolmogorov-Smirnov 5% Critical Value	0.304	95% BCA Bootstrap UCL	5.863
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	8.553
		97.5% Chebyshev(Mean, Sd) UCL	10.8
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	15.21
95% Approximate Gamma UCL	8.878		
95% Adjusted Gamma UCL	11.65		
Potential UCL to Use		95% Student's-t UCL	5.62

BENZO(G,H,I)PERYLENE

General Statistics			
Number of Valid Data	8	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	1
		Percent Non-Detects	12.50%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.19	Minimum Detected	-1.661
Maximum Detected	6.7	Maximum Detected	1.902
Mean of Detected	2.497	Mean of Detected	0.493
SD of Detected	2.149	SD of Detected	1.15
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.897	Shapiro Wilk Test Statistic	0.932
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.208	Mean	0.217
SD	2.151	SD	1.32
95% DL/2 (t) UCL	3.649	95% H-Stat (DL/2) UCL	9.74
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.872	Mean in Log Scale	0.259
SD	2.475	SD in Log Scale	1.253
95% MLE (t) UCL	3.53	Mean in Original Scale	2.217
95% MLE (Tiku) UCL	3.596	SD in Original Scale	2.142
		95% Percentile Bootstrap UCL	3.461
		95% BCA Bootstrap UCL	3.75
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.853	Data appear Normal at 5% Significance Level	
Theta Star	2.928		
nu star	11.94		
A-D Test Statistic	0.19	Nonparametric Statistics	

5% A-D Critical Value	0.723	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.723	Mean	2.209
5% K-S Critical Value	0.318	SD	2.011
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.768
		95% KM (t) UCL	3.664
Assuming Gamma Distribution		95% KM (z) UCL	3.472
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.632
Minimum	0.139	95% KM (bootstrap t) UCL	4.429
Maximum	6.7	95% KM (BCA) UCL	3.836
Mean	2.202	95% KM (Percentile Bootstrap) UCL	3.588
Median	1.85	95% KM (Chebyshev) UCL	5.556
SD	2.157	97.5% KM (Chebyshev) UCL	7.005
k star	0.682	99% KM (Chebyshev) UCL	9.85
Theta star	3.228		
Nu star	10.92	Potential UCLs to	
AppChi2	4.523	95% KM (t) UCL	3.664
95% Gamma Approximate UCL	5.316	95% KM (Percentile Bootstrap) UCL	3.588
95% Adjusted Gamma UCL	6.79		

Note: DL/2 is not a recommended method.

BENZO(K)FLUORANTHENE

General Statistics			
Number of Valid Data	8	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	1
		Percent Non-Detects	12.50%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.18	Minimum Detected	-1.715
Maximum Detected	2.8	Maximum Detected	1.03
Mean of Detected	1.194	Mean of Detected	-0.179
SD of Detected	0.973	SD of Detected	0.988
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.909	Shapiro Wilk Test Statistic	0.959
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.068	Mean	-0.371
SD	0.97	SD	1.064
95% DL/2 (t) UCL	1.717	95% H-Stat (DL/2) UCL	2.881
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.795	Mean in Log Scale	-0.328
SD	1.256	SD in Log Scale	1.008
95% MLE (t) UCL	1.636	Mean in Original Scale	1.077
95% MLE (Tiku) UCL	1.73	SD in Original Scale	0.96

		95% Percentile Bootstrap UCL	1.643
		95% BCA Bootstrap UCL	1.692

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.98	Data appear Normal at 5% Significance Level	
Theta Star	1.218		
nu star	13.72		
A-D Test Statistic	0.188	Nonparametric Statistics	
5% A-D Critical Value	0.721	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.721	Mean	1.076
5% K-S Critical Value	0.317	SD	0.899
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.344
		95% KM (t) UCL	1.727
Assuming Gamma Distribution		95% KM (z) UCL	1.641
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.721
Minimum	0.18	95% KM (bootstrap t) UCL	2.199
Maximum	2.8	95% KM (BCA) UCL	1.653
Mean	1.083	95% KM (Percentile Bootstrap) UCL	1.643
Median	0.83	95% KM (Chebyshev) UCL	2.574
SD	0.955	97.5% KM (Chebyshev) UCL	3.222
k star	0.983	99% KM (Chebyshev) UCL	4.495
Theta star	1.101		
Nu star	15.73	Potential UCLs to	
AppChi2	7.769	95% KM (t) UCL	1.727
95% Gamma Approximate UCL	2.191	95% KM (Percentile Bootstrap) UCL	1.643
95% Adjusted Gamma UCL	2.657		

Note: DL/2 is not a recommended method.

CHROMIUM

General Statistics			
Number of Valid Observations	8	Number of Distinct Observations	8
Raw Statistics		Log-transformed Statistics	
Minimum	10.2	Minimum of Log Data	2.322
Maximum	28	Maximum of Log Data	3.332
Mean	16.6	Mean of log Data	2.755
Median	16.45	SD of log Data	0.351
SD	5.997		
Coefficient of Variation	0.361		
Skewness	0.862		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.918	Shapiro Wilk Test Statistic	0.944
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	20.62	95% H-UCL	22.17
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	25.61
95% Adjusted-CLT UCL	20.78	97.5% Chebyshev (MVUE) UCL	29.52

95% Modified-t UCL	20.72	99% Chebyshev (MVUE) UCL	37.19

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	5.893	Data appear Normal at 5% Significance Level	
Theta Star	2.817		
nu star	94.29		
Approximate Chi Square Value (.05)	72.89	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	20.09
Adjusted Chi Square Value	68.15	95% Jackknife UCL	20.62
		95% Standard Bootstrap UCL	19.79
Anderson-Darling Test Statistic	0.282	95% Bootstrap-t UCL	21.58
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	21.06
Kolmogorov-Smirnov Test Statistic	0.196	95% Percentile Bootstrap UCL	19.85
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	20.44
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	25.84
		97.5% Chebyshev(Mean, Sd) UCL	29.84
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	37.7
95% Approximate Gamma UCL	21.47		
95% Adjusted Gamma UCL	22.97		

Potential UCL to Use		95% Student's-t UCL	20.62

DELTA-BHC

General Statistics			
Number of Valid Data	8	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	7
		Percent Non-Detects	87.50%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable DELTA-BHC was not processed!

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	8	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	2
		Percent Non-Detects	25.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.063	Minimum Detected	-2.765
Maximum Detected	1.7	Maximum Detected	0.531
Mean of Detected	0.717	Mean of Detected	-0.712
SD of Detected	0.563	SD of Detected	1.13
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.4	Maximum Non-Detect	-0.916

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	50.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

APPENDIX K, TABLE 21
RAGS 3.21 - PETROLEUM STORAGE AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.937	Shapiro Wilk Test Statistic	0.899
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.585	Mean	-0.949
SD	0.535	SD	1.052
95% DL/2 (t) UCL	0.944	95% H-Stat (DL/2) UCL	3.038
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.397	Mean in Log Scale	-1.094
SD	0.722	SD in Log Scale	1.194
95% MLE (t) UCL	0.88	Mean in Original Scale	0.565
95% MLE (Tiku) UCL	0.992	SD in Original Scale	0.553
		95% Percentile Bootstrap UCL	0.875
		95% BCA Bootstrap UCL	0.957
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.842	Data appear Normal at 5% Significance Level	
Theta Star	0.852		
nu star	10.11		
A-D Test Statistic	0.238	Nonparametric Statistics	
5% A-D Critical Value	0.708	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.708	Mean	0.566
5% K-S Critical Value	0.338	SD	0.52
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.202
		95% KM (t) UCL	0.95
Assuming Gamma Distribution		95% KM (z) UCL	0.899
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.94
Minimum	0.063	95% KM (bootstrap t) UCL	1.072
Maximum	1.7	95% KM (BCA) UCL	1.022
Mean	0.619	95% KM (Percentile Bootstrap) UCL	0.93
Median	0.498	95% KM (Chebyshev) UCL	1.448
SD	0.511	97.5% KM (Chebyshev) UCL	1.83
k star	1.085	99% KM (Chebyshev) UCL	2.58
Theta star	0.571		
Nu star	17.36	Potential UCLs to	
AppChi2	8.927	95% KM (t) UCL	0.95
95% Gamma Approximate UCL	1.204	95% KM (Percentile Bootstrap) UCL	0.93
95% Adjusted Gamma UCL	1.443		

Note: DL/2 is not a recommended method.

Highly Chlorinated

General Statistics			
Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable Highly Chlorinated was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

APPENDIX K, TABLE 21
RAGS 3.21 - PETROLEUM STORAGE AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	8	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	1
		Percent Non-Detects	12.50%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.17	Minimum Detected	-1.772
Maximum Detected	6.1	Maximum Detected	1.808
Mean of Detected	2.041	Mean of Detected	0.215
SD of Detected	2.011	SD of Detected	1.203
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.856	Shapiro Wilk Test Statistic	0.967
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.809	Mean	-0.0261
SD	1.975	SD	1.306
95% DL/2 (t) UCL	3.131	95% H-Stat (DL/2) UCL	23.27
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.495	Mean in Log Scale	-0.0306
SD	2.253	SD in Log Scale	1.313
95% MLE (t) UCL	3.003	Mean in Original Scale	1.808
95% MLE (Tiku) UCL	3.047	SD in Original Scale	1.975
		95% Percentile Bootstrap UCL	3.024
		95% BCA Bootstrap UCL	3.297
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.747	Data appear Normal at 5% Significance Level	
Theta Star	2.733		
nu star	10.46		
A-D Test Statistic	0.157	Nonparametric Statistics	
5% A-D Critical Value	0.726	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.726	Mean	1.808
5% K-S Critical Value	0.319	SD	1.848
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.706
		95% KM (t) UCL	3.145
Assuming Gamma Distribution		95% KM (z) UCL	2.968
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.121
Minimum	1.00E-09	95% KM (bootstrap t) UCL	4.228
Maximum	6.1	95% KM (BCA) UCL	3.163

Mean	1.786	95% KM (Percentile Bootstrap) UCL	2.961
Median	1.35	95% KM (Chebyshev) UCL	4.884
SD	1.997	97.5% KM (Chebyshev) UCL	6.215
k star	0.233	99% KM (Chebyshev) UCL	8.83
Theta star	7.66		
Nu star	3.731	Potential UCLs to	
AppChi2	0.618	95% KM (t) UCL	3.145
95% Gamma Approximate UCL	10.78	95% KM (Percentile Bootstrap) UCL	2.961
95% Adjusted Gamma UCL	17.95		

Note: DL/2 is not a recommended method.

IRON

General Statistics

Number of Valid Observations	8	Number of Distinct Observations	8

Raw Statistics		Log-transformed Statistics	
Minimum	11300	Minimum of Log Data	9.333
Maximum	28600	Maximum of Log Data	10.26
Mean	20850	Mean of log Data	9.907
Median	22300	SD of log Data	0.309
SD	5665		
Coefficient of Variation	0.272		
Skewness	-0.628		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.944	Shapiro Wilk Test Statistic	0.893
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	24645	95% H-UCL	26799
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	30919
95% Adjusted-CLT UCL	23670	97.5% Chebyshev (MVUE) UCL	35245
95% Modified-t UCL	24571	99% Chebyshev (MVUE) UCL	43743

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	8.373	Data appear Normal at 5% Significance Level	
Theta Star	2490		
nu star	134		
Approximate Chi Square Value (.05)	108.2	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	24145
Adjusted Chi Square Value	102.4	95% Jackknife UCL	24645
		95% Standard Bootstrap UCL	24049
Anderson-Darling Test Statistic	0.432	95% Bootstrap-t UCL	24120
Anderson-Darling 5% Critical Value	0.715	95% Hall's Bootstrap UCL	23749
Kolmogorov-Smirnov Test Statistic	0.232	95% Percentile Bootstrap UCL	23688
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	23450
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	29581
		97.5% Chebyshev(Mean, Sd) UCL	33359
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	40780
95% Approximate Gamma UCL	25809		

95% Adjusted Gamma UCL	27283		
Potential UCL to Use		95% Student's-t UCL	24645

MANGANESE

General Statistics			
Number of Valid Observations	8	Number of Distinct Observations	8
Raw Statistics		Log-transformed Statistics	
Minimum	257	Minimum of Log Data	5.549
Maximum	486	Maximum of Log Data	6.186
Mean	394	Mean of log Data	5.957
Median	399.5	SD of log Data	0.215
SD	78.79		
Coefficient of Variation	0.2		
Skewness	-0.545		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.955	Shapiro Wilk Test Statistic	0.929
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	446.8	95% H-UCL	463.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	525.6
95% Adjusted-CLT UCL	434.1	97.5% Chebyshev (MVUE) UCL	582.3
95% Modified-t UCL	445.9	99% Chebyshev (MVUE) UCL	693.8
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	16.41	Data appear Normal at 5% Significance Level	
Theta Star	24.01		
nu star	262.5		
Approximate Chi Square Value (.05)	226	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	439.8
Adjusted Chi Square Value	217.4	95% Jackknife UCL	446.8
		95% Standard Bootstrap UCL	436.8
Anderson-Darling Test Statistic	0.248	95% Bootstrap-t UCL	440.4
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	432.1
Kolmogorov-Smirnov Test Statistic	0.137	95% Percentile Bootstrap UCL	436
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	434.4
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	515.4
		97.5% Chebyshev(Mean, Sd) UCL	568
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	671.2
95% Approximate Gamma UCL	457.7		
95% Adjusted Gamma UCL	475.8		
Potential UCL to Use		95% Student's-t UCL	446.8

MERCURY

APPENDIX K, TABLE 21
RAGS 3.21 - PETROLEUM STORAGE AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics			
Number of Valid Observations	8	Number of Distinct Observations	8
Raw Statistics		Log-transformed Statistics	
Minimum	0.1	Minimum of Log Data	-2.303
Maximum	14.2	Maximum of Log Data	2.653
Mean	3.164	Mean of log Data	0.0333
Median	0.885	SD of log Data	1.616
SD	5.061		
Coefficient of Variation	1.6		
Skewness	1.934		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.659	Shapiro Wilk Test Statistic	0.937
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	6.554	95% H-UCL	83.68
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	10.06
95% Adjusted-CLT UCL	7.414	97.5% Chebyshev (MVUE) UCL	13.17
95% Modified-t UCL	6.758	99% Chebyshev (MVUE) UCL	19.27
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.432	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	7.318		
nu star	6.917		
Approximate Chi Square Value (.05)	2.125	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	6.107
Adjusted Chi Square Value	1.519	95% Jackknife UCL	6.554
		95% Standard Bootstrap UCL	5.992
Anderson-Darling Test Statistic	0.669	95% Bootstrap-t UCL	40.58
Anderson-Darling 5% Critical Value	0.758	95% Hall's Bootstrap UCL	35.67
Kolmogorov-Smirnov Test Statistic	0.349	95% Percentile Bootstrap UCL	5.783
Kolmogorov-Smirnov 5% Critical Value	0.308	95% BCA Bootstrap UCL	7.426
Data follow Appr. Gamma Distribution at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	10.96
		97.5% Chebyshev(Mean, Sd) UCL	14.34
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	20.97
95% Approximate Gamma UCL	10.3		
95% Adjusted Gamma UCL	14.41		
Potential UCL to Use		95% Approximate Gamma UCL	10.3

METHYL MERCURY

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

APPENDIX K, TABLE 21
RAGS 3.21 - PETROLEUM STORAGE AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

NAPHTHALENE

General Statistics			
Number of Valid Observations	8	Number of Distinct Observations	8
Raw Statistics		Log-transformed Statistics	
Minimum	0.59	Minimum of Log Data	-0.528
Maximum	30	Maximum of Log Data	3.401
Mean	8.029	Mean of log Data	1.058
Median	1.9	SD of log Data	1.47
SD	12.11		
Coefficient of Variation	1.508		
Skewness	1.479		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.644	Shapiro Wilk Test Statistic	0.845
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	16.14	95% H-UCL	112.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	22.43
95% Adjusted-CLT UCL	17.46	97.5% Chebyshev (MVUE) UCL	29.18
95% Modified-t UCL	16.51	99% Chebyshev (MVUE) UCL	42.44
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.46	Data appear Lognormal at 5% Significance Level	
Theta Star	17.46		
nu star	7.358		
Approximate Chi Square Value (.05)	2.369	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	15.07
Adjusted Chi Square Value	1.718	95% Jackknife UCL	16.14
		95% Standard Bootstrap UCL	14.37
Anderson-Darling Test Statistic	0.981	95% Bootstrap-t UCL	118.6
Anderson-Darling 5% Critical Value	0.755	95% Hall's Bootstrap UCL	93.15
Kolmogorov-Smirnov Test Statistic	0.353	95% Percentile Bootstrap UCL	15.02
Kolmogorov-Smirnov 5% Critical Value	0.307	95% BCA Bootstrap UCL	16.67
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	26.69
		97.5% Chebyshev(Mean, Sd) UCL	34.77
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	50.63
95% Approximate Gamma UCL	24.94		
95% Adjusted Gamma UCL	34.39		
Potential UCL to Use		95% Chebyshev (MVUE) UCL	22.43

PHENANTHRENE

APPENDIX K, TABLE 21
RAGS 3.21 - PETROLEUM STORAGE AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics			
Number of Valid Observations	8	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.08	Minimum of Log Data	-2.526
Maximum	4.4	Maximum of Log Data	1.482
Mean	2.19	Mean of log Data	0.232
Median	1.7	SD of log Data	1.407
SD	1.762		
Coefficient of Variation	0.804		
Skewness	0.26		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.862	Shapiro Wilk Test Statistic	0.855
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.37	95% H-UCL	36.93
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.936
95% Adjusted-CLT UCL	3.276	97.5% Chebyshev (MVUE) UCL	11.59
95% Modified-t UCL	3.38	99% Chebyshev (MVUE) UCL	16.81
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.734	Data appear Normal at 5% Significance Level	
Theta Star	2.984		
nu star	11.74		
Approximate Chi Square Value (.05)	5.058	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	3.214
Adjusted Chi Square Value	4.006	95% Jackknife UCL	3.37
		95% Standard Bootstrap UCL	3.146
Anderson-Darling Test Statistic	0.423	95% Bootstrap-t UCL	3.414
Anderson-Darling 5% Critical Value	0.735	95% Hall's Bootstrap UCL	2.994
Kolmogorov-Smirnov Test Statistic	0.223	95% Percentile Bootstrap UCL	3.2
Kolmogorov-Smirnov 5% Critical Value	0.301	95% BCA Bootstrap UCL	3.26
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4.905
		97.5% Chebyshev(Mean, Sd) UCL	6.08
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8.387
95% Approximate Gamma UCL	5.084		
95% Adjusted Gamma UCL	6.419		
Potential UCL to Use		95% Student's-t UCL	3.37

Total PCBs

General Statistics			
Number of Valid Observations	3	Number of Distinct Observations	3

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!

APPENDIX K, TABLE 21
RAGS 3.21 - PETROLEUM STORAGE AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

The data set for variable Total PCBs was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

VANADIUM

General Statistics			
Number of Valid Observations	8	Number of Distinct Observations	8
Raw Statistics		Log-transformed Statistics	
Minimum	10	Minimum of Log Data	2.303
Maximum	20.1	Maximum of Log Data	3.001
Mean	14.74	Mean of log Data	2.66
Median	14.05	SD of log Data	0.265
SD	3.879		
Coefficient of Variation	0.263		
Skewness	0.278		

Warning: There are only 8 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.925	Shapiro Wilk Test Statistic	0.936
Shapiro Wilk Critical Value	0.818	Shapiro Wilk Critical Value	0.818
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	17.34	95% H-UCL	18.12
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	20.79
95% Adjusted-CLT UCL	17.14	97.5% Chebyshev (MVUE) UCL	23.4
95% Modified-t UCL	17.36	99% Chebyshev (MVUE) UCL	28.54
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	10.39	Data appear Normal at 5% Significance Level	
Theta Star	1.419		
nu star	166.2		
Approximate Chi Square Value (.05)	137.4	Nonparametric Statistics	
Adjusted Level of Significance	0.0195	95% CLT UCL	16.99
Adjusted Chi Square Value	130.8	95% Jackknife UCL	17.34
		95% Standard Bootstrap UCL	16.84
Anderson-Darling Test Statistic	0.284	95% Bootstrap-t UCL	17.48
Anderson-Darling 5% Critical Value	0.716	95% Hall's Bootstrap UCL	17.01
Kolmogorov-Smirnov Test Statistic	0.161	95% Percentile Bootstrap UCL	16.9
Kolmogorov-Smirnov 5% Critical Value	0.294	95% BCA Bootstrap UCL	17.04
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	20.72
		97.5% Chebyshev(Mean, Sd) UCL	23.3
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	28.38
95% Approximate Gamma UCL	17.83		
95% Adjusted Gamma UCL	18.73		
Potential UCL to Use		95% Student's-t UCL	17.34

APPENDIX K, TABLE 22
RAGS 3.22 - PETROLEUM STORAGE AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

2-METHYLNAPHTHALENE

General Statistics

Number of Valid Data	3	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	2
		Percent Non-Detects	66.67%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 2-METHYLNAPHTHALENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

ALUMINUM

General Statistics

Number of Valid Data	6	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	3
		Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.66	Minimum Detected	1.297
Maximum Detected	38.3	Maximum Detected	3.645
Mean of Detected	21.89	Mean of Detected	2.703
SD of Detected	17.39	SD of Detected	1.24
Minimum Non-Detect	0.0262	Minimum Non-Detect	-3.642
Maximum Non-Detect	0.0321	Maximum Non-Detect	-3.439

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	50.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.992	Shapiro Wilk Test Statistic	0.896
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	10.95	Mean	-0.772

SD	16.26	SD	3.887
95% DL/2 (t) UCL	24.33	95% H-Stat (DL/2) UCL	1.05E+11
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.845	Mean in Log Scale	0.811
SD	25.72	SD in Log Scale	2.216
95% MLE (t) UCL	22	Mean in Original Scale	11.11
95% MLE (Tiku) UCL	26.88	SD in Original Scale	16.13
		95% Percentile Bootstrap UCL	21.33
		95% BCA Bootstrap UCL	23.21
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.344	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	12.77
5% K-S Critical Value	N/A	SD	13.56
Data not Gamma Distributed at 5% Significance Level		SE of Mean	6.78
		95% KM (t) UCL	26.44
Assuming Gamma Distribution		95% KM (z) UCL	23.93
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	29.31
Minimum	N/A	95% KM (bootstrap t) UCL	16.6
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	42.33
SD	N/A	97.5% KM (Chebyshev) UCL	55.11
k star	N/A	99% KM (Chebyshev) UCL	80.23
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	26.44
95% Gamma Approximate UCL	N/A	95% KM (Percentile Bootstrap) UCL	N/A
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

BARIUM

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.0469	Minimum of Log Data	-3.06
Maximum	0.477	Maximum of Log Data	-0.74
Mean	0.191	Mean of log Data	-2.012
Median	0.154	SD of log Data	0.946
SD	0.167		
Coefficient of Variation	0.876		
Skewness	1.092		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,

the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.855	Shapiro Wilk Test Statistic	0.9
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.328	95% H-UCL	1.101
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.507
95% Adjusted-CLT UCL	0.335	97.5% Chebyshev (MVUE) UCL	0.644
95% Modified-t UCL	0.333	99% Chebyshev (MVUE) UCL	0.914
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.89	Data appear Normal at 5% Significance Level	
Theta Star	0.214		
nu star	10.68		
Approximate Chi Square Value (.05)	4.374	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	0.303
Adjusted Chi Square Value	3.041	95% Jackknife UCL	0.328
		95% Standard Bootstrap UCL	0.291
Anderson-Darling Test Statistic	0.414	95% Bootstrap-t UCL	0.401
Anderson-Darling 5% Critical Value	0.707	95% Hall's Bootstrap UCL	0.322
Kolmogorov-Smirnov Test Statistic	0.266	95% Percentile Bootstrap UCL	0.298
Kolmogorov-Smirnov 5% Critical Value	0.337	95% BCA Bootstrap UCL	0.321
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.488
		97.5% Chebyshev(Mean, Sd) UCL	0.616
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.869
95% Approximate Gamma UCL	0.466		
95% Adjusted Gamma UCL	0.67		
Potential UCL to Use		95% Student's-t UCL	0.328

BENZENE

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	3	Minimum of Log Data	1.099
Maximum	4400	Maximum of Log Data	8.389
Mean	1373	Mean of log Data	5.095
Median	465	SD of log Data	3.202
SD	1848		
Coefficient of Variation	1.346		
Skewness	1.148		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

APPENDIX K, TABLE 22
RAGS 3.22 - PETROLEUM STORAGE AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.799	Shapiro Wilk Test Statistic	0.869
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2893	95% H-UCL	9.94E+11
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	16565
95% Adjusted-CLT UCL	2992	97.5% Chebyshev (MVUE) UCL	22285
95% Modified-t UCL	2952	99% Chebyshev (MVUE) UCL	33520
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.271	Data appear Normal at 5% Significance Level	
Theta Star	5061		
nu star	3.255		
Approximate Chi Square Value (.05)	0.452	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	2614
Adjusted Chi Square Value	0.205	95% Jackknife UCL	2893
		95% Standard Bootstrap UCL	2523
Anderson-Darling Test Statistic	0.328	95% Bootstrap-t UCL	6991
Anderson-Darling 5% Critical Value	0.764	95% Hall's Bootstrap UCL	12300
Kolmogorov-Smirnov Test Statistic	0.214	95% Percentile Bootstrap UCL	2562
Kolmogorov-Smirnov 5% Critical Value	0.356	95% BCA Bootstrap UCL	2795
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	4662
		97.5% Chebyshev(Mean, Sd) UCL	6085
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	8881
95% Approximate Gamma UCL	9890		
95% Adjusted Gamma UCL	21772		
Potential UCL to Use		95% Student's-t UCL	2893

CHROMIUM

General Statistics			
Number of Valid Data	6	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	3
		Percent Non-Detects	50.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0082	Minimum Detected	-4.804
Maximum Detected	0.0707	Maximum Detected	-2.649
Mean of Detected	0.0432	Mean of Detected	-3.478
SD of Detected	0.0319	SD of Detected	1.16
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.003	Maximum Non-Detect	-5.809

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

APPENDIX K, TABLE 22
RAGS 3.22 - PETROLEUM STORAGE AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.958	Shapiro Wilk Test Statistic	0.862
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0224	Mean	-4.99
SD	0.0305	SD	1.812
95% DL/2 (t) UCL	0.0475	95% H-Stat (DL/2) UCL	1.525
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.00452	Mean in Log Scale	-5.254
SD	0.0473	SD in Log Scale	2.181
95% MLE (t) UCL	0.0434	Mean in Original Scale	0.0222
95% MLE (Tiku) UCL	0.0524	SD in Original Scale	0.0306
		95% Percentile Bootstrap UCL	0.0413
		95% BCA Bootstrap UCL	0.044
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.403	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.0257
5% K-S Critical Value	N/A	SD	0.0254
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0127
		95% KM (t) UCL	0.0513
Assuming Gamma Distribution		95% KM (z) UCL	0.0466
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0589
Minimum	N/A	95% KM (bootstrap t) UCL	0.0339
Maximum	N/A	95% KM (BCA) UCL	0.0707
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.0707
Median	N/A	95% KM (Chebyshev) UCL	0.0811
SD	N/A	97.5% KM (Chebyshev) UCL	0.105
k star	N/A	99% KM (Chebyshev) UCL	0.152
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	0.0513
95% Gamma Approximate UCL	N/A	95% KM (Percentile Bootstrap) UCL	0.0707
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

COPPER

General Statistics			
Number of Valid Data	6	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	4
		Percent Non-Detects	66.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.133	Minimum Detected	-2.017
Maximum Detected	0.209	Maximum Detected	-1.565
Mean of Detected	0.171	Mean of Detected	-1.791
SD of Detected	0.0537	SD of Detected	0.32
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.0164	Maximum Non-Detect	-4.11

APPENDIX K, TABLE 22
RAGS 3.22 - PETROLEUM STORAGE AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	4
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	66.67%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0589	Mean	-4.852
SD	0.0902	SD	2.511
95% DL/2 (t) UCL	0.133	95% H-Stat (DL/2) UCL	40.87
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.146
5% K-S Critical Value	N/A	SD	0.0283
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0164
		95% KM (t) UCL	0.179
Assuming Gamma Distribution		95% KM (z) UCL	0.173
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.205
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	0.209
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.209
Median	N/A	95% KM (Chebyshev) UCL	0.217
SD	N/A	97.5% KM (Chebyshev) UCL	0.248
k star	N/A	99% KM (Chebyshev) UCL	0.308
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	0.179
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	0.209
95% Adjusted Gamma UCL	N/A		

APPENDIX K, TABLE 22
RAGS 3.22 - PETROLEUM STORAGE AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Note: DL/2 is not a recommended method.

DIBENZOFURAN

General Statistics			
Number of Valid Data	3	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	2
		Percent Non-Detects	66.67%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable DIBENZOFURAN was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

IRON

General Statistics			
Number of Valid Data	6	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	3
		Percent Non-Detects	50.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	6.6	Minimum Detected	1.887
Maximum Detected	58	Maximum Detected	4.06
Mean of Detected	38.4	Mean of Detected	3.29
SD of Detected	27.79	SD of Detected	1.217
Minimum Non-Detect	0.0226	Minimum Non-Detect	-3.79
Maximum Non-Detect	0.0778	Maximum Non-Detect	-2.554

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	50.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.855	Shapiro Wilk Test Statistic	0.797
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	19.21	Mean	-0.354
SD	27.4	SD	4.088
95% DL/2 (t) UCL	41.75	95% H-Stat (DL/2) UCL	1.11E+12
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	2.231	Mean in Log Scale	1.564
SD	43.6	SD in Log Scale	2.042

95% MLE (t) UCL	38.1	Mean in Original Scale	19.63
95% MLE (Tiku) UCL	46.35	SD in Original Scale	27.05
		95% Percentile Bootstrap UCL	37.44
		95% BCA Bootstrap UCL	36.48

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.526	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	22.5
5% K-S Critical Value	N/A	SD	22.59
Data not Gamma Distributed at 5% Significance Level		SE of Mean	11.29
		95% KM (t) UCL	45.26
Assuming Gamma Distribution		95% KM (z) UCL	41.08
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	54.79
Minimum	N/A	95% KM (bootstrap t) UCL	35.02
Maximum	N/A	95% KM (BCA) UCL	58
Mean	N/A	95% KM (Percentile Bootstrap) UCL	58
Median	N/A	95% KM (Chebyshev) UCL	71.73
SD	N/A	97.5% KM (Chebyshev) UCL	93.03
k star	N/A	99% KM (Chebyshev) UCL	134.9
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	45.26
95% Gamma Approximate UCL	N/A	95% KM (Percentile Bootstrap) UCL	58
95% Adjusted Gamma UCL	N/A		
Note: DL/2 is not a recommended method.			

LEAD

General Statistics			
Number of Valid Data	6	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	3
		Percent Non-Detects	50.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.015	Minimum Detected	-4.2
Maximum Detected	0.114	Maximum Detected	-2.172
Mean of Detected	0.0556	Mean of Detected	-3.216
SD of Detected	0.0518	SD of Detected	1.015
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	3
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	50.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only

APPENDIX K, TABLE 22
RAGS 3.22 - PETROLEUM STORAGE AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Shapiro Wilk Test Statistic	0.912	Shapiro Wilk Test Statistic	0.997
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0296	Mean	-4.641
SD	0.0435	SD	1.886
95% DL/2 (t) UCL	0.0653	95% H-Stat (DL/2) UCL	6.091
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.00699	Mean in Log Scale	-4.925
SD	0.0633	SD in Log Scale	2.022
95% MLE (t) UCL	0.0591	Mean in Original Scale	0.0286
95% MLE (Tiku) UCL	0.0713	SD in Original Scale	0.0442
		95% Percentile Bootstrap UCL	0.06
		95% BCA Bootstrap UCL	0.0662
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.272	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.0353
5% K-S Critical Value	N/A	SD	0.0362
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0181
		95% KM (t) UCL	0.0717
Assuming Gamma Distribution		95% KM (z) UCL	0.065
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0682
Minimum	N/A	95% KM (bootstrap t) UCL	0.0831
Maximum	N/A	95% KM (BCA) UCL	0.114
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.114
Median	N/A	95% KM (Chebyshev) UCL	0.114
SD	N/A	97.5% KM (Chebyshev) UCL	0.148
k star	N/A	99% KM (Chebyshev) UCL	0.215
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	0.0717
95% Gamma Approximate UCL	N/A	95% KM (Percentile Bootstrap) UCL	0.114
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

MANGANESE

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.131	Minimum of Log Data	-2.033
Maximum	2.62	Maximum of Log Data	0.963
Mean	0.918	Mean of log Data	-0.706
Median	0.629	SD of log Data	1.3
SD	0.983		
Coefficient of Variation	1.071		
Skewness	1.175		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

APPENDIX K, TABLE 22
RAGS 3.22 - PETROLEUM STORAGE AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.842	Shapiro Wilk Test Statistic	0.868
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	1.726	95% H-UCL	23.12
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.032
95% Adjusted-CLT UCL	1.783	97.5% Chebyshev (MVUE) UCL	3.937
95% Modified-t UCL	1.758	99% Chebyshev (MVUE) UCL	5.714
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.58	Data appear Normal at 5% Significance Level	
Theta Star	1.582		
nu star	6.96		
Approximate Chi Square Value (.05)	2.148	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	1.577
Adjusted Chi Square Value	1.315	95% Jackknife UCL	1.726
		95% Standard Bootstrap UCL	1.517
Anderson-Darling Test Statistic	0.449	95% Bootstrap-t UCL	2.056
Anderson-Darling 5% Critical Value	0.717	95% Hall's Bootstrap UCL	1.695
Kolmogorov-Smirnov Test Statistic	0.275	95% Percentile Bootstrap UCL	1.567
Kolmogorov-Smirnov 5% Critical Value	0.341	95% BCA Bootstrap UCL	1.727
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	2.666
		97.5% Chebyshev(Mean, Sd) UCL	3.423
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	4.909
95% Approximate Gamma UCL	2.972		
95% Adjusted Gamma UCL	4.854		
Potential UCL to Use		95% Student's-t UCL	1.726

MERCURY

General Statistics			
Number of Valid Data	6	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	4
		Percent Non-Detects	66.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0022	Minimum Detected	-6.119
Maximum Detected	0.0026	Maximum Detected	-5.952
Mean of Detected	0.0024	Mean of Detected	-6.036
SD of Detected	2.83E-04	SD of Detected	0.118
Minimum Non-Detect	2.00E-04	Minimum Non-Detect	-8.517
Maximum Non-Detect	2.00E-04	Maximum Non-Detect	-8.517

Warning: Data set has only 2 Distinct Detected Values.

This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	8.67E-04	Mean	-8.152
SD	0.00119	SD	1.64
95% DL/2 (t) UCL	0.00185	95% H-Stat (DL/2) UCL	0.0281
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.00227
5% K-S Critical Value	N/A	SD	1.49E-04
Data not Gamma Distributed at 5% Significance Level		SE of Mean	8.61E-05
		95% KM (t) UCL	0.00244
Assuming Gamma Distribution		95% KM (z) UCL	0.00241
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	N/A
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	0.00264
SD	N/A	97.5% KM (Chebyshev) UCL	0.0028
k star	N/A	99% KM (Chebyshev) UCL	0.00312
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	0.00244
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	N/A
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

NAPHTHALENE

APPENDIX K, TABLE 22
RAGS 3.22 - PETROLEUM STORAGE AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics			
Number of Valid Data	3	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	1
		Percent Non-Detects	33.33%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable NAPHTHALENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

NICKEL

General Statistics			
Number of Valid Data	6	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	4
		Percent Non-Detects	66.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0525	Minimum Detected	-2.947
Maximum Detected	0.0802	Maximum Detected	-2.523
Mean of Detected	0.0664	Mean of Detected	-2.735
SD of Detected	0.0196	SD of Detected	0.3
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0255	Mean	-4.444
SD	0.0329	SD	1.33
95% DL/2 (t) UCL	0.0525	95% H-Stat (DL/2) UCL	0.188
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A

		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.0571
5% K-S Critical Value	N/A	SD	0.0103
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.00596
		95% KM (t) UCL	0.0691
Assuming Gamma Distribution		95% KM (z) UCL	0.0669
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	N/A
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	0.0831
SD	N/A	97.5% KM (Chebyshev) UCL	0.0943
k star	N/A	99% KM (Chebyshev) UCL	0.116
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	0.0691
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	N/A
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

PHENANTHRENE

General Statistics			
Number of Valid Data	3	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	2
		Percent Non-Detects	66.67%

Warning: This data set only has 3 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable PHENANTHRENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

VANADIUM

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.0042	Minimum of Log Data	-5.473
Maximum	0.0861	Maximum of Log Data	-2.452
Mean	0.033	Mean of log Data	-3.875
Median	0.0189	SD of log Data	1.112
SD	0.0322		
Coefficient of Variation	0.977		
Skewness	1.115		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

APPENDIX K, TABLE 22
RAGS 3.22 - PETROLEUM STORAGE AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.856	Shapiro Wilk Test Statistic	0.964
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	0.0594	95% H-UCL	0.365
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	0.0986
95% Adjusted-CLT UCL	0.061	97.5% Chebyshev (MVUE) UCL	0.127
95% Modified-t UCL	0.0604	99% Chebyshev (MVUE) UCL	0.182
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.722	Data appear Normal at 5% Significance Level	
Theta Star	0.0457		
nu star	8.66		
Approximate Chi Square Value (.05)	3.123	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	0.0546
Adjusted Chi Square Value	2.052	95% Jackknife UCL	0.0594
		95% Standard Bootstrap UCL	0.0527
Anderson-Darling Test Statistic	0.274	95% Bootstrap-t UCL	0.104
Anderson-Darling 5% Critical Value	0.712	95% Hall's Bootstrap UCL	0.199
Kolmogorov-Smirnov Test Statistic	0.215	95% Percentile Bootstrap UCL	0.0541
Kolmogorov-Smirnov 5% Critical Value	0.339	95% BCA Bootstrap UCL	0.057
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	0.0902
		97.5% Chebyshev(Mean, Sd) UCL	0.115
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	0.164
95% Approximate Gamma UCL	0.0914		
95% Adjusted Gamma UCL	0.139		
Potential UCL to Use		95% Student's-t UCL	0.0594

XYLENES, TOTAL

General Statistics			
Number of Valid Data	6	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	5
		Percent Non-Detects	83.33%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!

It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable XYLENES, TOTAL was not processed!

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1,2,4-TRICHLOROBENZENE

General Statistics

Number of Valid Data	7	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	2
		Percent Non-Detects	28.57%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.042	Minimum Detected	-3.17
Maximum Detected	17	Maximum Detected	2.833
Mean of Detected	3.737	Mean of Detected	-0.72
SD of Detected	7.429	SD of Detected	2.364
Minimum Non-Detect	0.4	Minimum Non-Detect	-0.916
Maximum Non-Detect	10	Maximum Non-Detect	2.303

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	85.71%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.603	Shapiro Wilk Test Statistic	0.951
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3.412	Mean	-0.514
SD	6.247	SD	2.171
95% DL/2 (t) UCL	8	95% H-Stat (DL/2) UCL	4040

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.051
		SD in Log Scale	2.018
		Mean in Original Scale	2.714
		SD in Original Scale	6.312
		95% Percentile Bootstrap UCL	7.368
		95% BCA Bootstrap UCL	9.783

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	0.266	Data appear Gamma Distributed at 5% Significance Level
Theta Star	14.03	
nu star	2.664	

A-D Test Statistic	0.482	Nonparametric Statistics	

5% A-D Critical Value	0.735	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.735	Mean	2.745
5% K-S Critical Value	0.379	SD	5.833
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	2.466
		95% KM (t) UCL	7.537
Assuming Gamma Distribution		95% KM (z) UCL	6.802
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7.376
Minimum	1.00E-09	95% KM (bootstrap t) UCL	94.67
Maximum	17	95% KM (BCA) UCL	7.486
Mean	2.823	95% KM (Percentile Bootstrap) UCL	7.398
Median	0.35	95% KM (Chebyshev) UCL	13.5
SD	6.271	97.5% KM (Chebyshev) UCL	18.15
k star	0.191	99% KM (Chebyshev) UCL	27.29
Theta star	14.77		
Nu star	2.677	Potential UCLs to	
AppChi2	0.283	95% KM (Chebyshev) UCL	13.5
95% Gamma Approximate UCL	26.66		
95% Adjusted Gamma UCL	51.36		

Note: DL/2 is not a recommended method.

1,4-DICHLOROBENZENE

General Statistics			
Number of Valid Data	7	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	2
		Percent Non-Detects	28.57%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.11	Minimum Detected	-2.207
Maximum Detected	6.5	Maximum Detected	1.872
Mean of Detected	1.544	Mean of Detected	-0.704
SD of Detected	2.775	SD of Detected	1.56
Minimum Non-Detect	0.4	Minimum Non-Detect	-0.916
Maximum Non-Detect	10	Maximum Non-Detect	2.303
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.604	Shapiro Wilk Test Statistic	0.875
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.846	Mean	-0.503
SD	2.705	SD	1.613
95% DL/2 (t) UCL	3.833	95% H-Stat (DL/2) UCL	137
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.932

SD in Log Scale	1.369
Mean in Original Scale	1.177
SD in Original Scale	2.352
95% Percentile Bootstrap UCL	2.914
95% BCA Bootstrap UCL	3.003

Gamma Distribution Test with Detected Values Only	
k star (bias corrected)	0.353
Theta Star	4.371
nu star	3.533
A-D Test Statistic	0.706
5% A-D Critical Value	0.708
K-S Test Statistic	0.708
5% K-S Critical Value	0.371
Data follow Appr. Gamma Distribution at 5% Significance Level	
Assuming Gamma Distribution	
Gamma ROS Statistics using Extrapolated Data	
Minimum	1.00E-09
Maximum	6.5
Mean	1.297
Median	0.44
SD	2.338
k star	0.21
Theta star	6.189
Nu star	2.933
AppChi2	0.353
95% Gamma Approximate UCL	10.78
95% Adjusted Gamma UCL	20.96

Note: DL/2 is not a recommended method.

Data Distribution Test with Detected Values Only	
Data Follow Appr. Gamma Distribution at 5% Significance Level	
Nonparametric Statistics	
Kaplan-Meier (KM) Method	
Mean	1.313
SD	2.324
SE of Mean	1.061
95% KM (t) UCL	3.374
95% KM (z) UCL	3.057
95% KM (jackknife) UCL	3.361
95% KM (bootstrap t) UCL	23.29
95% KM (BCA) UCL	3.365
95% KM (Percentile Bootstrap) UCL	3.305
95% KM (Chebyshev) UCL	5.937
97.5% KM (Chebyshev) UCL	7.937
99% KM (Chebyshev) UCL	11.87
Potential UCLs to	
95% KM (Chebyshev) UCL	5.937

ACENAPHTHYLENE

General Statistics			
Number of Valid Data	7	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	3
		Percent Non-Detects	42.86%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.12	Minimum Detected	-2.12
Maximum Detected	0.34	Maximum Detected	-1.079
Mean of Detected	0.243	Mean of Detected	-1.495
SD of Detected	0.101	SD of Detected	0.477
Minimum Non-Detect	0.37	Minimum Non-Detect	-0.994
Maximum Non-Detect	10	Maximum Non-Detect	2.303

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic	0.932	Shapiro Wilk Test Statistic	0.913
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.906	Mean	-1.106
SD	1.807	SD	1.247
95% DL/2 (t) UCL	2.233	95% H-Stat (DL/2) UCL	57.67
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.495
		SD in Log Scale	0.373
		Mean in Original Scale	0.237
		SD in Original Scale	0.0806
		95% Percentile Bootstrap UCL	0.282
		95% BCA Bootstrap UCL	0.282
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.806	Data appear Normal at 5% Significance Level	
Theta Star	0.134		
nu star	14.45		
A-D Test Statistic	0.326	Nonparametric Statistics	
5% A-D Critical Value	0.658	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.658	Mean	0.243
5% K-S Critical Value	0.396	SD	0.0879
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0507
		95% KM (t) UCL	0.341
Assuming Gamma Distribution		95% KM (z) UCL	0.326
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.348
Minimum	0.12	95% KM (bootstrap t) UCL	0.335
Maximum	0.34	95% KM (BCA) UCL	0.32
Mean	0.244	95% KM (Percentile Bootstrap) UCL	0.325
Median	0.249	95% KM (Chebyshev) UCL	0.464
SD	0.0805	97.5% KM (Chebyshev) UCL	0.559
k star	5.436	99% KM (Chebyshev) UCL	0.747
Theta star	0.0449		
Nu star	76.11	Potential UCLs to	
AppChi2	57.02	95% KM (t) UCL	0.341
95% Gamma Approximate UCL	0.326	95% KM (Percentile Bootstrap) UCL	0.325
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

ARSENIC

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	3.5	Minimum of Log Data	1.253
Maximum	18.6	Maximum of Log Data	2.923
Mean	9.657	Mean of log Data	2.115
Median	9	SD of log Data	0.614
SD	5.509		
Coefficient of Variation	0.57		
Skewness	0.566		

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.945	Shapiro Wilk Test Statistic	0.963
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	13.7	95% H-UCL	19.72
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	19.6
95% Adjusted-CLT UCL	13.56	97.5% Chebyshev (MVUE) UCL	23.88
95% Modified-t UCL	13.78	99% Chebyshev (MVUE) UCL	32.28
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.054	Data appear Normal at 5% Significance Level	
Theta Star	4.701		
nu star	28.76		
Approximate Chi Square Value (.05)	17.52	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	13.08
Adjusted Chi Square Value	14.94	95% Jackknife UCL	13.7
		95% Standard Bootstrap UCL	12.86
Anderson-Darling Test Statistic	0.204	95% Bootstrap-t UCL	14.35
Anderson-Darling 5% Critical Value	0.711	95% Hall's Bootstrap UCL	13.53
Kolmogorov-Smirnov Test Statistic	0.164	95% Percentile Bootstrap UCL	12.99
Kolmogorov-Smirnov 5% Critical Value	0.313	95% BCA Bootstrap UCL	13.01
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	18.73
		97.5% Chebyshev(Mean, Sd) UCL	22.66
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	30.37
95% Approximate Gamma UCL	15.85		
95% Adjusted Gamma UCL	18.6		
Potential UCL to Use		95% Student's-t UCL	13.7

BENZENE

General Statistics			
Number of Valid Data	7	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	5
		Percent Non-Detects	71.43%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.001	Minimum Detected	-6.908
Maximum Detected	0.008	Maximum Detected	-4.828
Mean of Detected	0.0045	Mean of Detected	-5.868
SD of Detected	0.00495	SD of Detected	1.47
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	0.012	Maximum Non-Detect	-4.423
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00529	Mean	-5.381
SD	0.0021	SD	0.687
95% DL/2 (t) UCL	0.00683	95% H-Stat (DL/2) UCL	0.0412
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.357	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.0045
5% K-S Critical Value	N/A	SD	0.0035
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0035
		95% KM (t) UCL	0.0113
Assuming Gamma Distribution		95% KM (z) UCL	0.0103
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0134
Minimum	N/A	95% KM (bootstrap t) UCL	0.0115
Maximum	N/A	95% KM (BCA) UCL	0.008
Mean	N/A	95% KM (Percentile Bootstrap) UCL	0.008
Median	N/A	95% KM (Chebyshev) UCL	0.0198
SD	N/A	97.5% KM (Chebyshev) UCL	0.0264
k star	N/A	99% KM (Chebyshev) UCL	0.0393
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (BCA) UCL	0.008
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

BENZO(A)ANTHRACENE

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.32	Minimum of Log Data	-1.139
Maximum	17	Maximum of Log Data	2.833
Mean	4.319	Mean of log Data	0.667
Median	1.9	SD of log Data	1.42
SD	5.907		
Coefficient of Variation	1.368		
Skewness	2.113		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.718	Shapiro Wilk Test Statistic	0.96
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	8.657	95% H-UCL	93.27
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.12
95% Adjusted-CLT UCL	9.896	97.5% Chebyshev (MVUE) UCL	18.37
95% Modified-t UCL	8.954	99% Chebyshev (MVUE) UCL	26.73
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.525	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	8.231		
nu star	7.345		
Approximate Chi Square Value (.05)	2.362	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	7.991
Adjusted Chi Square Value	1.601	95% Jackknife UCL	8.657
		95% Standard Bootstrap UCL	7.718
Anderson-Darling Test Statistic	0.317	95% Bootstrap-t UCL	14.97
Anderson-Darling 5% Critical Value	0.736	95% Hall's Bootstrap UCL	20.44
Kolmogorov-Smirnov Test Statistic	0.17	95% Percentile Bootstrap UCL	8.343
Kolmogorov-Smirnov 5% Critical Value	0.323	95% BCA Bootstrap UCL	9.431
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.05
		97.5% Chebyshev(Mean, Sd) UCL	18.26
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	26.53
95% Approximate Gamma UCL	13.43		
95% Adjusted Gamma UCL	19.81		
Potential UCL to Use		95% Approximate Gamma UCL	13.43

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

BENZO(A)PYRENE

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.27	Minimum of Log Data	-1.309
Maximum	14	Maximum of Log Data	2.639
Mean	4.149	Mean of log Data	0.73
Median	2.5	SD of log Data	1.395
SD	4.828		
Coefficient of Variation	1.164		
Skewness	1.706		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.81	Shapiro Wilk Test Statistic	0.972
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.695	95% H-UCL	87.34
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.5
95% Adjusted-CLT UCL	8.408	97.5% Chebyshev (MVUE) UCL	18.85
95% Modified-t UCL	7.891	99% Chebyshev (MVUE) UCL	27.4
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.581	Data appear Normal at 5% Significance Level	
Theta Star	7.142		
nu star	8.132		
Approximate Chi Square Value (.05)	2.812	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	7.15
Adjusted Chi Square Value	1.958	95% Jackknife UCL	7.695
		95% Standard Bootstrap UCL	6.952
Anderson-Darling Test Statistic	0.202	95% Bootstrap-t UCL	11.04
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	18.43
Kolmogorov-Smirnov Test Statistic	0.159	95% Percentile Bootstrap UCL	7.186
Kolmogorov-Smirnov 5% Critical Value	0.321	95% BCA Bootstrap UCL	8.067
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	12.1
		97.5% Chebyshev(Mean, Sd) UCL	15.55
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	22.31
95% Approximate Gamma UCL	12		
95% Adjusted Gamma UCL	17.23		
Potential UCL to Use		95% Student's-t UCL	7.695

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.45	Minimum of Log Data	-0.799
Maximum	22	Maximum of Log Data	3.091
Mean	6.436	Mean of log Data	1.228
Median	4.6	SD of log Data	1.319
SD	7.459		
Coefficient of Variation	1.159		
Skewness	1.858		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.786	Shapiro Wilk Test Statistic	0.969
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	11.91	95% H-UCL	98.52
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	21.37
95% Adjusted-CLT UCL	13.19	97.5% Chebyshev (MVUE) UCL	27.68
95% Modified-t UCL	12.24	99% Chebyshev (MVUE) UCL	40.08
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.621	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	10.37		
nu star	8.687		
Approximate Chi Square Value (.05)	3.139	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	11.07
Adjusted Chi Square Value	2.222	95% Jackknife UCL	11.91
		95% Standard Bootstrap UCL	10.66
Anderson-Darling Test Statistic	0.243	95% Bootstrap-t UCL	18.05
Anderson-Darling 5% Critical Value	0.73	95% Hall's Bootstrap UCL	29.15
Kolmogorov-Smirnov Test Statistic	0.19	95% Percentile Bootstrap UCL	11.26
Kolmogorov-Smirnov 5% Critical Value	0.321	95% BCA Bootstrap UCL	12.81
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	18.72
		97.5% Chebyshev(Mean, Sd) UCL	24.04
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	34.49
95% Approximate Gamma UCL	17.81		
95% Adjusted Gamma UCL	25.16		
Potential UCL to Use		95% Approximate Gamma UCL	17.81

BENZO(G,H,I)PERYLENE

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.23	Minimum of Log Data	-1.47
Maximum	8.7	Maximum of Log Data	2.163
Mean	3.261	Mean of log Data	0.742
Median	2.7	SD of log Data	1.175
SD	2.859		
Coefficient of Variation	0.877		
Skewness	1.25		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.902	Shapiro Wilk Test Statistic	0.929
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5.361	95% H-UCL	31.49
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	10.71
95% Adjusted-CLT UCL	5.584	97.5% Chebyshev (MVUE) UCL	13.77
95% Modified-t UCL	5.447	99% Chebyshev (MVUE) UCL	19.77
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.825	Data appear Normal at 5% Significance Level	
Theta Star	3.955		
nu star	11.55		
Approximate Chi Square Value (.05)	4.929	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	5.039
Adjusted Chi Square Value	3.709	95% Jackknife UCL	5.361
		95% Standard Bootstrap UCL	4.901
Anderson-Darling Test Statistic	0.188	95% Bootstrap-t UCL	6.813
Anderson-Darling 5% Critical Value	0.724	95% Hall's Bootstrap UCL	15.05
Kolmogorov-Smirnov Test Statistic	0.157	95% Percentile Bootstrap UCL	5.043
Kolmogorov-Smirnov 5% Critical Value	0.318	95% BCA Bootstrap UCL	5.447
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	7.972
		97.5% Chebyshev(Mean, Sd) UCL	10.01
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	14.01
95% Approximate Gamma UCL	7.639		
95% Adjusted Gamma UCL	10.15		
Potential UCL to Use		95% Student's-t UCL	5.361

BENZO(K)FLUORANTHENE

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.14	Minimum of Log Data	-1.966
Maximum	6.8	Maximum of Log Data	1.917
Mean	1.923	Mean of log Data	0.00548
Median	1.6	SD of log Data	1.318
SD	2.307		
Coefficient of Variation	1.2		
Skewness	1.967		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.764	Shapiro Wilk Test Statistic	0.963
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	3.617	95% H-UCL	28.9
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	6.288
95% Adjusted-CLT UCL	4.05	97.5% Chebyshev (MVUE) UCL	8.145
95% Modified-t UCL	3.725	99% Chebyshev (MVUE) UCL	11.79
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.61	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.15		
nu star	8.546		
Approximate Chi Square Value (.05)	3.055	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	3.357
Adjusted Chi Square Value	2.154	95% Jackknife UCL	3.617
		95% Standard Bootstrap UCL	3.287
Anderson-Darling Test Statistic	0.282	95% Bootstrap-t UCL	5.266
Anderson-Darling 5% Critical Value	0.731	95% Hall's Bootstrap UCL	9.412
Kolmogorov-Smirnov Test Statistic	0.201	95% Percentile Bootstrap UCL	3.437
Kolmogorov-Smirnov 5% Critical Value	0.321	95% BCA Bootstrap UCL	3.857
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	5.723
		97.5% Chebyshev(Mean, Sd) UCL	7.368
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	10.6
95% Approximate Gamma UCL	5.379		
95% Adjusted Gamma UCL	7.63		
Potential UCL to Use		95% Approximate Gamma UCL	5.379

CHROMIUM

General Statistics

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Number of Valid Observations	7	Number of Distinct Observations	7

Raw Statistics		Log-transformed Statistics	
Minimum	11.4	Minimum of Log Data	2.434
Maximum	33.9	Maximum of Log Data	3.523
Mean	19.77	Mean of log Data	2.905
Median	15.9	SD of log Data	0.422
SD	8.824		
Coefficient of Variation	0.446		
Skewness	0.918		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.861	Shapiro Wilk Test Statistic	0.911
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	26.25	95% H-UCL	29.73
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	33.44
95% Adjusted-CLT UCL	26.49	97.5% Chebyshev (MVUE) UCL	39.39
95% Modified-t UCL	26.45	99% Chebyshev (MVUE) UCL	51.07
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.79	Data appear Normal at 5% Significance Level	
Theta Star	5.216		
nu star	53.07		
Approximate Chi Square Value (.05)	37.33	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	25.26
Adjusted Chi Square Value	33.39	95% Jackknife UCL	26.25
		95% Standard Bootstrap UCL	24.89
Anderson-Darling Test Statistic	0.419	95% Bootstrap-t UCL	31.14
Anderson-Darling 5% Critical Value	0.709	95% Hall's Bootstrap UCL	31.63
Kolmogorov-Smirnov Test Statistic	0.227	95% Percentile Bootstrap UCL	25.03
Kolmogorov-Smirnov 5% Critical Value	0.313	95% BCA Bootstrap UCL	25.76
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	34.31
		97.5% Chebyshev(Mean, Sd) UCL	40.6
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	52.96
95% Approximate Gamma UCL	28.1		
95% Adjusted Gamma UCL	31.42		
Potential UCL to Use		95% Student's-t UCL	26.25

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	7	Number of Detected Data	6

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Number of Distinct Detected Data	6	Number of Non-Detect Data	1
		Percent Non-Detects	14.29%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.26	Minimum Detected	-1.347
Maximum Detected	3	Maximum Detected	1.099
Mean of Detected	1.215	Mean of Detected	-0.124
SD of Detected	0.993	SD of Detected	0.929
Minimum Non-Detect	0.37	Minimum Non-Detect	-0.994
Maximum Non-Detect	0.37	Maximum Non-Detect	-0.994

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.87	Shapiro Wilk Test Statistic	0.914
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.068	Mean	-0.347
SD	0.986	SD	1.034
95% DL/2 (t) UCL	1.792	95% H-Stat (DL/2) UCL	6.27
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.718	Mean in Log Scale	-0.268
SD	0.773	SD in Log Scale	0.93
95% MLE (t) UCL	2.285	Mean in Original Scale	1.087
95% MLE (Tiku) UCL	2.455	SD in Original Scale	0.967
		95% Percentile Bootstrap UCL	1.714
		95% BCA Bootstrap UCL	1.847
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.97	Data appear Normal at 5% Significance Level	
Theta Star	1.253		
nu star	11.64		
A-D Test Statistic	0.341	Nonparametric Statistics	
5% A-D Critical Value	0.706	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.706	Mean	1.084
5% K-S Critical Value	0.337	SD	0.899
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.372
		95% KM (t) UCL	1.807
Assuming Gamma Distribution		95% KM (z) UCL	1.696
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.797
Minimum	0.26	95% KM (bootstrap t) UCL	2.162
Maximum	3	95% KM (BCA) UCL	1.743
Mean	1.111	95% KM (Percentile Bootstrap) UCL	1.729
Median	1.1	95% KM (Chebyshev) UCL	2.706
SD	0.947	97.5% KM (Chebyshev) UCL	3.408
k star	1.09	99% KM (Chebyshev) UCL	4.787
Theta star	1.019		
Nu star	15.26	Potential UCLs to	
AppChi2	7.445	95% KM (t) UCL	1.807

95% Gamma Approximate UCL	2.278	95% KM (Percentile Bootstrap) UCL	1.729
95% Adjusted Gamma UCL	2.887		

Note: DL/2 is not a recommended method.

HEXACHLOROBENZENE

General Statistics

Number of Valid Data	7	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	4
		Percent Non-Detects	57.14%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.038	Minimum Detected	-3.27
Maximum Detected	5.4	Maximum Detected	1.686
Mean of Detected	1.903	Mean of Detected	-0.964
SD of Detected	3.031	SD of Detected	2.496
Minimum Non-Detect	0.39	Minimum Non-Detect	-0.942
Maximum Non-Detect	10	Maximum Non-Detect	2.303

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.782	Shapiro Wilk Test Statistic	0.986
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.615	Mean	-0.877
SD	2.453	SD	1.84
95% DL/2 (t) UCL	3.416	95% H-Stat (DL/2) UCL	219

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.645
		SD in Log Scale	1.673
		Mean in Original Scale	0.896
		SD in Original Scale	1.988
		95% Percentile Bootstrap UCL	2.376
		95% BCA Bootstrap UCL	3.135

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		
nu star	N/A		

A-D Test Statistic	0.332	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	1.028
5% K-S Critical Value	N/A	SD	1.958

Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.981
		95% KM (t) UCL	2.935
Assuming Gamma Distribution		95% KM (z) UCL	2.642
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.768
Minimum	N/A	95% KM (bootstrap t) UCL	16.8
Maximum	N/A	95% KM (BCA) UCL	5.4
Mean	N/A	95% KM (Percentile Bootstrap) UCL	5.4
Median	N/A	95% KM (Chebyshev) UCL	5.305
SD	N/A	97.5% KM (Chebyshev) UCL	7.155
k star	N/A	99% KM (Chebyshev) UCL	10.79
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	95% KM (t) UCL	2.935
95% Gamma Approximate UCL	N/A	95% KM (Percentile Bootstrap) UCL	5.4
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Highly Chlorinated

General Statistics

Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.75	Minimum of Log Data	-0.288
Maximum	120	Maximum of Log Data	4.787
Mean	23.09	Mean of log Data	1.716
Median	4.45	SD of log Data	1.68
SD	47.51		
Coefficient of Variation	2.058		
Skewness	2.441		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.536	Shapiro Wilk Test Statistic	0.876
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	62.18	95% H-UCL	3076
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	58.22
95% Adjusted-CLT UCL	75.65	97.5% Chebyshev (MVUE) UCL	76.69
95% Modified-t UCL	65.4	99% Chebyshev (MVUE) UCL	113
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.338	Data appear Lognormal at 5% Significance Level	
Theta Star	68.4		
nu star	4.051		

Approximate Chi Square Value (.05)	0.742	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	55
Adjusted Chi Square Value	0.364	95% Jackknife UCL	62.18
		95% Standard Bootstrap UCL	51.73
Anderson-Darling Test Statistic	0.908	95% Bootstrap-t UCL	693.5
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	500.3
Kolmogorov-Smirnov Test Statistic	0.414	95% Percentile Bootstrap UCL	61.03
Kolmogorov-Smirnov 5% Critical Value	0.351	95% BCA Bootstrap UCL	62.52
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	107.6
		97.5% Chebyshev(Mean, Sd) UCL	144.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	216.1
95% Approximate Gamma UCL	126.1		
95% Adjusted Gamma UCL	257.2		
Potential UCL to Use		99% Chebyshev (MVUE) UCL	113

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.18	Minimum of Log Data	-1.715
Maximum	7.9	Maximum of Log Data	2.067
Mean	2.469	Mean of log Data	0.382
Median	2.3	SD of log Data	1.219
SD	2.597		
Coefficient of Variation	1.052		
Skewness	1.851		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.795	Shapiro Wilk Test Statistic	0.955
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	4.376	95% H-UCL	26.61
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	7.953
95% Adjusted-CLT UCL	4.817	97.5% Chebyshev (MVUE) UCL	10.25
95% Modified-t UCL	4.49	99% Chebyshev (MVUE) UCL	14.75
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.721	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.425		
nu star	10.09		
Approximate Chi Square Value (.05)	3.998	Nonparametric Statistics	

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Adjusted Level of Significance	0.0158	95% CLT UCL	4.083
Adjusted Chi Square Value	2.927	95% Jackknife UCL	4.376
		95% Standard Bootstrap UCL	3.968
Anderson-Darling Test Statistic	0.259	95% Bootstrap-t UCL	5.892
Anderson-Darling 5% Critical Value	0.726	95% Hall's Bootstrap UCL	10.61
Kolmogorov-Smirnov Test Statistic	0.182	95% Percentile Bootstrap UCL	4.094
Kolmogorov-Smirnov 5% Critical Value	0.319	95% BCA Bootstrap UCL	4.601
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	6.747
		97.5% Chebyshev(Mean, Sd) UCL	8.598
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	12.23
95% Approximate Gamma UCL	6.23		
95% Adjusted Gamma UCL	8.508		
Potential UCL to Use		95% Approximate Gamma UCL	6.23

IRON

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	9860	Minimum of Log Data	9.196
Maximum	27700	Maximum of Log Data	10.23
Mean	18180	Mean of log Data	9.738
Median	15200	SD of log Data	0.407
SD	7229		
Coefficient of Variation	0.398		
Skewness	0.368		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.896	Shapiro Wilk Test Statistic	0.922
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	23490	95% H-UCL	26937
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	30419
95% Adjusted-CLT UCL	23081	97.5% Chebyshev (MVUE) UCL	35711
95% Modified-t UCL	23553	99% Chebyshev (MVUE) UCL	46106
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	4.28	Data appear Normal at 5% Significance Level	
Theta Star	4248		
nu star	59.91		
Approximate Chi Square Value (.05)	43.12	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	22675

Adjusted Chi Square Value	38.85	95% Jackknife UCL	23490
		95% Standard Bootstrap UCL	22509
Anderson-Darling Test Statistic	0.349	95% Bootstrap-t UCL	25057
Anderson-Darling 5% Critical Value	0.709	95% Hall's Bootstrap UCL	22553
Kolmogorov-Smirnov Test Statistic	0.206	95% Percentile Bootstrap UCL	22380
Kolmogorov-Smirnov 5% Critical Value	0.313	95% BCA Bootstrap UCL	22386
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	30091
		97.5% Chebyshev(Mean, Sd) UCL	35244
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	45368
95% Approximate Gamma UCL	25264		
95% Adjusted Gamma UCL	28036		
Potential UCL to Use		95% Student's-t UCL	23490

MANGANESE

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	238	Minimum of Log Data	5.472
Maximum	353	Maximum of Log Data	5.866
Mean	298.1	Mean of log Data	5.687
Median	305	SD of log Data	0.159
SD	46.45		
Coefficient of Variation	0.156		
Skewness	-0.128		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.9	Shapiro Wilk Test Statistic	0.896
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	332.3	95% H-UCL	338.7
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	376.4
95% Adjusted-CLT UCL	326.1	97.5% Chebyshev (MVUE) UCL	410.2
95% Modified-t UCL	332.1	99% Chebyshev (MVUE) UCL	476.7
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	26.91	Data appear Normal at 5% Significance Level	
Theta Star	11.08		
nu star	376.8		
Approximate Chi Square Value (.05)	332.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	327
Adjusted Chi Square Value	320.2	95% Jackknife UCL	332.3

		95% Standard Bootstrap UCL	324.4
Anderson-Darling Test Statistic	0.382	95% Bootstrap-t UCL	331.5
Anderson-Darling 5% Critical Value	0.708	95% Hall's Bootstrap UCL	328.5
Kolmogorov-Smirnov Test Statistic	0.19	95% Percentile Bootstrap UCL	323.9
Kolmogorov-Smirnov 5% Critical Value	0.311	95% BCA Bootstrap UCL	324
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	374.7
		97.5% Chebyshev(Mean, Sd) UCL	407.8
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	472.8
95% Approximate Gamma UCL	337.6		
95% Adjusted Gamma UCL	350.8		
Potential UCL to Use		95% Student's-t UCL	332.3

MERCURY

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.53	Minimum of Log Data	-0.635
Maximum	3.5	Maximum of Log Data	1.253
Mean	1.496	Mean of log Data	0.171
Median	1	SD of log Data	0.711
SD	1.164		
Coefficient of Variation	0.779		
Skewness	1.235		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.788	Shapiro Wilk Test Statistic	0.895
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	2.351	95% H-UCL	3.58
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	3.194
95% Adjusted-CLT UCL	2.439	97.5% Chebyshev (MVUE) UCL	3.943
95% Modified-t UCL	2.385	99% Chebyshev (MVUE) UCL	5.412
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	1.415	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.057		
nu star	19.81		
Approximate Chi Square Value (.05)	10.71	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	2.22
Adjusted Chi Square Value	8.766	95% Jackknife UCL	2.351
		95% Standard Bootstrap UCL	2.171

Anderson-Darling Test Statistic	0.568	95% Bootstrap-t UCL	4.991
Anderson-Darling 5% Critical Value	0.714	95% Hall's Bootstrap UCL	8.95
Kolmogorov-Smirnov Test Statistic	0.301	95% Percentile Bootstrap UCL	2.181
Kolmogorov-Smirnov 5% Critical Value	0.315	95% BCA Bootstrap UCL	2.307
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	3.414
		97.5% Chebyshev(Mean, Sd) UCL	4.244
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	5.875
95% Approximate Gamma UCL	2.766		
95% Adjusted Gamma UCL	3.381		
Potential UCL to Use		95% Approximate Gamma UCL	2.766

METHYL MERCURY

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	0.39	Minimum of Log Data	-0.942
Maximum	25	Maximum of Log Data	3.219
Mean	5.011	Mean of log Data	0.432
Median	0.82	SD of log Data	1.539
SD	9.078		
Coefficient of Variation	1.811		
Skewness	2.367		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.601	Shapiro Wilk Test Statistic	0.844
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	11.68	95% H-UCL	141.2
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	13.3
95% Adjusted-CLT UCL	13.93	97.5% Chebyshev (MVUE) UCL	17.4
95% Modified-t UCL	12.19	99% Chebyshev (MVUE) UCL	25.44
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.4	Data appear Lognormal at 5% Significance Level	
Theta Star	12.54		
nu star	5.597		
Approximate Chi Square Value (.05)	1.438	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	10.65
Adjusted Chi Square Value	0.897	95% Jackknife UCL	11.68
		95% Standard Bootstrap UCL	10.21
Anderson-Darling Test Statistic	0.852	95% Bootstrap-t UCL	142.5
Anderson-Darling 5% Critical Value	0.75	95% Hall's Bootstrap UCL	61.44
Kolmogorov-Smirnov Test Statistic	0.354	95% Percentile Bootstrap UCL	11.17
Kolmogorov-Smirnov 5% Critical Value	0.327	95% BCA Bootstrap UCL	14.54
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	19.97
		97.5% Chebyshev(Mean, Sd) UCL	26.44
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	39.15
95% Approximate Gamma UCL	19.51		
95% Adjusted Gamma UCL	31.29		
Potential UCL to Use		99% Chebyshev (MVUE) UCL	25.44
Recommended UCL exceeds the maximum observation			

Total PCBs

General Statistics			
Number of Valid Observations	6	Number of Distinct Observations	6
Raw Statistics		Log-transformed Statistics	
Minimum	0.75	Minimum of Log Data	-0.288
Maximum	120	Maximum of Log Data	4.787
Mean	23.09	Mean of log Data	1.716
Median	4.45	SD of log Data	1.68
SD	47.51		
Coefficient of Variation	2.058		
Skewness	2.441		

Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 6 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.536	Shapiro Wilk Test Statistic	0.876
Shapiro Wilk Critical Value	0.788	Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	62.18	95% H-UCL	3076
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	58.22
95% Adjusted-CLT UCL	75.65	97.5% Chebyshev (MVUE) UCL	76.69
95% Modified-t UCL	65.4	99% Chebyshev (MVUE) UCL	113
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.338	Data appear Lognormal at 5% Significance Level	
Theta Star	68.4		
nu star	4.051		
Approximate Chi Square Value (.05)	0.742	Nonparametric Statistics	
Adjusted Level of Significance	0.0122	95% CLT UCL	55
Adjusted Chi Square Value	0.364	95% Jackknife UCL	62.18
		95% Standard Bootstrap UCL	52.57
Anderson-Darling Test Statistic	0.908	95% Bootstrap-t UCL	696.7
Anderson-Darling 5% Critical Value	0.743	95% Hall's Bootstrap UCL	477.7
Kolmogorov-Smirnov Test Statistic	0.414	95% Percentile Bootstrap UCL	61.39
Kolmogorov-Smirnov 5% Critical Value	0.351	95% BCA Bootstrap UCL	81.12
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	107.6
		97.5% Chebyshev(Mean, Sd) UCL	144.2
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	216.1
95% Approximate Gamma UCL	126.1		
95% Adjusted Gamma UCL	257.2		
Potential UCL to Use		99% Chebyshev (MVUE) UCL	113

VANADIUM

General Statistics			
Number of Valid Observations	7	Number of Distinct Observations	7
Raw Statistics		Log-transformed Statistics	
Minimum	7.5	Minimum of Log Data	2.015
Maximum	16.4	Maximum of Log Data	2.797
Mean	9.957	Mean of log Data	2.267
Median	9.2	SD of log Data	0.257
SD	2.995		
Coefficient of Variation	0.301		
Skewness	2.111		

Warning: A sample size of 'n' = 7 may not adequate enough to compute meaningful and reliable test statistics and estimates!

It is suggested to collect at least 8 to 10 observations using these statistical methods!
If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

Warning: There are only 7 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.753	Shapiro Wilk Test Statistic	0.838
Shapiro Wilk Critical Value	0.803	Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	

APPENDIX K, TABLE 23
RAGS 3.23 - CHLOROBENZENE HOT SPOT AREA - SURFACE SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

95% Student's-t UCL	12.16	95% H-UCL	12.44
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.14
95% Adjusted-CLT UCL	12.78	97.5% Chebyshev (MVUE) UCL	15.96
95% Modified-t UCL	12.31	99% Chebyshev (MVUE) UCL	19.54
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	9.28	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.073		
nu star	129.9		
Approximate Chi Square Value (.05)	104.6	Nonparametric Statistics	
Adjusted Level of Significance	0.0158	95% CLT UCL	11.82
Adjusted Chi Square Value	97.73	95% Jackknife UCL	12.16
		95% Standard Bootstrap UCL	11.72
Anderson-Darling Test Statistic	0.649	95% Bootstrap-t UCL	14.89
Anderson-Darling 5% Critical Value	0.707	95% Hall's Bootstrap UCL	19.6
Kolmogorov-Smirnov Test Statistic	0.27	95% Percentile Bootstrap UCL	11.97
Kolmogorov-Smirnov 5% Critical Value	0.312	95% BCA Bootstrap UCL	12.4
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	14.89
		97.5% Chebyshev(Mean, Sd) UCL	17.03
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	21.22
95% Approximate Gamma UCL	12.37		
95% Adjusted Gamma UCL	13.24		
Potential UCL to Use		95% Approximate Gamma UCL	12.37

APPENDIX K, TABLE 24
RAGS 3.24 - CHLOROBENZENE HOT SPOT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options
From File C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

1,2,4-TRICHLOROBENZENE

General Statistics

Number of Valid Data	13	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	5
		Percent Non-Detects	38.46%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.042	Minimum Detected	-3.17
Maximum Detected	3000	Maximum Detected	8.006
Mean of Detected	377.6	Mean of Detected	0.581
SD of Detected	1060	SD of Detected	3.516
Minimum Non-Detect	0.37	Minimum Non-Detect	-0.994
Maximum Non-Detect	10	Maximum Non-Detect	2.303

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	84.62%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.422	Shapiro Wilk Test Statistic	0.873
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	232.8	Mean	-0.0199
SD	831.4	SD	2.922
95% DL/2 (t) UCL	643.8	95% H-Stat (DL/2) UCL	20949

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.55
		SD in Log Scale	3.086
		Mean in Original Scale	232.4
		SD in Original Scale	831.6
		95% Percentile Bootstrap UCL	692.8
		95% BCA Bootstrap UCL	924.6

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	0.174	Data appear Lognormal at 5% Significance Level
Theta Star	2176	
nu star	2.777	

A-D Test Statistic	1.362	Nonparametric Statistics

5% A-D Critical Value	0.856	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.856	Mean	232.5
5% K-S Critical Value	0.326	SD	798.9
Data not Gamma Distributed at 5% Significance Level		SE of Mean	236.9
		95% KM (t) UCL	654.7
Assuming Gamma Distribution		95% KM (z) UCL	622.1
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	643.5
Minimum	1.00E-09	95% KM (bootstrap t) UCL	364843
Maximum	3000	95% KM (BCA) UCL	693.9
Mean	246.3	95% KM (Percentile Bootstrap) UCL	692.9
Median	0.35	95% KM (Chebyshev) UCL	1265
SD	828.9	97.5% KM (Chebyshev) UCL	1712
k star	0.109	99% KM (Chebyshev) UCL	2589
Theta star	2253		
Nu star	2.843	Potential UCLs to	
AppChi2	0.327	99% KM (Chebyshev) UCL	2589
95% Gamma Approximate UCL	2139		
95% Adjusted Gamma UCL	2921		

Note: DL/2 is not a recommended method.

1,2-DICHLOROBENZENE

General Statistics			
Number of Valid Data	13	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	4
		Percent Non-Detects	30.77%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.05	Minimum Detected	-2.996
Maximum Detected	1400	Maximum Detected	7.244
Mean of Detected	157	Mean of Detected	0.166
SD of Detected	466.1	SD of Detected	3.099
Minimum Non-Detect	0.39	Minimum Non-Detect	-0.942
Maximum Non-Detect	10	Maximum Non-Detect	2.303
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	92.31%

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.394	Shapiro Wilk Test Statistic	0.838
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	109.1	Mean	-0.133
SD	387.9	SD	2.696
95% DL/2 (t) UCL	300.9	95% H-Stat (DL/2) UCL	3075
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.467

		SD in Log Scale	2.737
		Mean in Original Scale	108.8
		SD in Original Scale	388
		95% Percentile Bootstrap UCL	323.8
		95% BCA Bootstrap UCL	432.3
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.178	Data appear Lognormal at 5% Significance Level	
Theta Star	881		
nu star	3.208		
A-D Test Statistic	1.665	Nonparametric Statistics	
5% A-D Critical Value	0.861	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.861	Mean	108.8
5% K-S Critical Value	0.31	SD	372.7
Data not Gamma Distributed at 5% Significance Level		SE of Mean	109.6
		95% KM (t) UCL	304.3
Assuming Gamma Distribution		95% KM (z) UCL	289.2
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	300.6
Minimum	1.00E-09	95% KM (bootstrap t) UCL	26721
Maximum	1400	95% KM (BCA) UCL	324.4
Mean	111.5	95% KM (Percentile Bootstrap) UCL	323.7
Median	0.38	95% KM (Chebyshev) UCL	586.8
SD	387.3	97.5% KM (Chebyshev) UCL	793.6
k star	0.121	99% KM (Chebyshev) UCL	1200
Theta star	923.3		
Nu star	3.14	Potential UCLs to	
AppChi2	0.415	99% KM (Chebyshev) UCL	1200
95% Gamma Approximate UCL	843.6		
95% Adjusted Gamma UCL	1144		

Note: DL/2 is not a recommended method.

1,3-DICHLOROBENZENE

General Statistics			
Number of Valid Data	13	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	11
		Percent Non-Detects	84.62%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.35	Minimum Detected	-1.05
Maximum Detected	63	Maximum Detected	4.143
Mean of Detected	31.68	Mean of Detected	1.547
SD of Detected	44.3	SD of Detected	3.672
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	10	Maximum Non-Detect	2.303
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	92.31%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

APPENDIX K, TABLE 24
RAGS 3.24 - CHLOROBENZENE HOT SPOT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5.406	Mean	-0.904
SD	17.36	SD	1.764
95% DL/2 (t) UCL	13.99	95% H-Stat (DL/2) UCL	8.823
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.358	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	5.169
5% K-S Critical Value	N/A	SD	16.69
Data not Gamma Distributed at 5% Significance Level		SE of Mean	6.548
		95% KM (t) UCL	16.84
Assuming Gamma Distribution		95% KM (z) UCL	15.94
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	47.74
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	63
Mean	N/A	95% KM (Percentile Bootstrap) UCL	63
Median	N/A	95% KM (Chebyshev) UCL	33.71
SD	N/A	97.5% KM (Chebyshev) UCL	46.06
k star	N/A	99% KM (Chebyshev) UCL	70.32
Theta star	N/A		
Nu star	N/A	Potential UCLs to	
AppChi2	N/A	99% KM (Chebyshev) UCL	70.32
95% Gamma Approximate UCL	N/A		
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

1,4-DICHLOROBENZENE

General Statistics			
Number of Valid Data	13	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	3
		Percent Non-Detects	23.08%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.068	Minimum Detected	-2.688

APPENDIX K, TABLE 24
RAGS 3.24 - CHLOROBENZENE HOT SPOT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Maximum Detected	2000	Maximum Detected	7.601
Mean of Detected	202	Mean of Detected	0.106
SD of Detected	631.8	SD of Detected	3.143
Minimum Non-Detect	0.39	Minimum Non-Detect	-0.942
Maximum Non-Detect	10	Maximum Non-Detect	2.303
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	84.62%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.37	Shapiro Wilk Test Statistic	0.82
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	155.8	Mean	-0.0442
SD	554.1	SD	2.841
95% DL/2 (t) UCL	429.7	95% H-Stat (DL/2) UCL	6560
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.383
		SD in Log Scale	2.896
		Mean in Original Scale	155.4
		SD in Original Scale	554.2
		95% Percentile Bootstrap UCL	462.6
		95% BCA Bootstrap UCL	616.8
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.17	Data do not follow a Discernable Distribution (0.05)	
Theta Star	1186		
nu star	3.406		
A-D Test Statistic	1.885	Nonparametric Statistics	
5% A-D Critical Value	0.872	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.872	Mean	155.4
5% K-S Critical Value	0.296	SD	532.5
Data not Gamma Distributed at 5% Significance Level		SE of Mean	155.7
		95% KM (t) UCL	432.9
Assuming Gamma Distribution		95% KM (z) UCL	411.5
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	429.4
Minimum	1.00E-09	95% KM (bootstrap t) UCL	46223
Maximum	2000	95% KM (BCA) UCL	463
Mean	155.4	95% KM (Percentile Bootstrap) UCL	462.4
Median	0.2	95% KM (Chebyshev) UCL	834
SD	554.3	97.5% KM (Chebyshev) UCL	1128
k star	0.117	99% KM (Chebyshev) UCL	1704
Theta star	1332		
Nu star	3.033	Potential UCLs to	
AppChi2	0.382	99% KM (Chebyshev) UCL	1704
95% Gamma Approximate UCL	1233		
95% Adjusted Gamma UCL	1677		
Note: DL/2 is not a recommended method.			

ACENAPHTHYLENE

General Statistics			
Number of Valid Data	13	Number of Detected Data	6

APPENDIX K, TABLE 24
RAGS 3.24 - CHLOROBENZENE HOT SPOT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Number of Distinct Detected Data	6	Number of Non-Detect Data	7
		Percent Non-Detects	53.85%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.049	Minimum Detected	-3.016
Maximum Detected	0.34	Maximum Detected	-1.079
Mean of Detected	0.18	Mean of Detected	-1.968
SD of Detected	0.125	SD of Detected	0.823
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	12	Maximum Non-Detect	2.485

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	13
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.895	Shapiro Wilk Test Statistic	0.905
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.002	Mean	-1.286
SD	2.008	SD	1.436
95% DL/2 (t) UCL	1.995	95% H-Stat (DL/2) UCL	15.75

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.968
		SD in Log Scale	0.562
		Mean in Original Scale	0.16
		SD in Original Scale	0.087
		95% Percentile Bootstrap UCL	0.2
		95% BCA Bootstrap UCL	0.202

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.177	Data appear Normal at 5% Significance Level	
Theta Star	0.153		
nu star	14.13		
A-D Test Statistic	0.334	Nonparametric Statistics	
5% A-D Critical Value	0.704	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.704	Mean	0.18
5% K-S Critical Value	0.336	SD	0.114
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.051
		95% KM (t) UCL	0.271
Assuming Gamma Distribution		95% KM (z) UCL	0.264
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.276
Minimum	0.049	95% KM (bootstrap t) UCL	0.314
Maximum	0.34	95% KM (BCA) UCL	0.263
Mean	0.181	95% KM (Percentile Bootstrap) UCL	0.263
Median	0.183	95% KM (Chebyshev) UCL	0.402
SD	0.0863	97.5% KM (Chebyshev) UCL	0.498
k star	3.11	99% KM (Chebyshev) UCL	0.687

Theta star	0.0583		
Nu star	80.86	Potential UCLs to	
AppChi2	61.14	95% KM (t) UCL	0.271
95% Gamma Approximate UCL	0.24	95% KM (Percentile Bootstrap) UCL	0.263
95% Adjusted Gamma UCL	0.25		

Note: DL/2 is not a recommended method.

ARSENIC

General Statistics

Number of Valid Observations	13	Number of Distinct Observations	10
Raw Statistics		Log-transformed Statistics	
Minimum	3	Minimum of Log Data	1.099
Maximum	18.6	Maximum of Log Data	2.923
Mean	7.362	Mean of log Data	1.817
Median	6	SD of log Data	0.609
SD	4.865		
Coefficient of Variation	0.661		
Skewness	1.275		

Relevant UCL Statistics

Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.848	Shapiro Wilk Test Statistic	0.929
Shapiro Wilk Critical Value	0.866	Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	9.766	95% H-UCL	11
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	12.85
95% Adjusted-CLT UCL	10.09	97.5% Chebyshev (MVUE) UCL	15.26
95% Modified-t UCL	9.846	99% Chebyshev (MVUE) UCL	19.99

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	2.316	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.178		
nu star	60.22		
Approximate Chi Square Value (.05)	43.38	Nonparametric Statistics	
Adjusted Level of Significance	0.0301	95% CLT UCL	9.581
Adjusted Chi Square Value	41.35	95% Jackknife UCL	9.766
		95% Standard Bootstrap UCL	9.528
Anderson-Darling Test Statistic	0.466	95% Bootstrap-t UCL	10.77
Anderson-Darling 5% Critical Value	0.739	95% Hall's Bootstrap UCL	10.5
Kolmogorov-Smirnov Test Statistic	0.171	95% Percentile Bootstrap UCL	9.615
Kolmogorov-Smirnov 5% Critical Value	0.238	95% BCA Bootstrap UCL	9.885
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	13.24
		97.5% Chebyshev(Mean, Sd) UCL	15.79
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	20.79
95% Approximate Gamma UCL	10.22		
95% Adjusted Gamma UCL	10.72		

Potential UCL to Use		95% Approximate Gamma UCL	10.22

BENZENE

General Statistics

Number of Valid Data	13	Number of Detected Data	6
Number of Distinct Detected Data	5	Number of Non-Detect Data	7
		Percent Non-Detects	53.85%

APPENDIX K, TABLE 24
RAGS 3.24 - CHLOROBENZENE HOT SPOT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.001	Minimum Detected	-6.908
Maximum Detected	2.4	Maximum Detected	0.875
Mean of Detected	0.412	Mean of Detected	-4.348
SD of Detected	0.974	SD of Detected	2.948
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	0.012	Maximum Non-Detect	-4.423

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	84.62%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.513	Shapiro Wilk Test Statistic	0.853
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.193	Mean	-4.788
SD	0.663	SD	1.95
95% DL/2 (t) UCL	0.521	95% H-Stat (DL/2) UCL	0.657
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-5.168
		SD in Log Scale	2.313
		Mean in Original Scale	0.194
		SD in Original Scale	0.663
		95% Percentile Bootstrap UCL	0.56
		95% BCA Bootstrap UCL	0.929
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.217	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	1.904		
nu star	2.598		
A-D Test Statistic	0.869	Nonparametric Statistics	
5% A-D Critical Value	0.799	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.799	Mean	0.192
5% K-S Critical Value	0.363	SD	0.638
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.194
		95% KM (t) UCL	0.537
Assuming Gamma Distribution		95% KM (z) UCL	0.511
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.52
Minimum	1.00E-09	95% KM (bootstrap t) UCL	29.14
Maximum	2.4	95% KM (BCA) UCL	0.561
Mean	0.389	95% KM (Percentile Bootstrap) UCL	0.558
Median	0.11	95% KM (Chebyshev) UCL	1.036
SD	0.649	97.5% KM (Chebyshev) UCL	1.402
k star	0.23	99% KM (Chebyshev) UCL	2.119
Theta star	1.693		
Nu star	5.972	Potential UCLs to	

AppChi2	1.625	95% KM (t) UCL	0.537
95% Gamma Approximate UCL	1.428		
95% Adjusted Gamma UCL	1.752		

Note: DL/2 is not a recommended method.

BENZO(A)ANTHRACENE

General Statistics			
Number of Valid Observations	13	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	0.085	Minimum of Log Data	-2.465
Maximum	17	Maximum of Log Data	2.833
Mean	3.839	Mean of log Data	0.241
Median	0.83	SD of log Data	1.576
SD	6.049		
Coefficient of Variation	1.576		
Skewness	1.897		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.625	Shapiro Wilk Test Statistic	0.942
Shapiro Wilk Critical Value	0.866	Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	6.829	95% H-UCL	26.26
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	11.55
95% Adjusted-CLT UCL	7.542	97.5% Chebyshev (MVUE) UCL	14.95
95% Modified-t UCL	6.976	99% Chebyshev (MVUE) UCL	21.62
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.486	Data appear Lognormal at 5% Significance Level	
Theta Star	7.904		
nu star	12.63		
Approximate Chi Square Value (.05)	5.643	Nonparametric Statistics	
Adjusted Level of Significance	0.0301	95% CLT UCL	6.599
Adjusted Chi Square Value	4.993	95% Jackknife UCL	6.829
		95% Standard Bootstrap UCL	6.518
Anderson-Darling Test Statistic	0.855	95% Bootstrap-t UCL	13.06
Anderson-Darling 5% Critical Value	0.785	95% Hall's Bootstrap UCL	19.97
Kolmogorov-Smirnov Test Statistic	0.267	95% Percentile Bootstrap UCL	6.621
Kolmogorov-Smirnov 5% Critical Value	0.249	95% BCA Bootstrap UCL	7.305
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	11.15
		97.5% Chebyshev(Mean, Sd) UCL	14.32
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	20.53
95% Approximate Gamma UCL	8.59		
95% Adjusted Gamma UCL	9.708		
Potential UCL to Use		99% Chebyshev (MVUE) UCL	21.62

Recommended UCL exceeds the maximum observation

BENZO(A)PYRENE

General Statistics			
Number of Valid Observations	13	Number of Distinct Observations	13
Raw Statistics		Log-transformed Statistics	
Minimum	0.067	Minimum of Log Data	-2.703

Maximum	14	Maximum of Log Data	2.639
Mean	3.364	Mean of log Data	0.24
Median	0.76	SD of log Data	1.558
SD	4.646		
Coefficient of Variation	1.381		
Skewness	1.654		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.714	Shapiro Wilk Test Statistic	0.956
Shapiro Wilk Critical Value	0.866	Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	5.661	95% H-UCL	24.64
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	11.19
95% Adjusted-CLT UCL	6.115	97.5% Chebyshev (MVUE) UCL	14.47
95% Modified-t UCL	5.759	99% Chebyshev (MVUE) UCL	20.91
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.536	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	6.278		
nu star	13.93		
Approximate Chi Square Value (.05)	6.526	Nonparametric Statistics	
Adjusted Level of Significance	0.0301	95% CLT UCL	5.484
Adjusted Chi Square Value	5.818	95% Jackknife UCL	5.661
		95% Standard Bootstrap UCL	5.4
Anderson-Darling Test Statistic	0.595	95% Bootstrap-t UCL	7.82
Anderson-Darling 5% Critical Value	0.78	95% Hall's Bootstrap UCL	7.764
Kolmogorov-Smirnov Test Statistic	0.234	95% Percentile Bootstrap UCL	5.67
Kolmogorov-Smirnov 5% Critical Value	0.248	95% BCA Bootstrap UCL	5.958
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	8.981
		97.5% Chebyshev(Mean, Sd) UCL	11.41
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	16.19
95% Approximate Gamma UCL	7.183		
95% Adjusted Gamma UCL	8.057		
Potential UCL to Use		95% Approximate Gamma UCL	7.183

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Observations	13	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	0.094	Minimum of Log Data	-2.364
Maximum	22	Maximum of Log Data	3.091
Mean	5.076	Mean of log Data	0.677
Median	1.3	SD of log Data	1.551
SD	6.962		
Coefficient of Variation	1.372		
Skewness	1.744		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.719	Shapiro Wilk Test Statistic	0.956
Shapiro Wilk Critical Value	0.866	Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	

95% Student's-t UCL	8.517	95% H-UCL	37.15
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	17.11
95% Adjusted-CLT UCL	9.25	97.5% Chebyshev (MVUE) UCL	22.11
95% Modified-t UCL	8.673	99% Chebyshev (MVUE) UCL	31.94

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.548	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	9.265		
nu star	14.24		
Approximate Chi Square Value (.05)	6.738	Nonparametric Statistics	
Adjusted Level of Significance	0.0301	95% CLT UCL	8.252
Adjusted Chi Square Value	6.017	95% Jackknife UCL	8.517
		95% Standard Bootstrap UCL	8.168
Anderson-Darling Test Statistic	0.562	95% Bootstrap-t UCL	12.59
Anderson-Darling 5% Critical Value	0.779	95% Hall's Bootstrap UCL	19.87
Kolmogorov-Smirnov Test Statistic	0.247	95% Percentile Bootstrap UCL	8.276
Kolmogorov-Smirnov 5% Critical Value	0.248	95% BCA Bootstrap UCL	9.149
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	13.49
		97.5% Chebyshev(Mean, Sd) UCL	17.13
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	24.29
95% Approximate Gamma UCL	10.73		
95% Adjusted Gamma UCL	12.02		

Potential UCL to Use		95% Approximate Gamma UCL	10.73

BENZO(G,H,I)PERYLENE

General Statistics			
Number of Valid Data	13	Number of Detected Data	12
Number of Distinct Detected Data	11	Number of Non-Detect Data	1
		Percent Non-Detects	7.69%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.23	Minimum Detected	-1.47
Maximum Detected	8.7	Maximum Detected	2.163
Mean of Detected	2.537	Mean of Detected	0.387
SD of Detected	2.61	SD of Detected	1.153
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.832	Shapiro Wilk Test Statistic	0.964
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	2.355	Mean	0.225
SD	2.583	SD	1.249
95% DL/2 (t) UCL	3.632	95% H-Stat (DL/2) UCL	7.48

Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	2.119	Mean in Log Scale	0.223
SD	2.789	SD in Log Scale	1.252
95% MLE (t) UCL	3.497	Mean in Original Scale	2.355
95% MLE (Tiku) UCL	3.471	SD in Original Scale	2.583
		95% Percentile Bootstrap UCL	3.593
		95% BCA Bootstrap UCL	3.762

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.846	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.997		
nu star	20.31		
A-D Test Statistic	0.303	Nonparametric Statistics	
5% A-D Critical Value	0.756	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.756	Mean	2.359
5% K-S Critical Value	0.252	SD	2.478
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.718
		95% KM (t) UCL	3.639
Assuming Gamma Distribution		95% KM (z) UCL	3.54
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.627
Minimum	1.00E-09	95% KM (bootstrap t) UCL	4.423
Maximum	8.7	95% KM (BCA) UCL	3.462
Mean	2.342	95% KM (Percentile Bootstrap) UCL	3.553
Median	1.4	95% KM (Chebyshev) UCL	5.488
SD	2.596	97.5% KM (Chebyshev) UCL	6.842
k star	0.302	99% KM (Chebyshev) UCL	9.501
Theta star	7.755		
Nu star	7.85	Potential UCLs to	
AppChi2	2.649	95% KM (Chebyshev) UCL	5.488
95% Gamma Approximate UCL	6.94		
95% Adjusted Gamma UCL	8.214		

Note: DL/2 is not a recommended method.

BENZO(K)FLUORANTHENE

General Statistics			
Number of Valid Data	13	Number of Detected Data	12
Number of Distinct Detected Data	11	Number of Non-Detect Data	1
		Percent Non-Detects	7.69%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.14	Minimum Detected	-1.966
Maximum Detected	6.8	Maximum Detected	1.917
Mean of Detected	1.741	Mean of Detected	-0.268
SD of Detected	2.364	SD of Detected	1.332
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.688	Shapiro Wilk Test Statistic	0.887
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.621	Mean	-0.379
SD	2.304	SD	1.337
95% DL/2 (t) UCL	2.76	95% H-Stat (DL/2) UCL	6.366
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.414	Mean in Log Scale	-0.355
SD	3.45	SD in Log Scale	1.314
95% MLE (t) UCL	2.119	Mean in Original Scale	1.626
95% MLE (Tiku) UCL	2.437	SD in Original Scale	2.301

		95% Percentile Bootstrap UCL	2.763
		95% BCA Bootstrap UCL	2.995
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.604	Data appear Lognormal at 5% Significance Level	
Theta Star	2.884		
nu star	14.49		
A-D Test Statistic	0.895	Nonparametric Statistics	
5% A-D Critical Value	0.767	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.767	Mean	1.626
5% K-S Critical Value	0.255	SD	2.21
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.64
		95% KM (t) UCL	2.768
Assuming Gamma Distribution		95% KM (z) UCL	2.68
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.764
Minimum	1.00E-09	95% KM (bootstrap t) UCL	4.652
Maximum	6.8	95% KM (BCA) UCL	2.815
Mean	1.607	95% KM (Percentile Bootstrap) UCL	2.67
Median	0.38	95% KM (Chebyshev) UCL	4.417
SD	2.314	97.5% KM (Chebyshev) UCL	5.625
k star	0.281	99% KM (Chebyshev) UCL	7.997
Theta star	5.727		
Nu star	7.295	Potential UCLs to	
AppChi2	2.334	97.5% KM (Chebyshev) UCL	5.625
95% Gamma Approximate UCL	5.023		
95% Adjusted Gamma UCL	5.998		

Note: DL/2 is not a recommended method.

CHLOROBENZENE

General Statistics			
Number of Valid Data	13	Number of Detected Data	10
Number of Distinct Detected Data	9	Number of Non-Detect Data	3
		Percent Non-Detects	23.08%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.001	Minimum Detected	-6.908
Maximum Detected	56	Maximum Detected	4.025
Mean of Detected	6.072	Mean of Detected	-3.568
SD of Detected	17.6	SD of Detected	3.642
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	0.012	Maximum Non-Detect	-4.423
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	9
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	69.23%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.407	Shapiro Wilk Test Statistic	0.822
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.672	Mean	-3.932
SD	15.47	SD	3.229
95% DL/2 (t) UCL	12.32	95% H-Stat (DL/2) UCL	3910

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.035
		SD in Log Scale	3.309
		Mean in Original Scale	4.672
		SD in Original Scale	15.47
		95% Percentile Bootstrap UCL	12.93
		95% BCA Bootstrap UCL	17.94
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.167	Data do not follow a Discernable Distribution (0.05)	
Theta Star	36.27		
nu star	3.348		
A-D Test Statistic	1.562	Nonparametric Statistics	
5% A-D Critical Value	0.873	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.873	Mean	4.672
5% K-S Critical Value	0.297	SD	14.87
Data not Gamma Distributed at 5% Significance Level		SE of Mean	4.346
		95% KM (t) UCL	12.42
Assuming Gamma Distribution		95% KM (z) UCL	11.82
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	12.32
Minimum	1.00E-09	95% KM (bootstrap t) UCL	4056
Maximum	56	95% KM (BCA) UCL	13.28
Mean	4.768	95% KM (Percentile Bootstrap) UCL	12.94
Median	0.004	95% KM (Chebyshev) UCL	23.62
SD	15.45	97.5% KM (Chebyshev) UCL	31.82
k star	0.134	99% KM (Chebyshev) UCL	47.92
Theta star	35.57		
Nu star	3.485	Potential UCLs to	
AppChi2	0.53	99% KM (Chebyshev) UCL	47.92
95% Gamma Approximate UCL	31.38		
95% Adjusted Gamma UCL	41.99		

Note: DL/2 is not a recommended method.

CHROMIUM

General Statistics			
Number of Valid Observations	13	Number of Distinct Observations	13
Raw Statistics		Log-transformed Statistics	
Minimum	4.8	Minimum of Log Data	1.569
Maximum	33.9	Maximum of Log Data	3.523
Mean	17.75	Mean of log Data	2.748
Median	14.2	SD of log Data	0.546
SD	9.104		
Coefficient of Variation	0.513		
Skewness	0.671		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.905	Shapiro Wilk Test Statistic	0.942
Shapiro Wilk Critical Value	0.866	Shapiro Wilk Critical Value	0.866
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	22.25	95% H-UCL	25.51
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	30.07
95% Adjusted-CLT UCL	22.41	97.5% Chebyshev (MVUE) UCL	35.34
95% Modified-t UCL	22.33	99% Chebyshev (MVUE) UCL	45.69

Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.161	Data appear Normal at 5% Significance Level	
Theta Star	5.616		
nu star	82.2		
Approximate Chi Square Value (.05)	62.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0301	95% CLT UCL	21.91
Adjusted Chi Square Value	59.84	95% Jackknife UCL	22.25
		95% Standard Bootstrap UCL	21.86
Anderson-Darling Test Statistic	0.37	95% Bootstrap-t UCL	23.11
Anderson-Darling 5% Critical Value	0.737	95% Hall's Bootstrap UCL	22.22
Kolmogorov-Smirnov Test Statistic	0.142	95% Percentile Bootstrap UCL	21.82
Kolmogorov-Smirnov 5% Critical Value	0.238	95% BCA Bootstrap UCL	22.33
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	28.76
		97.5% Chebyshev(Mean, Sd) UCL	33.52
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	42.88
95% Approximate Gamma UCL	23.42		
95% Adjusted Gamma UCL	24.39		
Potential UCL to Use		95% Student's-t UCL	22.25

DIBENZO(A,H)ANTHRACENE

General Statistics			
Number of Valid Data	13	Number of Detected Data	11
Number of Distinct Detected Data	10	Number of Non-Detect Data	2
		Percent Non-Detects	15.38%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.097	Minimum Detected	-2.333
Maximum Detected	3	Maximum Detected	1.099
Mean of Detected	0.922	Mean of Detected	-0.715
SD of Detected	0.99	SD of Detected	1.244
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.37	Maximum Non-Detect	-0.994
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	61.54%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.816	Shapiro Wilk Test Statistic	0.895
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.809	Mean	-0.867
SD	0.945	SD	1.194
95% DL/2 (t) UCL	1.276	95% H-Stat (DL/2) UCL	2.918
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.845	Mean in Log Scale	-0.843
SD	0.735	SD in Log Scale	1.177
95% MLE (t) UCL	2.209	Mean in Original Scale	0.813
95% MLE (Tiku) UCL	2.425	SD in Original Scale	0.942
		95% Percentile Bootstrap UCL	1.263
		95% BCA Bootstrap UCL	1.364
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	

k star (bias corrected)	0.729	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.266		
nu star	16.03		
A-D Test Statistic	0.607	Nonparametric Statistics	
5% A-D Critical Value	0.755	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.755	Mean	0.81
5% K-S Critical Value	0.263	SD	0.908
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.264
		95% KM (t) UCL	1.281
Assuming Gamma Distribution		95% KM (z) UCL	1.245
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.278
Minimum	0.097	95% KM (bootstrap t) UCL	1.576
Maximum	3	95% KM (BCA) UCL	1.245
Mean	0.851	95% KM (Percentile Bootstrap) UCL	1.242
Median	0.46	95% KM (Chebyshev) UCL	1.962
SD	0.92	97.5% KM (Chebyshev) UCL	2.46
k star	0.837	99% KM (Chebyshev) UCL	3.439
Theta star	1.017		
Nu star	21.75	Potential UCLs to	
AppChi2	12.15	95% KM (Chebyshev) UCL	1.962
95% Gamma Approximate UCL	1.524		
95% Adjusted Gamma UCL	1.662		

Note: DL/2 is not a recommended method.

HEXACHLOROBENZENE

General Statistics			
Number of Valid Data	13	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	9
		Percent Non-Detects	69.23%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.038	Minimum Detected	-3.27
Maximum Detected	13	Maximum Detected	2.565
Mean of Detected	4.677	Mean of Detected	-0.082
SD of Detected	6.076	SD of Detected	2.696
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	10	Maximum Non-Detect	2.303
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	92.31%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.862	Shapiro Wilk Test Statistic	0.934
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.943	Mean	-0.91

SD	3.813	SD	1.712
95% DL/2 (t) UCL	3.828	95% H-Stat (DL/2) UCL	8.824

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.553
		SD in Log Scale	1.834
		Mean in Original Scale	1.543
		SD in Original Scale	3.737
		95% Percentile Bootstrap UCL	3.5
		95% BCA Bootstrap UCL	4.324

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.268	Data appear Normal at 5% Significance Level	
Theta Star	17.47		
nu star	2.142		
A-D Test Statistic	0.296	Nonparametric Statistics	
5% A-D Critical Value	0.692	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.692	Mean	1.582
5% K-S Critical Value	0.414	SD	3.602
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.164
		95% KM (t) UCL	3.657
Assuming Gamma Distribution		95% KM (z) UCL	3.497
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3.465
Minimum	0.038	95% KM (bootstrap t) UCL	4.29
Maximum	13	95% KM (BCA) UCL	7.738
Mean	4.525	95% KM (Percentile Bootstrap) UCL	6.569
Median	5.027	95% KM (Chebyshev) UCL	6.657
SD	3.35	97.5% KM (Chebyshev) UCL	8.853
k star	0.798	99% KM (Chebyshev) UCL	13.17
Theta star	5.672		
Nu star	20.74	Potential UCLs to	
AppChi2	11.4	95% KM (t) UCL	3.657
95% Gamma Approximate UCL	8.234	95% KM (Percentile Bootstrap) UCL	6.569
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

Highly Chlorinated

General Statistics

Number of Valid Observations	9	Number of Distinct Observations	9

Raw Statistics		Log-transformed Statistics	
Minimum	0.41	Minimum of Log Data	-0.892
Maximum	120	Maximum of Log Data	4.787
Mean	15.58	Mean of log Data	0.943
Median	2.7	SD of log Data	1.767
SD	39.21		
Coefficient of Variation	2.517		
Skewness	2.983		

Warning: There are only 9 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics

Normal Distribution Test	Lognormal Distribution Test

Shapiro Wilk Test Statistic	0.438	Shapiro Wilk Test Statistic	0.867
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	39.89	95% H-UCL	297.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	31.99
95% Adjusted-CLT UCL	50.97	97.5% Chebyshev (MVUE) UCL	41.99
95% Modified-t UCL	42.05	99% Chebyshev (MVUE) UCL	61.65
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.321	Data appear Lognormal at 5% Significance Level	
Theta Star	48.61		
nu star	5.77		
Approximate Chi Square Value (.05)	1.523	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	37.08
Adjusted Chi Square Value	1.112	95% Jackknife UCL	39.89
		95% Standard Bootstrap UCL	36
Anderson-Darling Test Statistic	1.233	95% Bootstrap-t UCL	330.2
Anderson-Darling 5% Critical Value	0.795	95% Hall's Bootstrap UCL	188.2
Kolmogorov-Smirnov Test Statistic	0.356	95% Percentile Bootstrap UCL	41.38
Kolmogorov-Smirnov 5% Critical Value	0.299	95% BCA Bootstrap UCL	54.54
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	72.56
		97.5% Chebyshev(Mean, Sd) UCL	97.21
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	145.6
95% Approximate Gamma UCL	59.01		
95% Adjusted Gamma UCL	80.88		
Potential UCL to Use		99% Chebyshev (MVUE) UCL	61.65

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	13	Number of Detected Data	12
Number of Distinct Detected Data	11	Number of Non-Detect Data	1
		Percent Non-Detects	7.69%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.18	Minimum Detected	-1.715
Maximum Detected	7.9	Maximum Detected	2.067
Mean of Detected	1.978	Mean of Detected	0.012
SD of Detected	2.369	SD of Detected	1.244
Minimum Non-Detect	0.36	Minimum Non-Detect	-1.022
Maximum Non-Detect	0.36	Maximum Non-Detect	-1.022
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.769	Shapiro Wilk Test Statistic	0.941
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.84	Mean	-0.121
SD	2.322	SD	1.284
95% DL/2 (t) UCL	2.988	95% H-Stat (DL/2) UCL	7.109
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.26	Mean in Log Scale	-0.106

SD	2.893	SD in Log Scale	1.265
95% MLE (t) UCL	2.69	Mean in Original Scale	1.843
95% MLE (Tiku) UCL	2.767	SD in Original Scale	2.32
		95% Percentile Bootstrap UCL	2.979
		95% BCA Bootstrap UCL	3.178
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.712	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	2.778		
nu star	17.09		
A-D Test Statistic	0.486	Nonparametric Statistics	
5% A-D Critical Value	0.761	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.761	Mean	1.846
5% K-S Critical Value	0.254	SD	2.227
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.645
		95% KM (t) UCL	2.995
Assuming Gamma Distribution		95% KM (z) UCL	2.907
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.991
Minimum	1.00E-09	95% KM (bootstrap t) UCL	3.925
Maximum	7.9	95% KM (BCA) UCL	3.019
Mean	1.826	95% KM (Percentile Bootstrap) UCL	2.988
Median	0.71	95% KM (Chebyshev) UCL	4.658
SD	2.333	97.5% KM (Chebyshev) UCL	5.874
k star	0.292	99% KM (Chebyshev) UCL	8.264
Theta star	6.247		
Nu star	7.6	Potential UCLs to	
AppChi2	2.506	95% KM (Chebyshev) UCL	4.658
95% Gamma Approximate UCL	5.539		
95% Adjusted Gamma UCL	6.581		

Note: DL/2 is not a recommended method.

IRON

General Statistics			
Number of Valid Observations	13	Number of Distinct Observations	13
Raw Statistics		Log-transformed Statistics	
Minimum	5210	Minimum of Log Data	8.558
Maximum	27700	Maximum of Log Data	10.23
Mean	14596	Mean of log Data	9.469
Median	13100	SD of log Data	0.521
SD	7248		
Coefficient of Variation	0.497		
Skewness	0.667		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.931	Shapiro Wilk Test Statistic	0.967
Shapiro Wilk Critical Value	0.866	Shapiro Wilk Critical Value	0.866
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	18179	95% H-UCL	20470
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	24175
95% Adjusted-CLT UCL	18300	97.5% Chebyshev (MVUE) UCL	28288
95% Modified-t UCL	18241	99% Chebyshev (MVUE) UCL	36368
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	3.394	Data appear Normal at 5% Significance Level	

Theta Star	4301		
nu star	88.24		
Approximate Chi Square Value (.05)	67.59	Nonparametric Statistics	
Adjusted Level of Significance	0.0301	95% CLT UCL	17902
Adjusted Chi Square Value	65.02	95% Jackknife UCL	18179
		95% Standard Bootstrap UCL	17769
Anderson-Darling Test Statistic	0.174	95% Bootstrap-t UCL	19020
Anderson-Darling 5% Critical Value	0.737	95% Hall's Bootstrap UCL	18913
Kolmogorov-Smirnov Test Statistic	0.0954	95% Percentile Bootstrap UCL	17740
Kolmogorov-Smirnov 5% Critical Value	0.238	95% BCA Bootstrap UCL	18003
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	23358
		97.5% Chebyshev(Mean, Sd) UCL	27149
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	34597
95% Approximate Gamma UCL	19057		
95% Adjusted Gamma UCL	19811		
Potential UCL to Use		95% Student's-t UCL	18179

MANGANESE

General Statistics			
Number of Valid Observations	13	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	238	Minimum of Log Data	5.472
Maximum	463	Maximum of Log Data	6.138
Mean	345.8	Mean of log Data	5.825
Median	353	SD of log Data	0.217
SD	73.83		
Coefficient of Variation	0.213		
Skewness	0.172		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.948	Shapiro Wilk Test Statistic	0.949
Shapiro Wilk Critical Value	0.866	Shapiro Wilk Critical Value	0.866
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	382.3	95% H-UCL	389
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	437.2
95% Adjusted-CLT UCL	380.6	97.5% Chebyshev (MVUE) UCL	476.7
95% Modified-t UCL	382.5	99% Chebyshev (MVUE) UCL	554.3
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	18.1	Data appear Normal at 5% Significance Level	
Theta Star	19.11		
nu star	470.6		
Approximate Chi Square Value (.05)	421.3	Nonparametric Statistics	
Adjusted Level of Significance	0.0301	95% CLT UCL	379.5
Adjusted Chi Square Value	414.7	95% Jackknife UCL	382.3
		95% Standard Bootstrap UCL	378.4
Anderson-Darling Test Statistic	0.277	95% Bootstrap-t UCL	383.4
Anderson-Darling 5% Critical Value	0.733	95% Hall's Bootstrap UCL	380.4
Kolmogorov-Smirnov Test Statistic	0.146	95% Percentile Bootstrap UCL	377.5
Kolmogorov-Smirnov 5% Critical Value	0.236	95% BCA Bootstrap UCL	378.5
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	435.1
		97.5% Chebyshev(Mean, Sd) UCL	473.7
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	549.6
95% Approximate Gamma UCL	386.3		

95% Adjusted Gamma UCL	392.5		
Potential UCL to Use		95% Student's-t UCL	382.3

MERCURY

General Statistics			
Number of Valid Data	13	Number of Detected Data	12
Number of Distinct Detected Data	11	Number of Non-Detect Data	1
		Percent Non-Detects	7.69%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.22	Minimum Detected	-1.514
Maximum Detected	5.8	Maximum Detected	1.758
Mean of Detected	1.818	Mean of Detected	0.213
SD of Detected	1.641	SD of Detected	0.954
Minimum Non-Detect	0.05	Minimum Non-Detect	-2.996
Maximum Non-Detect	0.05	Maximum Non-Detect	-2.996
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.844	Shapiro Wilk Test Statistic	0.968
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.68	Mean	-0.0873
SD	1.648	SD	1.416
95% DL/2 (t) UCL	2.495	95% H-Stat (DL/2) UCL	8.012
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.612	Mean in Log Scale	0.033
SD	1.683	SD in Log Scale	1.12
95% MLE (t) UCL	2.444	Mean in Original Scale	1.688
95% MLE (Tiku) UCL	2.418	SD in Original Scale	1.64
		95% Percentile Bootstrap UCL	2.45
		95% BCA Bootstrap UCL	2.598
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.137	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.599		
nu star	27.29		
A-D Test Statistic	0.325	Nonparametric Statistics	
5% A-D Critical Value	0.747	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.747	Mean	1.695
5% K-S Critical Value	0.25	SD	1.569
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.454
		95% KM (t) UCL	2.505
Assuming Gamma Distribution		95% KM (z) UCL	2.443
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.491
Minimum	1.00E-09	95% KM (bootstrap t) UCL	2.84
Maximum	5.8	95% KM (BCA) UCL	2.488
Mean	1.678	95% KM (Percentile Bootstrap) UCL	2.467
Median	1	95% KM (Chebyshev) UCL	3.676
SD	1.65	97.5% KM (Chebyshev) UCL	4.533
k star	0.321	99% KM (Chebyshev) UCL	6.217
Theta star	5.226		

Nu star	8.351	Potential UCLs to	
AppChi2	2.94	95% KM (Chebyshev) UCL	3.676
95% Gamma Approximate UCL	4.768		
95% Adjusted Gamma UCL	5.603		

Note: DL/2 is not a recommended method.

METHYL MERCURY

General Statistics			
Number of Valid Observations	1	Number of Distinct Observations	1

Warning: This data set only has 1 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable METHYL MERCURY was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

PHENANTHRENE

General Statistics			
Number of Valid Observations	13	Number of Distinct Observations	13
Raw Statistics		Log-transformed Statistics	
Minimum	0.15	Minimum of Log Data	-1.897
Maximum	25	Maximum of Log Data	3.219
Mean	3.588	Mean of log Data	0.0117
Median	0.7	SD of log Data	1.54
SD	7.007		
Coefficient of Variation	1.953		
Skewness	2.789		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.55	Shapiro Wilk Test Statistic	0.898
Shapiro Wilk Critical Value	0.866	Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	7.051	95% H-UCL	18.43
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	8.642
95% Adjusted-CLT UCL	8.39	97.5% Chebyshev (MVUE) UCL	11.16
95% Modified-t UCL	7.302	99% Chebyshev (MVUE) UCL	16.12
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.437	Data appear Lognormal at 5% Significance Level	
Theta Star	8.208		
nu star	11.36		
Approximate Chi Square Value (.05)	4.811	Nonparametric Statistics	
Adjusted Level of Significance	0.0301	95% CLT UCL	6.784
Adjusted Chi Square Value	4.22	95% Jackknife UCL	7.051
		95% Standard Bootstrap UCL	6.713
Anderson-Darling Test Statistic	1.28	95% Bootstrap-t UCL	14.29
Anderson-Darling 5% Critical Value	0.79	95% Hall's Bootstrap UCL	16.19
Kolmogorov-Smirnov Test Statistic	0.333	95% Percentile Bootstrap UCL	7
Kolmogorov-Smirnov 5% Critical Value	0.25	95% BCA Bootstrap UCL	8.688
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	12.06

		97.5% Chebyshev(Mean, Sd) UCL	15.72
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	22.92
95% Approximate Gamma UCL	8.474		
95% Adjusted Gamma UCL	9.662		
Potential UCL to Use		99% Chebyshev (MVUE) UCL	16.12

Total PCBs

General Statistics			
Number of Valid Observations	9	Number of Distinct Observations	9
Raw Statistics		Log-transformed Statistics	
Minimum	0.41	Minimum of Log Data	-0.892
Maximum	120	Maximum of Log Data	4.787
Mean	15.58	Mean of log Data	0.943
Median	2.7	SD of log Data	1.767
SD	39.21		
Coefficient of Variation	2.517		
Skewness	2.983		

Warning: There are only 9 Values in this data
Note: It should be noted that even though bootstrap methods may be performed on this data set,
the resulting calculations may not be reliable enough to draw conclusions

The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.

Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.438	Shapiro Wilk Test Statistic	0.867
Shapiro Wilk Critical Value	0.829	Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	39.89	95% H-UCL	297.3
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	31.99
95% Adjusted-CLT UCL	50.97	97.5% Chebyshev (MVUE) UCL	41.99
95% Modified-t UCL	42.05	99% Chebyshev (MVUE) UCL	61.65
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	0.321	Data appear Lognormal at 5% Significance Level	
Theta Star	48.61		
nu star	5.77		
Approximate Chi Square Value (.05)	1.523	Nonparametric Statistics	
Adjusted Level of Significance	0.0231	95% CLT UCL	37.08
Adjusted Chi Square Value	1.112	95% Jackknife UCL	39.89
		95% Standard Bootstrap UCL	35.5
Anderson-Darling Test Statistic	1.233	95% Bootstrap-t UCL	318.8
Anderson-Darling 5% Critical Value	0.795	95% Hall's Bootstrap UCL	192
Kolmogorov-Smirnov Test Statistic	0.356	95% Percentile Bootstrap UCL	41.5
Kolmogorov-Smirnov 5% Critical Value	0.299	95% BCA Bootstrap UCL	54.71
Data not Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	72.56
		97.5% Chebyshev(Mean, Sd) UCL	97.21
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	145.6
95% Approximate Gamma UCL	59.01		
95% Adjusted Gamma UCL	80.88		
Potential UCL to Use		99% Chebyshev (MVUE) UCL	61.65

APPENDIX K, TABLE 24
RAGS 3.24 - CHLOROBENZENE HOT SPOT AREA - UPPER SOIL
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

VANADIUM

General Statistics			
Number of Valid Observations	13	Number of Distinct Observations	12
Raw Statistics		Log-transformed Statistics	
Minimum	3.2	Minimum of Log Data	1.163
Maximum	16.4	Maximum of Log Data	2.797
Mean	9.654	Mean of log Data	2.206
Median	9.2	SD of log Data	0.388
SD	3.239		
Coefficient of Variation	0.336		
Skewness	0.362		
Relevant UCL Statistics			
Normal Distribution Test		Lognormal Distribution Test	
Shapiro Wilk Test Statistic	0.93	Shapiro Wilk Test Statistic	0.858
Shapiro Wilk Critical Value	0.866	Shapiro Wilk Critical Value	0.866
Data appear Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
95% Student's-t UCL	11.26	95% H-UCL	12.25
95% UCLs (Adjusted for Skewness)		95% Chebyshev (MVUE) UCL	14.38
95% Adjusted-CLT UCL	11.23	97.5% Chebyshev (MVUE) UCL	16.39
95% Modified-t UCL	11.27	99% Chebyshev (MVUE) UCL	20.34
Gamma Distribution Test		Data Distribution	
k star (bias corrected)	6.495	Data appear Normal at 5% Significance Level	
Theta Star	1.486		
nu star	168.9		
Approximate Chi Square Value (.05)	139.8	Nonparametric Statistics	
Adjusted Level of Significance	0.0301	95% CLT UCL	11.13
Adjusted Chi Square Value	136	95% Jackknife UCL	11.26
		95% Standard Bootstrap UCL	11.13
Anderson-Darling Test Statistic	0.583	95% Bootstrap-t UCL	11.48
Anderson-Darling 5% Critical Value	0.734	95% Hall's Bootstrap UCL	11.93
Kolmogorov-Smirnov Test Statistic	0.203	95% Percentile Bootstrap UCL	11.14
Kolmogorov-Smirnov 5% Critical Value	0.237	95% BCA Bootstrap UCL	11.2
Data appear Gamma Distributed at 5% Significance Level		95% Chebyshev(Mean, Sd) UCL	13.57
		97.5% Chebyshev(Mean, Sd) UCL	15.26
Assuming Gamma Distribution		99% Chebyshev(Mean, Sd) UCL	18.59
95% Approximate Gamma UCL	11.66		
95% Adjusted Gamma UCL	11.98		
Potential UCL to Use		95% Student's-t UCL	11.26

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output

General UCL Statistics for Data Sets with Non-Detects

User Selected Options	
From File	C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

1,2,3-TRICHLOROBENZENE

General Statistics

Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,3-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2,4-TRICHLOROBENZENE

General Statistics

Number of Valid Data	11	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	7
		Percent Non-Detects	63.64%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.2	Minimum Detected	-1.609
Maximum Detected	360	Maximum Detected	5.886
Mean of Detected	162.8	Mean of Detected	3.422
SD of Detected	167.1	SD of Detected	3.459
Minimum Non-Detect	2.5	Minimum Non-Detect	0.916
Maximum Non-Detect	10	Maximum Non-Detect	2.303

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	72.73%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.929	Shapiro Wilk Test Statistic	0.816
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	62.04	Mean	2.143
SD	121.5	SD	2.187
95% DL/2 (t) UCL	128.4	95% H-Stat (DL/2) UCL	3780
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.238

		SD in Log Scale	3.615
		Mean in Original Scale	59.8
		SD in Original Scale	122.7
		95% Percentile Bootstrap UCL	124.7
		95% BCA Bootstrap UCL	151.2
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.265	Data appear Normal at 5% Significance Level	
Theta Star	613.5		
nu star	2.123		
A-D Test Statistic	0.395	Nonparametric Statistics	
5% A-D Critical Value	0.693	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.693	Mean	59.33
5% K-S Critical Value	0.414	SD	117.2
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	40.8
		95% KM (t) UCL	133.3
Assuming Gamma Distribution		95% KM (z) UCL	126.4
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	122.9
Minimum	1.00E-09	95% KM (bootstrap t) UCL	116.7
Maximum	360	95% KM (BCA) UCL	360
Mean	129.8	95% KM (Percentile Bootstrap) UCL	261.8
Median	51	95% KM (Chebyshev) UCL	237.2
SD	143	97.5% KM (Chebyshev) UCL	314.1
k star	0.139	99% KM (Chebyshev) UCL	465.3
Theta star	934.1		
Nu star	3.056	Potential UCLs to Use	
AppChi2	0.389	95% KM (t) UCL	133.3
95% Gamma Approximate UCL	1019	95% KM (Percentile Bootstrap) UCL	261.8
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

1,2-DICHLOROBENZENE

General Statistics			
Number of Valid Data	18	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	12
		Percent Non-Detects	66.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.8	Minimum Detected	0.588
Maximum Detected	3800	Maximum Detected	8.243
Mean of Detected	1664	Mean of Detected	5.369
SD of Detected	1786	SD of Detected	3.312
Minimum Non-Detect	5	Minimum Non-Detect	1.609
Maximum Non-Detect	10	Maximum Non-Detect	2.303
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	14
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	4
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	77.78%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.798	Shapiro Wilk Test Statistic	0.844
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	557	Mean	2.632
SD	1259	SD	2.698
95% DL/2 (t) UCL	1073	95% H-Stat (DL/2) UCL	6234
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.807
		SD in Log Scale	3.667
		Mean in Original Scale	558.2
		SD in Original Scale	1259
		95% Percentile Bootstrap UCL	1091
		95% BCA Bootstrap UCL	1188
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.277	Data appear Normal at 5% Significance Level	
Theta Star	6010		
nu star	3.322		
A-D Test Statistic	0.565	Nonparametric Statistics	
5% A-D Critical Value	0.762	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.762	Mean	556
5% K-S Critical Value	0.355	SD	1224
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	316.1
		95% KM (t) UCL	1106
Assuming Gamma Distribution		95% KM (z) UCL	1076
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1069
Minimum	1.8	95% KM (bootstrap t) UCL	1253
Maximum	11820	95% KM (BCA) UCL	1393
Mean	2774	95% KM (Percentile Bootstrap) UCL	1312
Median	1777	95% KM (Chebyshev) UCL	1934
SD	3127	97.5% KM (Chebyshev) UCL	2530
k star	0.513	99% KM (Chebyshev) UCL	3702
Theta star	5403		
Nu star	18.48	Potential UCLs to Use	
AppChi2	9.74	95% KM (t) UCL	1106
95% Gamma Approximate UCL	5264	95% KM (Percentile Bootstrap) UCL	1312
95% Adjusted Gamma UCL	5613		

Note: DL/2 is not a recommended method.

1,3-DICHLOROBENZENE

General Statistics			
Number of Valid Data	19	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	15
		Percent Non-Detects	78.95%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.78	Minimum Detected	-0.248
Maximum Detected	160	Maximum Detected	5.075
Mean of Detected	81.7	Mean of Detected	3.257
SD of Detected	79.96	SD of Detected	2.479
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	500	Maximum Non-Detect	6.215
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	19
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.861	Shapiro Wilk Test Statistic	0.843
5% Shapiro Wilk Critical Value	0.748	5% Shapiro Wilk Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	34.05	Mean	1.87
SD	69.58	SD	1.791
95% DL/2 (t) UCL	61.74	95% H-Stat (DL/2) UCL	121.4
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-1.047
		SD in Log Scale	3.137
		Mean in Original Scale	17.62
		SD in Original Scale	47.14
		95% Percentile Bootstrap UCL	35.76
		95% BCA Bootstrap UCL	44.36
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.303	Data appear Normal at 5% Significance Level	
Theta Star	269.3		
nu star	2.426		
A-D Test Statistic	0.402	Nonparametric Statistics	
5% A-D Critical Value	0.679	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.679	Mean	18.85
5% K-S Critical Value	0.409	SD	46.86
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	12.76
		95% KM (t) UCL	40.98
Assuming Gamma Distribution		95% KM (z) UCL	39.85
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	40.13
Minimum	1.00E-09	95% KM (bootstrap t) UCL	32.35
Maximum	160	95% KM (BCA) UCL	160
Mean	71.96	95% KM (Percentile Bootstrap) UCL	142.4
Median	77.01	95% KM (Chebyshev) UCL	74.48
SD	45.38	97.5% KM (Chebyshev) UCL	98.55
k star	0.248	99% KM (Chebyshev) UCL	145.8
Theta star	290.4		
Nu star	9.416	Potential UCLs to Use	
AppChi2	3.58	95% KM (t) UCL	40.98
95% Gamma Approximate UCL	189.3	95% KM (Percentile Bootstrap) UCL	142.4
95% Adjusted Gamma UCL	N/A		
Note: DL/2 is not a recommended method.			

1,4-DICHLOROBENZENE

General Statistics			
Number of Valid Data	19	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	12
		Percent Non-Detects	63.16%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.9	Minimum Detected	1.361
Maximum Detected	9600	Maximum Detected	9.17
Mean of Detected	2769	Mean of Detected	6.18
SD of Detected	3554	SD of Detected	2.869
Minimum Non-Detect	5	Minimum Non-Detect	1.609
Maximum Non-Detect	10	Maximum Non-Detect	2.303
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	13

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	68.42%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.823	Shapiro Wilk Test Statistic	0.917
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1022	Mean	3.075
SD	2467	SD	2.96
95% DL/2 (t) UCL	2004	95% H-Stat (DL/2) UCL	34529
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	2.75
		SD in Log Scale	3.589
		Mean in Original Scale	1026
		SD in Original Scale	2466
		95% Percentile Bootstrap UCL	2031
		95% BCA Bootstrap UCL	2408
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.312	Data appear Normal at 5% Significance Level	
Theta Star	8862		
nu star	4.374		
A-D Test Statistic	0.22	Nonparametric Statistics	
5% A-D Critical Value	0.771	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.771	Mean	1022
5% K-S Critical Value	0.332	SD	2401
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	595.1
		95% KM (t) UCL	2054
Assuming Gamma Distribution		95% KM (z) UCL	2001
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1988
Minimum	1.00E-09	95% KM (bootstrap t) UCL	3116
Maximum	9600	95% KM (BCA) UCL	2336
Mean	2918	95% KM (Percentile Bootstrap) UCL	2183
Median	1100	95% KM (Chebyshev) UCL	3616
SD	3448	97.5% KM (Chebyshev) UCL	4739
k star	0.191	99% KM (Chebyshev) UCL	6943
Theta star	15263		
Nu star	7.264	Potential UCLs to Use	
AppChi2	2.317	95% KM (t) UCL	2054
95% Gamma Approximate UCL	9149	95% KM (Percentile Bootstrap) UCL	2183
95% Adjusted Gamma UCL	10190		

Note: DL/2 is not a recommended method.

ALUMINUM

General Statistics

Number of Valid Data	15	Number of Detected Data	9
Number of Distinct Detected Data	9	Number of Non-Detect Data	6
		Percent Non-Detects	40.00%
Raw Statistics		Log-transformed Statistics	

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Minimum Detected	0.44	Minimum Detected	-0.821
Maximum Detected	98	Maximum Detected	4.585
Mean of Detected	23.8	Mean of Detected	1.738
SD of Detected	35.29	SD of Detected	2.011
Minimum Non-Detect	0.0303	Minimum Non-Detect	-3.497
Maximum Non-Detect	0.055	Maximum Non-Detect	-2.9

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	6
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	40.00%

Warning: There are only 9 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.728	Shapiro Wilk Test Statistic	0.927
5% Shapiro Wilk Critical Value	0.829	5% Shapiro Wilk Critical Value	0.829
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	14.29	Mean	-0.55
SD	29.27	SD	3.278
95% DL/2 (t) UCL	27.6	95% H-Stat (DL/2) UCL	14645
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	1.629	Mean in Log Scale	-0.361
SD	40.41	SD in Log Scale	3.083
95% MLE (t) UCL	20.01	Mean in Original Scale	14.29
95% MLE (Tiku) UCL	22.27	SD in Original Scale	29.27
		95% Percentile Bootstrap UCL	26.93
		95% BCA Bootstrap UCL	31.65
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.375	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	63.5		
nu star	6.745		
A-D Test Statistic	0.465	Nonparametric Statistics	
5% A-D Critical Value	0.78	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.78	Mean	14.45
5% K-S Critical Value	0.296	SD	28.2
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	7.722
		95% KM (t) UCL	28.05
Assuming Gamma Distribution		95% KM (z) UCL	27.16
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	27.68
Minimum	1.00E-09	95% KM (bootstrap t) UCL	51.36
Maximum	98	95% KM (BCA) UCL	29.14
Mean	15.2	95% KM (Percentile Bootstrap) UCL	27.48
Median	1.494	95% KM (Chebyshev) UCL	48.11
SD	28.86	97.5% KM (Chebyshev) UCL	62.68
k star	0.246	99% KM (Chebyshev) UCL	91.28
Theta star	61.78		
Nu star	7.38	Potential UCLs to Use	
AppChi2	2.381	95% KM (BCA) UCL	29.14
95% Gamma Approximate UCL	47.1		
95% Adjusted Gamma UCL	54.79		

Note: DL/2 is not a recommended method.

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ARSENIC

General Statistics			
Number of Valid Data	15	Number of Detected Data	13
Number of Distinct Detected Data	13	Number of Non-Detect Data	2
		Percent Non-Detects	13.33%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0023	Minimum Detected	-6.075
Maximum Detected	0.261	Maximum Detected	-1.343
Mean of Detected	0.0498	Mean of Detected	-4.016
SD of Detected	0.0875	SD of Detected	1.365
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	0.001	Maximum Non-Detect	-6.908
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.545	Shapiro Wilk Test Statistic	0.903
5% Shapiro Wilk Critical Value	0.866	5% Shapiro Wilk Critical Value	0.866
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0432	Mean	-4.494
SD	0.0828	SD	1.785
95% DL/2 (t) UCL	0.0809	95% H-Stat (DL/2) UCL	0.28
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.0354	Mean in Log Scale	-4.437
SD	0.0881	SD in Log Scale	1.687
95% MLE (t) UCL	0.0755	Mean in Original Scale	0.0433
95% MLE (Tiku) UCL	0.0734	SD in Original Scale	0.0828
		95% Percentile Bootstrap UCL	0.0779
		95% BCA Bootstrap UCL	0.0935
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.518	Data appear Lognormal at 5% Significance Level	
Theta Star	0.0962		
nu star	13.47		
A-D Test Statistic	1.364	Nonparametric Statistics	
5% A-D Critical Value	0.782	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.782	Mean	0.0435
5% K-S Critical Value	0.248	SD	0.0799
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0215
		95% KM (t) UCL	0.0813
Assuming Gamma Distribution		95% KM (z) UCL	0.0788
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0808
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.332
Maximum	0.261	95% KM (BCA) UCL	0.0782
Mean	0.0432	95% KM (Percentile Bootstrap) UCL	0.079
Median	0.0154	95% KM (Chebyshev) UCL	0.137
SD	0.0829	97.5% KM (Chebyshev) UCL	0.178
k star	0.23	99% KM (Chebyshev) UCL	0.257
Theta star	0.188		
Nu star	6.897	Potential UCLs to Use	
AppChi2	2.114	97.5% KM (Chebyshev) UCL	0.178
95% Gamma Approximate UCL	0.141		
95% Adjusted Gamma UCL	0.165		

Note: DL/2 is not a recommended method.

BARIUM

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics			
Number of Valid Data	15	Number of Detected Data	14
Number of Distinct Detected Data	13	Number of Non-Detect Data	1
		Percent Non-Detects	6.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0121	Minimum Detected	-4.415
Maximum Detected	0.591	Maximum Detected	-0.526
Mean of Detected	0.208	Mean of Detected	-2.238
SD of Detected	0.224	SD of Detected	1.284
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.75	Shapiro Wilk Test Statistic	0.915
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.194	Mean	-2.442
SD	0.222	SD	1.468
95% DL/2 (t) UCL	0.295	95% H-Stat (DL/2) UCL	0.84
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.186	Mean in Log Scale	-2.444
SD	0.225	SD in Log Scale	1.472
95% MLE (t) UCL	0.288	Mean in Original Scale	0.194
95% MLE (Tiku) UCL	0.283	SD in Original Scale	0.222
		95% Percentile Bootstrap UCL	0.289
		95% BCA Bootstrap UCL	0.294
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.74	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.281		
nu star	20.72		
A-D Test Statistic	0.763	Nonparametric Statistics	
5% A-D Critical Value	0.765	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.765	Mean	0.195
5% K-S Critical Value	0.236	SD	0.214
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0573
		95% KM (t) UCL	0.295
Assuming Gamma Distribution		95% KM (z) UCL	0.289
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.295
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.331
Maximum	0.591	95% KM (BCA) UCL	0.293
Mean	0.194	95% KM (Percentile Bootstrap) UCL	0.288
Median	0.0697	95% KM (Chebyshev) UCL	0.444
SD	0.222	97.5% KM (Chebyshev) UCL	0.552
k star	0.337	99% KM (Chebyshev) UCL	0.765
Theta star	0.575		
Nu star	10.1	Potential UCLs to Use	
AppChi2	4.003	95% KM (Chebyshev) UCL	0.444
95% Gamma Approximate UCL	0.489		
95% Adjusted Gamma UCL	0.552		
Note: DL/2 is not a recommended method.			

BENZENE

General Statistics			
Number of Valid Data	19	Number of Detected Data	10

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Number of Distinct Detected Data	10	Number of Non-Detect Data	9
		Percent Non-Detects	47.37%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.7	Minimum Detected	-0.357
Maximum Detected	5500	Maximum Detected	8.613
Mean of Detected	647.2	Mean of Detected	3.421
SD of Detected	1720	SD of Detected	2.712
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	5	Maximum Non-Detect	1.609
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	63.16%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.441	Shapiro Wilk Test Statistic	0.968
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	341.3	Mean	1.811
SD	1261	SD	2.653
95% DL/2 (t) UCL	842.9	95% H-Stat (DL/2) UCL	3777
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.084
		SD in Log Scale	3.382
		Mean in Original Scale	340.9
		SD in Original Scale	1261
		95% Percentile Bootstrap UCL	913.1
		95% BCA Bootstrap UCL	1247
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.231	Data appear Lognormal at 5% Significance Level	
Theta Star	2799		
nu star	4.625		
A-D Test Statistic	0.926	Nonparametric Statistics	
5% A-D Critical Value	0.84	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.84	Mean	341.1
5% K-S Critical Value	0.292	SD	1227
Data not Gamma Distributed at 5% Significance Level		SE of Mean	296.8
		95% KM (t) UCL	855.7
Assuming Gamma Distribution		95% KM (z) UCL	829.2
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	842.2
Minimum	0.7	95% KM (bootstrap t) UCL	16607
Maximum	5500	95% KM (BCA) UCL	915.6
Mean	684.4	95% KM (Percentile Bootstrap) UCL	891.9
Median	655.7	95% KM (Chebyshev) UCL	1635
SD	1222	97.5% KM (Chebyshev) UCL	2194
k star	0.376	99% KM (Chebyshev) UCL	3294
Theta star	1822		
Nu star	14.28	Potential UCLs to Use	
AppChi2	6.762	99% KM (Chebyshev) UCL	3294
95% Gamma Approximate UCL	1445		
95% Adjusted Gamma UCL	1548		
Note: DL/2 is not a recommended method.			

CHLOROBENZENE

General Statistics

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Number of Valid Data	19	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	11
		Percent Non-Detects	57.89%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	25000	Maximum Detected	10.13
Mean of Detected	3885	Mean of Detected	5.348
SD of Detected	8652	SD of Detected	3.295
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	5	Maximum Non-Detect	1.609

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	12
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	63.16%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.531	Shapiro Wilk Test Statistic	0.968
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1636	Mean	2.274
SD	5744	SD	3.445
95% DL/2 (t) UCL	3921	95% H-Stat (DL/2) UCL	191066

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.399
		SD in Log Scale	5.943
		Mean in Original Scale	1636
		SD in Original Scale	5744
		95% Percentile Bootstrap UCL	4193
		95% BCA Bootstrap UCL	5969

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.236	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	16456		
nu star	3.777		

A-D Test Statistic	0.382	Nonparametric Statistics	
5% A-D Critical Value	0.819	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.819	Mean	1636
5% K-S Critical Value	0.32	SD	5590
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1371
		95% KM (t) UCL	4014
Assuming Gamma Distribution		95% KM (z) UCL	3891
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	3918
Minimum	1	95% KM (bootstrap t) UCL	29213
Maximum	25000	95% KM (BCA) UCL	4272
Mean	3948	95% KM (Percentile Bootstrap) UCL	4263
Median	3946	95% KM (Chebyshev) UCL	7613
SD	5403	97.5% KM (Chebyshev) UCL	10199
k star	0.468	99% KM (Chebyshev) UCL	15278
Theta star	8440		
Nu star	17.78	Potential UCLs to Use	
AppChi2	9.229	95% KM (t) UCL	4014

95% Gamma Approximate UCL	7605
95% Adjusted Gamma UCL	8073

Note: DL/2 is not a recommended method.

CHLOROFORM

General Statistics

Number of Valid Data	19	Number of Detected Data	2
Number of Distinct Detected Data	1	Number of Non-Detect Data	17
		Percent Non-Detects	89.47%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable CHLOROFORM was not processed!

CHROMIUM

General Statistics

Number of Valid Data	15	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	8
		Percent Non-Detects	53.33%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0195	Minimum Detected	-3.937
Maximum Detected	2.11	Maximum Detected	0.747
Mean of Detected	0.397	Mean of Detected	-2.078
SD of Detected	0.759	SD of Detected	1.57
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.015	Maximum Non-Detect	-4.2

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	8
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	53.33%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.545	Shapiro Wilk Test Statistic	0.916
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.187	Mean	-4.183
SD	0.537	SD	2.337
95% DL/2 (t) UCL	0.431	95% H-Stat (DL/2) UCL	1.703

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-4.567
		SD in Log Scale	2.742
		Mean in Original Scale	0.186
		SD in Original Scale	0.537
		95% Percentile Bootstrap UCL	0.459
		95% BCA Bootstrap UCL	0.614

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.406	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.979		
nu star	5.679		
A-D Test Statistic	0.695	Nonparametric Statistics	
5% A-D Critical Value	0.749	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.749	Mean	0.196
5% K-S Critical Value	0.326	SD	0.516
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.144
		95% KM (t) UCL	0.449
Assuming Gamma Distribution		95% KM (z) UCL	0.432
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.437
Minimum	0.0195	95% KM (bootstrap t) UCL	1.796
Maximum	2.11	95% KM (BCA) UCL	0.497
Mean	0.398	95% KM (Percentile Bootstrap) UCL	0.467
Median	0.375	95% KM (Chebyshev) UCL	0.822
SD	0.497	97.5% KM (Chebyshev) UCL	1.094
k star	0.893	99% KM (Chebyshev) UCL	1.626
Theta star	0.445		
Nu star	26.8	Potential UCLs to Use	
AppChi2	15.99	95% KM (t) UCL	0.449
95% Gamma Approximate UCL	0.666		
95% Adjusted Gamma UCL	0.711		

Note: DL/2 is not a recommended method.

COBALT

General Statistics			
Number of Valid Data	15	Number of Detected Data	6
Number of Distinct Detected Data	6	Number of Non-Detect Data	9
		Percent Non-Detects	60.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0046	Minimum Detected	-5.382
Maximum Detected	0.0897	Maximum Detected	-2.411
Mean of Detected	0.0365	Mean of Detected	-3.716
SD of Detected	0.032	SD of Detected	1.073
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.015	Maximum Non-Detect	-4.2
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	66.67%

Warning: There are only 6 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.906	Shapiro Wilk Test Statistic	0.96
5% Shapiro Wilk Critical Value	0.788	5% Shapiro Wilk Critical Value	0.788
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.016	Mean	-5.234
SD	0.0258	SD	1.495
95% DL/2 (t) UCL	0.0277	95% H-Stat (DL/2) UCL	0.0404

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.747
		SD in Log Scale	1.995
		Mean in Original Scale	0.0153
		SD in Original Scale	0.0262
		95% Percentile Bootstrap UCL	0.0272
		95% BCA Bootstrap UCL	0.0301
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.802	Data appear Normal at 5% Significance Level	
Theta Star	0.0455		
nu star	9.62		
A-D Test Statistic	0.218	Nonparametric Statistics	
5% A-D Critical Value	0.71	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.71	Mean	0.0173
5% K-S Critical Value	0.338	SD	0.0242
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00684
		95% KM (t) UCL	0.0294
Assuming Gamma Distribution		95% KM (z) UCL	0.0286
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.028
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0335
Maximum	0.0994	95% KM (BCA) UCL	0.0419
Mean	0.043	95% KM (Percentile Bootstrap) UCL	0.0345
Median	0.0431	95% KM (Chebyshev) UCL	0.0471
SD	0.0311	97.5% KM (Chebyshev) UCL	0.06
k star	0.418	99% KM (Chebyshev) UCL	0.0854
Theta star	0.103		
Nu star	12.54	Potential UCLs to Use	
AppChi2	5.584	95% KM (t) UCL	0.0294
95% Gamma Approximate UCL	0.0966	95% KM (Percentile Bootstrap) UCL	0.0345
95% Adjusted Gamma UCL	0.107		

Note: DL/2 is not a recommended method.

COPPER

General Statistics			
Number of Valid Data	15	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	7
		Percent Non-Detects	46.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0206	Minimum Detected	-3.882
Maximum Detected	0.505	Maximum Detected	-0.683
Mean of Detected	0.144	Mean of Detected	-2.643
SD of Detected	0.176	SD of Detected	1.283
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.0119	Maximum Non-Detect	-4.431
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	46.67%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.771	Shapiro Wilk Test Statistic	0.871
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.078	Mean	-4.251
SD	0.144	SD	2.055
95% DL/2 (t) UCL	0.144	95% H-Stat (DL/2) UCL	0.252
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	3.47E-04	Mean in Log Scale	-4.293
SD	0.215	SD in Log Scale	2.053
95% MLE (t) UCL	0.0979	Mean in Original Scale	0.0777
95% MLE (Tiku) UCL	0.117	SD in Original Scale	0.144
		95% Percentile Bootstrap UCL	0.142
		95% BCA Bootstrap UCL	0.169
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.608	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.237		
nu star	9.723		
A-D Test Statistic	0.572	Nonparametric Statistics	
5% A-D Critical Value	0.742	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.742	Mean	0.0863
5% K-S Critical Value	0.303	SD	0.135
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0373
		95% KM (t) UCL	0.152
Assuming Gamma Distribution		95% KM (z) UCL	0.148
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.15
Minimum	0.0206	95% KM (bootstrap t) UCL	0.25
Maximum	0.505	95% KM (BCA) UCL	0.154
Mean	0.122	95% KM (Percentile Bootstrap) UCL	0.151
Median	0.0944	95% KM (Chebyshev) UCL	0.249
SD	0.13	97.5% KM (Chebyshev) UCL	0.319
k star	1.06	99% KM (Chebyshev) UCL	0.457
Theta star	0.115		
Nu star	31.81	Potential UCLs to Use	
AppChi2	19.92	95% KM (BCA) UCL	0.154
95% Gamma Approximate UCL	0.194		
95% Adjusted Gamma UCL	0.206		

Note: DL/2 is not a recommended method.

CYANIDE

General Statistics			
Number of Valid Data	7	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	5
		Percent Non-Detects	71.43%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.206	Minimum Detected	-1.58
Maximum Detected	0.643	Maximum Detected	-0.442
Mean of Detected	0.425	Mean of Detected	-1.011
SD of Detected	0.309	SD of Detected	0.805
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.125	Mean	-4.073
SD	0.24	SD	2.118
95% DL/2 (t) UCL	0.301	95% H-Stat (DL/2) UCL	20.96
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	0.268
5% K-S Critical Value	N/A	SD	0.153
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0817
		95% KM (t) UCL	0.427
Assuming Gamma Distribution		95% KM (z) UCL	0.403
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	N/A
Minimum	N/A	95% KM (bootstrap t) UCL	N/A
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	0.625
SD	N/A	97.5% KM (Chebyshev) UCL	0.779
k star	N/A	99% KM (Chebyshev) UCL	1.082
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	0.427
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	N/A
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

HEXACHLOROBENZENE

General Statistics			
Number of Valid Data	7	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	6
		Percent Non-Detects	85.71%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable HEXACHLOROBENZENE was not processed!

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

IRON

General Statistics			
Number of Valid Data	15	Number of Detected Data	14
Number of Distinct Detected Data	13	Number of Non-Detect Data	1
		Percent Non-Detects	6.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.207	Minimum Detected	-1.575
Maximum Detected	146	Maximum Detected	4.984
Mean of Detected	35.42	Mean of Detected	1.95
SD of Detected	47.76	SD of Detected	2.355
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.763	Shapiro Wilk Test Statistic	0.902
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	33.06	Mean	1.467
SD	46.92	SD	2.941
95% DL/2 (t) UCL	54.4	95% H-Stat (DL/2) UCL	37265
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	31.15	Mean in Log Scale	1.573
SD	47.63	SD in Log Scale	2.7
95% MLE (t) UCL	52.81	Mean in Original Scale	33.06
95% MLE (Tiku) UCL	51.43	SD in Original Scale	46.92
		95% Percentile Bootstrap UCL	54.14
		95% BCA Bootstrap UCL	55.13
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.367	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	96.62		
nu star	10.27		
A-D Test Statistic	0.498	Nonparametric Statistics	
5% A-D Critical Value	0.811	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.811	Mean	33.07
5% K-S Critical Value	0.245	SD	45.32
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	12.14
		95% KM (t) UCL	54.46
Assuming Gamma Distribution		95% KM (z) UCL	53.05
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	54.41
Minimum	1.00E-09	95% KM (bootstrap t) UCL	68.97
Maximum	146	95% KM (BCA) UCL	54.06
Mean	33.06	95% KM (Percentile Bootstrap) UCL	53.25
Median	9.38	95% KM (Chebyshev) UCL	86
SD	46.92	97.5% KM (Chebyshev) UCL	108.9
k star	0.232	99% KM (Chebyshev) UCL	153.9
Theta star	142.5		
Nu star	6.962	Potential UCLs to Use	
AppChi2	2.15	95% KM (Chebyshev) UCL	86
95% Gamma Approximate UCL	107.1		
95% Adjusted Gamma UCL	125.4		

Note: DL/2 is not a recommended method.

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

LEAD

General Statistics			
Number of Valid Data	16	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	9
		Percent Non-Detects	56.25%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0075	Minimum Detected	-4.893
Maximum Detected	0.258	Maximum Detected	-1.355
Mean of Detected	0.0992	Mean of Detected	-3.279
SD of Detected	0.116	SD of Detected	1.636
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	0.0102	Maximum Non-Detect	-4.585

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	68.75%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.76	Shapiro Wilk Test Statistic	0.795
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0451	Mean	-4.989
SD	0.0882	SD	2.07
95% DL/2 (t) UCL	0.0837	95% H-Stat (DL/2) UCL	0.253
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.482
		SD in Log Scale	2.437
		Mean in Original Scale	0.0442
		SD in Original Scale	0.0886
		95% Percentile Bootstrap UCL	0.0823
		95% BCA Bootstrap UCL	0.0914
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.457	Data Follow Appr. Gamma Distribution at 5% Significance Level	
Theta Star	0.217		
nu star	6.4		
A-D Test Statistic	0.793	Nonparametric Statistics	
5% A-D Critical Value	0.743	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.743	Mean	0.0477
5% K-S Critical Value	0.325	SD	0.0841
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.0227
		95% KM (t) UCL	0.0875
Assuming Gamma Distribution		95% KM (z) UCL	0.085
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0851
Minimum	0.0075	95% KM (bootstrap t) UCL	0.12
Maximum	0.258	95% KM (BCA) UCL	0.0954
Mean	0.092	95% KM (Percentile Bootstrap) UCL	0.0872
Median	0.0738	95% KM (Chebyshev) UCL	0.147
SD	0.0783	97.5% KM (Chebyshev) UCL	0.189

k star	1.025	99% KM (Chebyshev) UCL	0.274
Theta star	0.0897		
Nu star	32.8	Potential UCLs to Use	
AppChi2	20.71	95% KM (t) UCL	0.0875
95% Gamma Approximate UCL	0.146		
95% Adjusted Gamma UCL	0.154		

Note: DL/2 is not a recommended method.

MANGANESE

General Statistics			
Number of Valid Data	15	Number of Detected Data	14
Number of Distinct Detected Data	13	Number of Non-Detect Data	1
		Percent Non-Detects	6.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0122	Minimum Detected	-4.406
Maximum Detected	3.45	Maximum Detected	1.238
Mean of Detected	0.675	Mean of Detected	-1.666
SD of Detected	0.969	SD of Detected	1.936
Minimum Non-Detect	0.005	Minimum Non-Detect	-5.298
Maximum Non-Detect	0.005	Maximum Non-Detect	-5.298
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.728	Shapiro Wilk Test Statistic	0.927
5% Shapiro Wilk Critical Value	0.874	5% Shapiro Wilk Critical Value	0.874
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.63	Mean	-1.955
SD	0.95	SD	2.174
95% DL/2 (t) UCL	1.063	95% H-Stat (DL/2) UCL	15.85
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.591	Mean in Log Scale	-1.981
SD	0.964	SD in Log Scale	2.228
95% MLE (t) UCL	1.03	Mean in Original Scale	0.63
95% MLE (Tiku) UCL	1	SD in Original Scale	0.95
		95% Percentile Bootstrap UCL	1.045
		95% BCA Bootstrap UCL	1.207
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.44	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1.536		
nu star	12.31		
A-D Test Statistic	0.351	Nonparametric Statistics	
5% A-D Critical Value	0.793	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.793	Mean	0.631
5% K-S Critical Value	0.242	SD	0.918
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.246
		95% KM (t) UCL	1.064
Assuming Gamma Distribution		95% KM (z) UCL	1.035
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.063
Minimum	1.00E-09	95% KM (bootstrap t) UCL	1.503
Maximum	3.45	95% KM (BCA) UCL	1.104
Mean	0.63	95% KM (Percentile Bootstrap) UCL	1.059
Median	0.171	95% KM (Chebyshev) UCL	1.703
SD	0.95	97.5% KM (Chebyshev) UCL	2.166
k star	0.27	99% KM (Chebyshev) UCL	3.077
Theta star	2.337		

Nu star	8.089	Potential UCLs to Use	
AppChi2	2.787	95% KM (Chebyshev) UCL	1.703
95% Gamma Approximate UCL	1.829		
95% Adjusted Gamma UCL	2.109		

Note: DL/2 is not a recommended method.

MERCURY

General Statistics

Number of Valid Data	19	Number of Detected Data	7
Number of Distinct Detected Data	6	Number of Non-Detect Data	12
		Percent Non-Detects	63.16%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.30E-04	Minimum Detected	-8.016
Maximum Detected	0.0092	Maximum Detected	-4.689
Mean of Detected	0.00323	Mean of Detected	-6.509
SD of Detected	0.00372	SD of Detected	1.446
Minimum Non-Detect	2.00E-04	Minimum Non-Detect	-8.517
Maximum Non-Detect	0.002	Maximum Non-Detect	-6.215

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	16
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	3
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	84.21%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.795	Shapiro Wilk Test Statistic	0.867
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0013	Mean	-8.094
SD	0.00263	SD	1.585
95% DL/2 (t) UCL	0.00235	95% H-Stat (DL/2) UCL	0.00236

Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.00704	Mean in Log Scale	-9.249
SD	0.00264	SD in Log Scale	2.611
95% MLE (t) UCL	0.00809	Mean in Original Scale	0.00122
95% MLE (Tiku) UCL	0.00965	SD in Original Scale	0.00266
		95% Percentile Bootstrap UCL	0.00229
		95% BCA Bootstrap UCL	0.00258

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.536	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.00602		
nu star	7.503		

		Nonparametric Statistics	
A-D Test Statistic	0.475		
5% A-D Critical Value	0.735	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.735	Mean	0.0014
5% K-S Critical Value	0.322	SD	0.00251
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	6.23E-04
		95% KM (t) UCL	0.00248
Assuming Gamma Distribution		95% KM (z) UCL	0.00243

Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00243
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0046
Maximum	0.0223	95% KM (BCA) UCL	0.00276
Mean	0.00663	95% KM (Percentile Bootstrap) UCL	0.00265
Median	0.00433	95% KM (Chebyshev) UCL	0.00412
SD	0.00678	97.5% KM (Chebyshev) UCL	0.00529
k star	0.304	99% KM (Chebyshev) UCL	0.0076
Theta star	0.0218		
Nu star	11.56	Potential UCLs to Use	
AppChi2	4.94	95% KM (t) UCL	0.00248
95% Gamma Approximate UCL	0.0155		
95% Adjusted Gamma UCL	0.0168		

Note: DL/2 is not a recommended method.

NAPHTHALENE

General Statistics			
Number of Valid Data	11	Number of Detected Data	3
Number of Distinct Detected Data	3	Number of Non-Detect Data	8
		Percent Non-Detects	72.73%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.1	Minimum Detected	0.0953
Maximum Detected	6.8	Maximum Detected	1.917
Mean of Detected	3.3	Mean of Detected	0.902
SD of Detected	3.064	SD of Detected	0.929
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	25	Maximum Non-Detect	3.219

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	11
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: There are only 3 Distinct Detected Values in this data set
The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.865	Shapiro Wilk Test Statistic	0.962
5% Shapiro Wilk Critical Value	0.767	5% Shapiro Wilk Critical Value	0.767
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4.786	Mean	1.227
SD	3.252	SD	1.069
95% DL/2 (t) UCL	6.564	95% H-Stat (DL/2) UCL	21.58
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.271
		SD in Log Scale	1.271
		Mean in Original Scale	2.474
		SD in Original Scale	2.815
		95% Percentile Bootstrap UCL	3.925
		95% BCA Bootstrap UCL	4.332
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data appear Normal at 5% Significance Level	
Theta Star	N/A		

nu star	N/A		
A-D Test Statistic	0.341	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	2.75
5% K-S Critical Value	N/A	SD	2.367
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.449
		95% KM (t) UCL	5.377
Assuming Gamma Distribution		95% KM (z) UCL	5.134
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.421
Minimum	N/A	95% KM (bootstrap t) UCL	12.53
Maximum	N/A	95% KM (BCA) UCL	6.8
Mean	N/A	95% KM (Percentile Bootstrap) UCL	6.8
Median	N/A	95% KM (Chebyshev) UCL	9.068
SD	N/A	97.5% KM (Chebyshev) UCL	11.8
k star	N/A	99% KM (Chebyshev) UCL	17.17
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	5.377
95% Gamma Approximate UCL	N/A	95% KM (Percentile Bootstrap) UCL	6.8
95% Adjusted Gamma UCL	N/A		
Note: DL/2 is not a recommended method.			

NICKEL

General Statistics			
Number of Valid Data	15	Number of Detected Data	11
Number of Distinct Detected Data	10	Number of Non-Detect Data	4
		Percent Non-Detects	26.67%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0122	Minimum Detected	-4.406
Maximum Detected	0.996	Maximum Detected	-0.00401
Mean of Detected	0.156	Mean of Detected	-2.776
SD of Detected	0.285	SD of Detected	1.32
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.05	Maximum Non-Detect	-2.996
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	10
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	66.67%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.528	Shapiro Wilk Test Statistic	0.928
5% Shapiro Wilk Critical Value	0.85	5% Shapiro Wilk Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.117	Mean	-3.295
SD	0.25	SD	1.471
95% DL/2 (t) UCL	0.231	95% H-Stat (DL/2) UCL	0.313
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-3.436
		SD in Log Scale	1.635
		Mean in Original Scale	0.116
		SD in Original Scale	0.251
		95% Percentile Bootstrap UCL	0.235
		95% BCA Bootstrap UCL	0.32
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.544	Data Follow Appr. Gamma Distribution at 5% Significance Level	

Theta Star	0.287		
nu star	11.96		
A-D Test Statistic	0.784	Nonparametric Statistics	
5% A-D Critical Value	0.769	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.769	Mean	0.118
5% K-S Critical Value	0.266	SD	0.241
Data follow Appr. Gamma Distribution at 5% Significance Level		SE of Mean	0.0653
		95% KM (t) UCL	0.233
Assuming Gamma Distribution		95% KM (z) UCL	0.226
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.231
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.553
Maximum	0.996	95% KM (BCA) UCL	0.243
Mean	0.119	95% KM (Percentile Bootstrap) UCL	0.243
Median	0.0293	95% KM (Chebyshev) UCL	0.403
SD	0.25	97.5% KM (Chebyshev) UCL	0.526
k star	0.186	99% KM (Chebyshev) UCL	0.768
Theta star	0.64		
Nu star	5.59	Potential UCLs to Use	
AppChi2	1.434	95% KM (Chebyshev) UCL	0.403
95% Gamma Approximate UCL	0.465		
95% Adjusted Gamma UCL	0.559		

Note: DL/2 is not a recommended method.

PHENANTHRENE

General Statistics			
Number of Valid Data	7	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	6
		Percent Non-Detects	85.71%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable PHENANTHRENE was not processed!

VANADIUM

General Statistics			
Number of Valid Data	15	Number of Detected Data	12
Number of Distinct Detected Data	11	Number of Non-Detect Data	3
		Percent Non-Detects	20.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.009	Minimum Detected	-4.711
Maximum Detected	0.223	Maximum Detected	-1.501
Mean of Detected	0.061	Mean of Detected	-3.39
SD of Detected	0.0742	SD of Detected	1.113
Minimum Non-Detect	0.006	Minimum Non-Detect	-5.116
Maximum Non-Detect	0.015	Maximum Non-Detect	-4.2
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	7
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	46.67%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.708	Shapiro Wilk Test Statistic	0.911
5% Shapiro Wilk Critical Value	0.859	5% Shapiro Wilk Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	

APPENDIX K, TABLE 25
RAGS 3.25 - CHLOROBENZENE HOT SPOT AREA - SHALLOW GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0499	Mean	-3.766
SD	0.0697	SD	1.27
95% DL/2 (t) UCL	0.0816	95% H-Stat (DL/2) UCL	0.109
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	0.0142	Mean in Log Scale	-3.757
SD	0.104	SD in Log Scale	1.279
95% MLE (t) UCL	0.0614	Mean in Original Scale	0.0501
95% MLE (Tiku) UCL	0.0706	SD in Original Scale	0.0696
		95% Percentile Bootstrap UCL	0.0801
		95% BCA Bootstrap UCL	0.0906
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.787	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0775		
nu star	18.89		
A-D Test Statistic	0.683	Nonparametric Statistics	
5% A-D Critical Value	0.758	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.758	Mean	0.0508
5% K-S Critical Value	0.253	SD	0.0667
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.018
		95% KM (t) UCL	0.0825
Assuming Gamma Distribution		95% KM (z) UCL	0.0804
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0821
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.127
Maximum	0.223	95% KM (BCA) UCL	0.0786
Mean	0.0505	95% KM (Percentile Bootstrap) UCL	0.0798
Median	0.025	95% KM (Chebyshev) UCL	0.129
SD	0.0693	97.5% KM (Chebyshev) UCL	0.163
k star	0.357	99% KM (Chebyshev) UCL	0.23
Theta star	0.142		
Nu star	10.7	Potential UCLs to Use	
AppChi2	4.383	95% KM (Chebyshev) UCL	0.129
95% Gamma Approximate UCL	0.123		
95% Adjusted Gamma UCL	0.139		

Note: DL/2 is not a recommended method.

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

ProUCL Output
General UCL Statistics for Data Sets with Non-Detects
User Selected Options
From File C:\Documents and Settings\StrodeSA\Desktop\Willis Ave\Book1.wst
Full Precision OFF
Confidence Coefficient 95%
Number of Bootstrap Operations 2000

1,1,2,2-TETRACHLOROETHANE

General Statistics

Number of Valid Data	61	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	60
		Percent Non-Detects	98.36%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable 1,1,2,2-TETRACHLOROETHANE was not processed!

1,2,3-TRICHLOROBENZENE

General Statistics

Number of Valid Data	4	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	3
		Percent Non-Detects	75.00%

Warning: This data set only has 4 observations!
Data set is too small to compute reliable and meaningful statistics and estimates!
The data set for variable 1,2,3-TRICHLOROBENZENE was not processed!

It is suggested to collect at least 8 to 10 observations before using these statistical methods!
If possible, compute and collect Data Quality Objectives (DQO) based sample size and analytical results.

1,2,4-TRICHLOROBENZENE

General Statistics

Number of Valid Data	32	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	24
		Percent Non-Detects	75.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.2	Minimum Detected	-1.609
Maximum Detected	1000	Maximum Detected	6.908
Mean of Detected	219.7	Mean of Detected	3.847
SD of Detected	340	SD of Detected	2.606
Minimum Non-Detect	2.5	Minimum Non-Detect	0.916
Maximum Non-Detect	150	Maximum Non-Detect	5.011

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	29
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	3
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	90.63%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.699	Shapiro Wilk Test Statistic	0.895
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	60.75	Mean	2.213
SD	186.9	SD	1.658
95% DL/2 (t) UCL	116.8	95% H-Stat (DL/2) UCL	54.67
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	659.4	Mean in Log Scale	-0.302
SD	333.6	SD in Log Scale	3.442
95% MLE (t) UCL	759.4	Mean in Original Scale	55.75
95% MLE (Tiku) UCL	977	SD in Original Scale	188
		95% Percentile Bootstrap UCL	115.9
		95% BCA Bootstrap UCL	165.5
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.347	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	632.6		
nu star	5.555		
A-D Test Statistic	0.213	Nonparametric Statistics	
5% A-D Critical Value	0.776	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.776	Mean	55.24
5% K-S Critical Value	0.312	SD	185.2
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	35
		95% KM (t) UCL	114.6
Assuming Gamma Distribution		95% KM (z) UCL	112.8
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	103.6
Minimum	1.00E-09	95% KM (bootstrap t) UCL	235.7
Maximum	1000	95% KM (BCA) UCL	159
Mean	135.1	95% KM (Percentile Bootstrap) UCL	127
Median	71.28	95% KM (Chebyshev) UCL	207.8
SD	196	97.5% KM (Chebyshev) UCL	273.8
k star	0.11	99% KM (Chebyshev) UCL	403.5
Theta star	1224		
Nu star	7.066	Potential UCLs to Use	
AppChi2	2.207	95% KM (t) UCL	114.6
95% Gamma Approximate UCL	432.6		
95% Adjusted Gamma UCL	462.5		
Note: DL/2 is not a recommended method.			

1,2-DICHLOROBENZENE

General Statistics			
Number of Valid Data	54	Number of Detected Data	15
Number of Distinct Detected Data	14	Number of Non-Detect Data	39
		Percent Non-Detects	72.22%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.8	Minimum Detected	0.588
Maximum Detected	29000	Maximum Detected	10.28
Mean of Detected	3993	Mean of Detected	5.968
SD of Detected	7339	SD of Detected	3.159
Minimum Non-Detect	5	Minimum Non-Detect	1.609
Maximum Non-Detect	500	Maximum Non-Detect	6.215
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	46
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	8
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	85.19%

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.562	Lilliefors Test Statistic	0.887
5% Lilliefors Critical Value	0.881	5% Lilliefors Critical Value	0.881
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1127	Mean	2.905
SD	4177	SD	2.732
95% DL/2 (t) UCL	2079	95% H-Stat (DL/2) UCL	1600
Maximum Likelihood Estimate(MLE) Method		Log ROS Method	
Mean	11316	Mean in Log Scale	0.949
SD	8308	SD in Log Scale	4.314
95% MLE (t) UCL	13209	Mean in Original Scale	1113
95% MLE (Tiku) UCL	16035	SD in Original Scale	4181
		95% Percentile Bootstrap UCL	2130
		95% BCA Bootstrap UCL	2808
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.282	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	14152		
nu star	8.465		
A-D Test Statistic	0.548	Nonparametric Statistics	
5% A-D Critical Value	0.837	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.837	Mean	1112
5% K-S Critical Value	0.24	SD	4142
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	583.5
		95% KM (t) UCL	2088
Assuming Gamma Distribution		95% KM (z) UCL	2071
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2062
Minimum	1.00E-09	95% KM (bootstrap t) UCL	3820
Maximum	58204	95% KM (BCA) UCL	2269
Mean	8876	95% KM (Percentile Bootstrap) UCL	2155
Median	3164	95% KM (Chebyshev) UCL	3655
SD	13341	97.5% KM (Chebyshev) UCL	4755
k star	0.113	99% KM (Chebyshev) UCL	6917
Theta star	78491		
Nu star	12.21	Potential UCLs to Use	
AppChi2	5.368	95% KM (t) UCL	2088
95% Gamma Approximate UCL	20195		
95% Adjusted Gamma UCL	20676		
Note: DL/2 is not a recommended method.			

1,2-DICHLOROETHANE

General Statistics			
Number of Valid Data	61	Number of Detected Data	2
Number of Distinct Detected Data	1	Number of Non-Detect Data	59
		Percent Non-Detects	96.72%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable 1,2-DICHLOROETHANE was not processed!

1,2-DICHLOROPROPANE

General Statistics

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Number of Valid Data	61	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	59
		Percent Non-Detects	96.72%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2	Minimum Detected	0.693
Maximum Detected	3	Maximum Detected	1.099
Mean of Detected	2.5	Mean of Detected	0.896
SD of Detected	0.707	SD of Detected	0.287
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	5000	Maximum Non-Detect	8.517

Note: Data have multiple DLs - Use of KM Method is recommended	Number treated as Non-Detect	61
For all methods (except KM, DL/2, and ROS Methods),	Number treated as Detected	0
Observations < Largest ND are treated as NDs	Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	1	Lilliefors Test Statistic	1
5% Lilliefors Critical Value	N/A	5% Lilliefors Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	155.1	Mean	2.007
SD	421.1	SD	2.573
95% DL/2 (t) UCL	245.2	95% H-Stat (DL/2) UCL	764.3
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	2.053
5% K-S Critical Value	N/A	SD	0.223
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0724
		95% KM (t) UCL	2.174
Assuming Gamma Distribution		95% KM (z) UCL	2.172
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	2.683
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	3
Mean	N/A	95% KM (Percentile Bootstrap) UCL	3

Median	N/A	95% KM (Chebyshev) UCL	2.368
SD	N/A	97.5% KM (Chebyshev) UCL	2.505
k star	N/A	99% KM (Chebyshev) UCL	2.773
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	2.174
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	3
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

1,3-DICHLOROBENZENE

General Statistics			
Number of Valid Data	61	Number of Detected Data	11
Number of Distinct Detected Data	11	Number of Non-Detect Data	50
		Percent Non-Detects	81.97%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.78	Minimum Detected	-0.248
Maximum Detected	9500	Maximum Detected	9.159
Mean of Detected	1079	Mean of Detected	4.709
SD of Detected	2804	SD of Detected	2.571
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	13000	Maximum Non-Detect	9.473
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	61
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.42	Lilliefors Test Statistic	0.969
5% Lilliefors Critical Value	0.85	5% Lilliefors Critical Value	0.85
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	456.8	Mean	2.849
SD	1529	SD	2.484
95% DL/2 (t) UCL	783.8	95% H-Stat (DL/2) UCL	814.6
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-0.935
		SD in Log Scale	3.815
		Mean in Original Scale	195.6
		SD in Original Scale	1218
		95% Percentile Bootstrap UCL	505.1
		95% BCA Bootstrap UCL	700.8
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.281	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3845		
nu star	6.175		
A-D Test Statistic	0.63	Nonparametric Statistics	
5% A-D Critical Value	0.82	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.82	Mean	203.7
5% K-S Critical Value	0.276	SD	1218
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	165.1
		95% KM (t) UCL	479.4
Assuming Gamma Distribution		95% KM (z) UCL	475.2
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	463.7
Minimum	0.78	95% KM (bootstrap t) UCL	2209
Maximum	9500	95% KM (BCA) UCL	565.9

Mean	1602	95% KM (Percentile Bootstrap) UCL	526
Median	1120	95% KM (Chebyshev) UCL	923.2
SD	1499	97.5% KM (Chebyshev) UCL	1235
k star	1.015	99% KM (Chebyshev) UCL	1846
Theta star	1579		
Nu star	123.8	Potential UCLs to Use	
AppChi2	99.13	95% KM (t) UCL	479.4
95% Gamma Approximate UCL	2002		
95% Adjusted Gamma UCL	2012		

Note: DL/2 is not a recommended method.

1,4-DICHLOROBENZENE

General Statistics			
Number of Valid Data	61	Number of Detected Data	22
Number of Distinct Detected Data	22	Number of Non-Detect Data	39
		Percent Non-Detects	63.93%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	3.9	Minimum Detected	1.361
Maximum Detected	72000	Maximum Detected	11.18
Mean of Detected	9159	Mean of Detected	7.236
SD of Detected	16031	SD of Detected	2.826
Minimum Non-Detect	5	Minimum Non-Detect	1.609
Maximum Non-Detect	500	Maximum Non-Detect	6.215
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	45
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	16
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	73.77%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.584	Lilliefors Test Statistic	0.9
5% Lilliefors Critical Value	0.911	5% Lilliefors Critical Value	0.911
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3319	Mean	3.714
SD	10465	SD	3.306
95% DL/2 (t) UCL	5557	95% H-Stat (DL/2) UCL	16873
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	2.969
		SD in Log Scale	4.163
		Mean in Original Scale	3310
		SD in Original Scale	10467
		95% Percentile Bootstrap UCL	5719
		95% BCA Bootstrap UCL	6591
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.337	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	27145		
nu star	14.85		
A-D Test Statistic	0.358	Nonparametric Statistics	
5% A-D Critical Value	0.836	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.836	Mean	3306
5% K-S Critical Value	0.2	SD	10382
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1361
		95% KM (t) UCL	5579
Assuming Gamma Distribution		95% KM (z) UCL	5544
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5543
Minimum	3.9	95% KM (bootstrap t) UCL	8963

Maximum	72000	95% KM (BCA) UCL	5684
Mean	9075	95% KM (Percentile Bootstrap) UCL	5653
Median	9137	95% KM (Chebyshev) UCL	9237
SD	9529	97.5% KM (Chebyshev) UCL	11803
k star	0.826	99% KM (Chebyshev) UCL	16844
Theta star	10985		
Nu star	100.8	Potential UCLs to Use	
AppChi2	78.63	95% KM (t) UCL	5579
95% Gamma Approximate UCL	11633		
95% Adjusted Gamma UCL	11703		

Note: DL/2 is not a recommended method.

2,4,6-TRICHLOROPHENOL

General Statistics			
Number of Valid Data	25	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	24
		Percent Non-Detects	96.00%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable 2,4,6-TRICHLOROPHENOL was not processed!

2,4-DICHLOROPHENOL

General Statistics			
Number of Valid Data	25	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	20
		Percent Non-Detects	80.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	4	Minimum Detected	1.386
Maximum Detected	23	Maximum Detected	3.135
Mean of Detected	14.2	Mean of Detected	2.504
SD of Detected	7.19	SD of Detected	0.68
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	25
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.991	Shapiro Wilk Test Statistic	0.887
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	26.64	Mean	1.972
SD	98.73	SD	0.995
95% DL/2 (t) UCL	60.42	95% H-Stat (DL/2) UCL	18.49

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.559
		SD in Log Scale	0.775
		Mean in Original Scale	6.358
		SD in Original Scale	5.399
		95% Percentile Bootstrap UCL	8.175
		95% BCA Bootstrap UCL	8.577

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	1.533	Data appear Normal at 5% Significance Level	
Theta Star	9.262		
nu star	15.33		
A-D Test Statistic	0.302	Nonparametric Statistics	
5% A-D Critical Value	0.682	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.682	Mean	6.125
5% K-S Critical Value	0.359	SD	5.077
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.159
		95% KM (t) UCL	8.107
Assuming Gamma Distribution		95% KM (z) UCL	8.031
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	10.4
Minimum	2.18	95% KM (bootstrap t) UCL	7.63
Maximum	23	95% KM (BCA) UCL	18.2
Mean	9.933	95% KM (Percentile Bootstrap) UCL	15.76
Median	9.321	95% KM (Chebyshev) UCL	11.18
SD	5.461	97.5% KM (Chebyshev) UCL	13.36
k star	2.78	99% KM (Chebyshev) UCL	17.65
Theta star	3.573		
Nu star	139	Potential UCLs to Use	
AppChi2	112.8	95% KM (t) UCL	8.107
95% Gamma Approximate UCL	12.24	95% KM (Percentile Bootstrap) UCL	15.76
95% Adjusted Gamma UCL	12.42		

Note: DL/2 is not a recommended method.

2-CHLOROPHENOL

General Statistics			
Number of Valid Data	25	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	20
		Percent Non-Detects	80.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	180	Maximum Detected	5.193
Mean of Detected	50.4	Mean of Detected	2.71
SD of Detected	74.29	SD of Detected	2.035
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	25
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.741	Shapiro Wilk Test Statistic	0.972
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762

Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	33.88	Mean	2.014
SD	103.4	SD	1.287
95% DL/2 (t) UCL	69.26	95% H-Stat (DL/2) UCL	41.61
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.998
		SD in Log Scale	1.766
		Mean in Original Scale	13.2
		SD in Original Scale	36.03
		95% Percentile Bootstrap UCL	26.14
		95% BCA Bootstrap UCL	38.94
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.342	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	147.4		
nu star	3.42		
A-D Test Statistic	0.227	Nonparametric Statistics	
5% A-D Critical Value	0.71	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.71	Mean	12.48
5% K-S Critical Value	0.371	SD	36.05
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	8.287
		95% KM (t) UCL	26.66
Assuming Gamma Distribution		95% KM (z) UCL	26.11
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	25.71
Minimum	1.00E-09	95% KM (bootstrap t) UCL	49.9
Maximum	180	95% KM (BCA) UCL	180
Mean	35.64	95% KM (Percentile Bootstrap) UCL	40.08
Median	27.25	95% KM (Chebyshev) UCL	48.6
SD	39.78	97.5% KM (Chebyshev) UCL	64.23
k star	0.142	99% KM (Chebyshev) UCL	94.94
Theta star	251.2		
Nu star	7.094	Potential UCLs to Use	
AppChi2	2.222	95% KM (t) UCL	26.66
95% Gamma Approximate UCL	113.8		
95% Adjusted Gamma UCL	123.9		

Note: DL/2 is not a recommended method.

2-METHYLNAPHTHALENE

General Statistics			
Number of Valid Data	28	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	23
		Percent Non-Detects	82.14%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	24	Maximum Detected	3.178
Mean of Detected	7.6	Mean of Detected	1.454
SD of Detected	9.397	SD of Detected	1.205
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	28
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.748	Shapiro Wilk Test Statistic	0.974
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	23.2	Mean	1.756
SD	93.52	SD	0.992
95% DL/2 (t) UCL	53.3	95% H-Stat (DL/2) UCL	16.44
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.076
		SD in Log Scale	0.894
		Mean in Original Scale	4.362
		SD in Original Scale	4.75
		95% Percentile Bootstrap UCL	6.003
		95% BCA Bootstrap UCL	6.412
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.536	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	14.19		
nu star	5.355		
A-D Test Statistic	0.323	Nonparametric Statistics	
5% A-D Critical Value	0.691	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.691	Mean	4.259
5% K-S Critical Value	0.364	SD	4.368
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.388
		95% KM (t) UCL	6.623
Assuming Gamma Distribution		95% KM (z) UCL	6.542
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6.821
Minimum	0.124	95% KM (bootstrap t) UCL	7.205
Maximum	24	95% KM (BCA) UCL	6.821
Mean	6.852	95% KM (Percentile Bootstrap) UCL	6.667
Median	6.97	95% KM (Chebyshev) UCL	10.31
SD	4.613	97.5% KM (Chebyshev) UCL	12.92
k star	1.596	99% KM (Chebyshev) UCL	18.07
Theta star	4.293		
Nu star	89.38	Potential UCLs to Use	
AppChi2	68.58	95% KM (t) UCL	6.623
95% Gamma Approximate UCL	8.93		
95% Adjusted Gamma UCL	9.079		

Note: DL/2 is not a recommended method.

2-NITROPHENOL

General Statistics			
Number of Valid Data	25	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	24
		Percent Non-Detects	96.00%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable 2-NITROPHENOL was not processed!

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

4-CHLORO-3-METHYLPHENOL

General Statistics			
Number of Valid Data	25	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	23
		Percent Non-Detects	92.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	3	Minimum Detected	1.099
Maximum Detected	4	Maximum Detected	1.386
Mean of Detected	3.5	Mean of Detected	1.242
SD of Detected	0.707	SD of Detected	0.203
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	25
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	24.7	Mean	1.768
SD	99.02	SD	0.933
95% DL/2 (t) UCL	58.58	95% H-Stat (DL/2) UCL	15.98
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	3.5
5% K-S Critical Value	N/A	SD	0.5
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.5
		95% KM (t) UCL	4.355
Assuming Gamma Distribution		95% KM (z) UCL	4.322
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.685

Minimum	N/A	95% KM (bootstrap t) UCL	4.25
Maximum	N/A	95% KM (BCA) UCL	4
Mean	N/A	95% KM (Percentile Bootstrap) UCL	4
Median	N/A	95% KM (Chebyshev) UCL	5.679
SD	N/A	97.5% KM (Chebyshev) UCL	6.622
k star	N/A	99% KM (Chebyshev) UCL	8.475
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	4.355
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	4
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

4-METHYLPHENOL

General Statistics

Number of Valid Data	25	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	17
		Percent Non-Detects	68.00%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	6	Minimum Detected	1.792
Maximum Detected	500	Maximum Detected	6.215
Mean of Detected	128.8	Mean of Detected	3.861
SD of Detected	173.4	SD of Detected	1.661
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	25
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.769	Shapiro Wilk Test Statistic	0.938
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	64.42	Mean	2.518
SD	142.8	SD	1.587
95% DL/2 (t) UCL	113.3	95% H-Stat (DL/2) UCL	84.02

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	2.321
		SD in Log Scale	1.697
		Mean in Original Scale	46.78
		SD in Original Scale	110
		95% Percentile Bootstrap UCL	86.18
		95% BCA Bootstrap UCL	106.4

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only
k star (bias corrected)	0.469	Data appear Gamma Distributed at 5% Significance Level
Theta Star	274.5	
nu star	7.503	

A-D Test Statistic	0.292	Nonparametric Statistics	
5% A-D Critical Value	0.754	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.754	Mean	47.25
5% K-S Critical Value	0.307	SD	110
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	24
		95% KM (t) UCL	88.3
Assuming Gamma Distribution		95% KM (z) UCL	86.72
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	86.52
Minimum	6	95% KM (bootstrap t) UCL	168.4
Maximum	500	95% KM (BCA) UCL	103.3
Mean	119	95% KM (Percentile Bootstrap) UCL	93.17
Median	115.6	95% KM (Chebyshev) UCL	151.8
SD	95.11	97.5% KM (Chebyshev) UCL	197.1
k star	1.489	99% KM (Chebyshev) UCL	286
Theta star	79.9		
Nu star	74.47	Potential UCLs to Use	
AppChi2	55.6	95% KM (t) UCL	88.3
95% Gamma Approximate UCL	159.4		
95% Adjusted Gamma UCL	162.7		

Note: DL/2 is not a recommended method.

4-NITROPHENOL

General Statistics

Number of Valid Data	25	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	24
		Percent Non-Detects	96.00%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).
The data set for variable 4-NITROPHENOL was not processed!

ACETONE

General Statistics

Number of Valid Data	28	Number of Detected Data	8
Number of Distinct Detected Data	8	Number of Non-Detect Data	20
		Percent Non-Detects	71.43%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	8	Minimum Detected	2.079
Maximum Detected	2800	Maximum Detected	7.937
Mean of Detected	526.4	Mean of Detected	4.85
SD of Detected	968.2	SD of Detected	1.841
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	10000	Maximum Non-Detect	9.21

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	28
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only	Lognormal Distribution Test with Detected Values Only

Shapiro Wilk Test Statistic	0.608	Shapiro Wilk Test Statistic	0.965
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	580.8	Mean	3.976
SD	1189	SD	2.441
95% DL/2 (t) UCL	963.5	95% H-Stat (DL/2) UCL	13242
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	2.698
		SD in Log Scale	1.944
		Mean in Original Scale	157.6
		SD in Original Scale	547.2
		95% Percentile Bootstrap UCL	348.9
		95% BCA Bootstrap UCL	459.4
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.368	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1431		
nu star	5.886		
A-D Test Statistic	0.591	Nonparametric Statistics	
5% A-D Critical Value	0.77	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.77	Mean	181.9
5% K-S Critical Value	0.311	SD	567.3
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	122
		95% KM (t) UCL	389.7
Assuming Gamma Distribution		95% KM (z) UCL	382.5
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	367.9
Minimum	1.00E-09	95% KM (bootstrap t) UCL	2005
Maximum	7838	95% KM (BCA) UCL	465.3
Mean	1757	95% KM (Percentile Bootstrap) UCL	410.6
Median	924	95% KM (Chebyshev) UCL	713.6
SD	1966	97.5% KM (Chebyshev) UCL	943.7
k star	0.201	99% KM (Chebyshev) UCL	1396
Theta star	8751		
Nu star	11.24	Potential UCLs to Use	
AppChi2	4.733	95% KM (t) UCL	389.7
95% Gamma Approximate UCL	4174		
95% Adjusted Gamma UCL	4416		

Note: DL/2 is not a recommended method.

ALUMINUM

General Statistics			
Number of Valid Data	56	Number of Detected Data	31
Number of Distinct Detected Data	31	Number of Non-Detect Data	25
		Percent Non-Detects	44.64%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.44	Minimum Detected	-0.821
Maximum Detected	287	Maximum Detected	5.659
Mean of Detected	29.96	Mean of Detected	2.145
SD of Detected	57.74	SD of Detected	1.711
Minimum Non-Detect	0.011	Minimum Non-Detect	-4.51
Maximum Non-Detect	1.01	Maximum Non-Detect	0.00995
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	30
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	26
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	53.57%

UCL Statistics

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.541	Lilliefors Test Statistic	0.975
5% Lilliefors Critical Value	0.929	5% Lilliefors Critical Value	0.929
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	16.63	Mean	-0.253
SD	45.2	SD	3.09
95% DL/2 (t) UCL	26.73	95% H-Stat (DL/2) UCL	238.2
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.283
		SD in Log Scale	2.457
		Mean in Original Scale	16.65
		SD in Original Scale	45.19
		95% Percentile Bootstrap UCL	27.47
		95% BCA Bootstrap UCL	33.18
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.478	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	62.7		
nu star	29.62		
A-D Test Statistic	0.747	Nonparametric Statistics	
5% A-D Critical Value	0.809	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.809	Mean	16.78
5% K-S Critical Value	0.167	SD	44.74
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	6.077
		95% KM (t) UCL	26.95
Assuming Gamma Distribution		95% KM (z) UCL	26.78
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	26.83
Minimum	0.44	95% KM (bootstrap t) UCL	40.11
Maximum	287	95% KM (BCA) UCL	28.92
Mean	22.68	95% KM (Percentile Bootstrap) UCL	27.18
Median	12	95% KM (Chebyshev) UCL	43.27
SD	43.67	97.5% KM (Chebyshev) UCL	54.74
k star	0.674	99% KM (Chebyshev) UCL	77.25
Theta star	33.66		
Nu star	75.48	Potential UCLs to Use	
AppChi2	56.47	95% KM (BCA) UCL	28.92
95% Gamma Approximate UCL	30.32		
95% Adjusted Gamma UCL	30.55		
Note: DL/2 is not a recommended method.			

ARSENIC

General Statistics			
Number of Valid Data	56	Number of Detected Data	33
Number of Distinct Detected Data	31	Number of Non-Detect Data	23
		Percent Non-Detects	41.07%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.001	Minimum Detected	-6.908
Maximum Detected	0.956	Maximum Detected	-0.045
Mean of Detected	0.0687	Mean of Detected	-4.051
SD of Detected	0.177	SD of Detected	1.468
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	0.0274	Maximum Non-Detect	-3.597
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	47
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	83.93%

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.407	Lilliefors Test Statistic	0.93
5% Lilliefors Critical Value	0.931	5% Lilliefors Critical Value	0.931
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0417	Mean	-5.055
SD	0.139	SD	1.808
95% DL/2 (t) UCL	0.0726	95% H-Stat (DL/2) UCL	0.0401
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.293
		SD in Log Scale	1.968
		Mean in Original Scale	0.041
		SD in Original Scale	0.139
		95% Percentile Bootstrap UCL	0.0743
		95% BCA Bootstrap UCL	0.0905
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.445	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.154		
nu star	29.38		
A-D Test Statistic	3.376	Nonparametric Statistics	
5% A-D Critical Value	0.818	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.818	Mean	0.0413
5% K-S Critical Value	0.163	SD	0.137
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0187
		95% KM (t) UCL	0.0725
Assuming Gamma Distribution		95% KM (z) UCL	0.072
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0719
Minimum	0.001	95% KM (bootstrap t) UCL	0.125
Maximum	0.956	95% KM (BCA) UCL	0.0754
Mean	0.0665	95% KM (Percentile Bootstrap) UCL	0.072
Median	0.0549	95% KM (Chebyshev) UCL	0.123
SD	0.135	97.5% KM (Chebyshev) UCL	0.158
k star	0.711	99% KM (Chebyshev) UCL	0.227
Theta star	0.0935		
Nu star	79.66	Potential UCLs to Use	
AppChi2	60.09	95% KM (Chebyshev) UCL	0.123
95% Gamma Approximate UCL	0.0881		
95% Adjusted Gamma UCL	0.0888		
Note: DL/2 is not a recommended method.			

BARIUM

General Statistics			
Number of Valid Data	56	Number of Detected Data	53
Number of Distinct Detected Data	49	Number of Non-Detect Data	3
		Percent Non-Detects	5.36%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0121	Minimum Detected	-4.415
Maximum Detected	10.9	Maximum Detected	2.389
Mean of Detected	0.472	Mean of Detected	-1.827
SD of Detected	1.503	SD of Detected	1.269
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.194	Maximum Non-Detect	-1.64
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	30
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	26
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	53.57%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.393	Lilliefors Test Statistic	0.0802
5% Lilliefors Critical Value	0.122	5% Lilliefors Critical Value	0.122
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.45	Mean	-1.916
SD	1.465	SD	1.325
95% DL/2 (t) UCL	0.777	95% H-Stat (DL/2) UCL	0.492
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.921
		SD in Log Scale	1.32
		Mean in Original Scale	0.449
		SD in Original Scale	1.465
		95% Percentile Bootstrap UCL	0.821
		95% BCA Bootstrap UCL	1.065
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.557	Data appear Lognormal at 5% Significance Level	
Theta Star	0.848		
nu star	59.05		
A-D Test Statistic	3.489	Nonparametric Statistics	
5% A-D Critical Value	0.808	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.808	Mean	0.45
5% K-S Critical Value	0.128	SD	1.452
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.196
		95% KM (t) UCL	0.777
Assuming Gamma Distribution		95% KM (z) UCL	0.772
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.777
Minimum	1.00E-09	95% KM (bootstrap t) UCL	1.883
Maximum	10.9	95% KM (BCA) UCL	0.839
Mean	0.447	95% KM (Percentile Bootstrap) UCL	0.827
Median	0.162	95% KM (Chebyshev) UCL	1.303
SD	1.466	97.5% KM (Chebyshev) UCL	1.673
k star	0.327	99% KM (Chebyshev) UCL	2.398
Theta star	1.365		
Nu star	36.66	Potential UCLs to Use	
AppChi2	23.8	95% KM (Chebyshev) UCL	1.303
95% Gamma Approximate UCL	0.688		
95% Adjusted Gamma UCL	0.696		
Note: DL/2 is not a recommended method.			

BENZENE

General Statistics			
Number of Valid Data	61	Number of Detected Data	46
Number of Distinct Detected Data	39	Number of Non-Detect Data	15
		Percent Non-Detects	24.59%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.7	Minimum Detected	-0.357
Maximum Detected	62000	Maximum Detected	11.03
Mean of Detected	7591	Mean of Detected	5.441
SD of Detected	16518	SD of Detected	3.559
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	5	Maximum Non-Detect	1.609
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	26
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	35

Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	42.62%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.514	Lilliefors Test Statistic	0.918
5% Lilliefors Critical Value	0.945	5% Lilliefors Critical Value	0.945
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	5724	Mean	4.091
SD	14679	SD	3.916
95% DL/2 (t) UCL	8865	95% H-Stat (DL/2) UCL	841362
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	3.715
		SD in Log Scale	4.453
		Mean in Original Scale	5724
		SD in Original Scale	14679
		95% Percentile Bootstrap UCL	9033
		95% BCA Bootstrap UCL	9885
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.21	Data do not follow a Discernable Distribution (0.05)	
Theta Star	36144		
nu star	19.32		
A-D Test Statistic	1.526	Nonparametric Statistics	
5% A-D Critical Value	0.902	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.902	Mean	5724
5% K-S Critical Value	0.144	SD	14559
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1885
		95% KM (t) UCL	8873
Assuming Gamma Distribution		95% KM (z) UCL	8824
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	8864
Minimum	1.00E-09	95% KM (bootstrap t) UCL	10200
Maximum	62000	95% KM (BCA) UCL	8898
Mean	5724	95% KM (Percentile Bootstrap) UCL	8926
Median	33	95% KM (Chebyshev) UCL	13939
SD	14680	97.5% KM (Chebyshev) UCL	17494
k star	0.0925	99% KM (Chebyshev) UCL	24476
Theta star	61886		
Nu star	11.28	Potential UCLs to Use	
AppChi2	4.76	97.5% KM (Chebyshev) UCL	17494
95% Gamma Approximate UCL	13571		
95% Adjusted Gamma UCL	13870		
Note: DL/2 is not a recommended method.			

BENZO(B)FLUORANTHENE

General Statistics			
Number of Valid Data	27	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	26
		Percent Non-Detects	96.30%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BENZO(B)FLUORANTHENE was not processed!

BENZO(G,H,I)PERYLENE

General Statistics			
Number of Valid Data	27	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	26
		Percent Non-Detects	96.30%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BENZO(G,H,I)PERYLENE was not processed!

BENZO(K)FLUORANTHENE

General Statistics			
Number of Valid Data	27	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	26
		Percent Non-Detects	96.30%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BENZO(K)FLUORANTHENE was not processed!

BERYLLIUM

General Statistics			
Number of Valid Data	57	Number of Detected Data	19
Number of Distinct Detected Data	14	Number of Non-Detect Data	38
		Percent Non-Detects	66.67%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.001	Minimum Detected	-6.908
Maximum Detected	0.031	Maximum Detected	-3.474
Mean of Detected	0.00814	Mean of Detected	-5.419
SD of Detected	0.0101	SD of Detected	1.071
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	0.0346	Maximum Non-Detect	-3.364

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	57
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.666	Lilliefors Test Statistic	0.845
5% Lilliefors Critical Value	0.901	5% Lilliefors Critical Value	0.901
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00476	Mean	-6.151
SD	0.00711	SD	1.24
95% DL/2 (t) UCL	0.00634	95% H-Stat (DL/2) UCL	0.0102
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.875
		SD in Log Scale	1.385
		Mean in Original Scale	0.00316
		SD in Original Scale	0.00674
		95% Percentile Bootstrap UCL	0.00472
		95% BCA Bootstrap UCL	0.00523

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.839	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0097		
nu star	31.88		
A-D Test Statistic	1.984	Nonparametric Statistics	
5% A-D Critical Value	0.771	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.771	Mean	0.00368
5% K-S Critical Value	0.205	SD	0.00666
Data not Gamma Distributed at 5% Significance Level		SE of Mean	9.29E-04
		95% KM (t) UCL	0.00523
Assuming Gamma Distribution		95% KM (z) UCL	0.00521
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00512
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.00599
Maximum	0.032	95% KM (BCA) UCL	0.00556
Mean	0.0099	95% KM (Percentile Bootstrap) UCL	0.00537
Median	0.00751	95% KM (Chebyshev) UCL	0.00773
SD	0.00857	97.5% KM (Chebyshev) UCL	0.00948
k star	0.438	99% KM (Chebyshev) UCL	0.0129
Theta star	0.0226		
Nu star	49.98	Potential UCLs to Use	
AppChi2	34.75	95% KM (BCA) UCL	0.00556
95% Gamma Approximate UCL	0.0142		
95% Adjusted Gamma UCL	0.0144		

Note: DL/2 is not a recommended method.

BIS(2-ETHYLHEXYL)PHTHALATE

General Statistics			
Number of Valid Data	27	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	26
		Percent Non-Detects	96.30%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable BIS(2-ETHYLHEXYL)PHTHALATE was not processed!

CARBON DISULFIDE

General Statistics			
Number of Valid Data	28	Number of Detected Data	7
Number of Distinct Detected Data	7	Number of Non-Detect Data	21
		Percent Non-Detects	75.00%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	250	Maximum Detected	5.521
Mean of Detected	81.57	Mean of Detected	3.27
SD of Detected	100.5	SD of Detected	2.045
Minimum Non-Detect	5	Minimum Non-Detect	1.609
Maximum Non-Detect	5000	Maximum Non-Detect	8.517
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	28
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 7 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.773	Shapiro Wilk Test Statistic	0.9
5% Shapiro Wilk Critical Value	0.803	5% Shapiro Wilk Critical Value	0.803
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	226.5	Mean	2.909
SD	550.9	SD	2.395
95% DL/2 (t) UCL	403.8	95% H-Stat (DL/2) UCL	2902
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.47
		SD in Log Scale	1.771
		Mean in Original Scale	23.44
		SD in Original Scale	58.5
		95% Percentile Bootstrap UCL	42.96
		95% BCA Bootstrap UCL	51.28
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.411	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	198.4		
nu star	5.756		
A-D Test Statistic	0.343	Nonparametric Statistics	
5% A-D Critical Value	0.748	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.748	Mean	27.42
5% K-S Critical Value	0.326	SD	63.44
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	14.48
		95% KM (t) UCL	52.09
Assuming Gamma Distribution		95% KM (z) UCL	51.24
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	50.95
Minimum	1.00E-09	95% KM (bootstrap t) UCL	98.72
Maximum	250	95% KM (BCA) UCL	71.33
Mean	60.64	95% KM (Percentile Bootstrap) UCL	62.8
Median	54.02	95% KM (Chebyshev) UCL	90.55
SD	56.03	97.5% KM (Chebyshev) UCL	117.9
k star	0.241	99% KM (Chebyshev) UCL	171.5
Theta star	252.1		
Nu star	13.47	Potential UCLs to Use	
AppChi2	6.21	95% KM (t) UCL	52.09
95% Gamma Approximate UCL	131.5		
95% Adjusted Gamma UCL	138.3		
Note: DL/2 is not a recommended method.			

CHLOROBENZENE

General Statistics			
Number of Valid Data	61	Number of Detected Data	25
Number of Distinct Detected Data	22	Number of Non-Detect Data	36
		Percent Non-Detects	59.02%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	87000	Maximum Detected	11.37
Mean of Detected	10903	Mean of Detected	6.09
SD of Detected	22925	SD of Detected	3.463
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	5000	Maximum Non-Detect	8.517
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	52

For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	85.25%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.529	Lilliefors Test Statistic	0.918
5% Lilliefors Critical Value	0.918	5% Lilliefors Critical Value	0.918
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	4567	Mean	3.444
SD	15450	SD	3.68
95% DL/2 (t) UCL	7872	95% H-Stat (DL/2) UCL	169626
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.932
		SD in Log Scale	5.339
		Mean in Original Scale	4469
		SD in Original Scale	15474
		95% Percentile Bootstrap UCL	7882
		95% BCA Bootstrap UCL	9602
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.225	Data do not follow a Discernable Distribution (0.05)	
Theta Star	48481		
nu star	11.24		
A-D Test Statistic	0.942	Nonparametric Statistics	
5% A-D Critical Value	0.884	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.884	Mean	4475
5% K-S Critical Value	0.192	SD	15346
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2005
		95% KM (t) UCL	7825
Assuming Gamma Distribution		95% KM (z) UCL	7773
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7782
Minimum	1	95% KM (bootstrap t) UCL	13520
Maximum	87000	95% KM (BCA) UCL	7590
Mean	11632	95% KM (Percentile Bootstrap) UCL	8113
Median	4529	95% KM (Chebyshev) UCL	13216
SD	17711	97.5% KM (Chebyshev) UCL	16998
k star	0.4	99% KM (Chebyshev) UCL	24428
Theta star	29097		
Nu star	48.77	Potential UCLs to Use	
AppChi2	33.74	97.5% KM (Chebyshev) UCL	16998
95% Gamma Approximate UCL	16815		
95% Adjusted Gamma UCL	16967		
Note: DL/2 is not a recommended method.			

CHLOROFORM

General Statistics			
Number of Valid Data	61	Number of Detected Data	6
Number of Distinct Detected Data	4	Number of Non-Detect Data	55
		Percent Non-Detects	90.16%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1	Minimum Detected	0
Maximum Detected	52	Maximum Detected	3.951
Mean of Detected	10.33	Mean of Detected	1.073
SD of Detected	20.45	SD of Detected	1.539
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	5000	Maximum Non-Detect	8.517

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	61
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.547	Lilliefors Test Statistic	0.774
5% Lilliefors Critical Value	0.788	5% Lilliefors Critical Value	0.788
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	153.9	Mean	1.985
SD	421.3	SD	2.563
95% DL/2 (t) UCL	244.1	95% H-Stat (DL/2) UCL	785.8
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-2.382
		SD in Log Scale	2.053
		Mean in Original Scale	1.228
		SD in Original Scale	6.654
		95% Percentile Bootstrap UCL	2.898
		95% BCA Bootstrap UCL	3.834
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.362	Data do not follow a Discernable Distribution (0.05)	
Theta Star	28.51		
nu star	4.349		
A-D Test Statistic	0.98	Nonparametric Statistics	
5% A-D Critical Value	0.736	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.736	Mean	2.419
5% K-S Critical Value	0.349	SD	7.686
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.29
		95% KM (t) UCL	4.574
Assuming Gamma Distribution		95% KM (z) UCL	4.54
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	4.417
Minimum	1	95% KM (bootstrap t) UCL	17.53
Maximum	52	95% KM (BCA) UCL	5.658
Mean	17.79	95% KM (Percentile Bootstrap) UCL	5.062
Median	14.8	95% KM (Chebyshev) UCL	8.042
SD	11.12	97.5% KM (Chebyshev) UCL	10.47
k star	2.17	99% KM (Chebyshev) UCL	15.25
Theta star	8.195		
Nu star	264.8	Potential UCLs to Use	
AppChi2	228.1	95% KM (Chebyshev) UCL	8.042
95% Gamma Approximate UCL	20.65		
95% Adjusted Gamma UCL	20.72		
Note: DL/2 is not a recommended method.			

CHROMIUM

General Statistics			
Number of Valid Data	56	Number of Detected Data	18
Number of Distinct Detected Data	18	Number of Non-Detect Data	38
		Percent Non-Detects	67.86%

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0044	Minimum Detected	-5.426
Maximum Detected	2.7	Maximum Detected	0.993
Mean of Detected	0.339	Mean of Detected	-2.722
SD of Detected	0.762	SD of Detected	1.817
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.117	Maximum Non-Detect	-2.146
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	50
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	89.29%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.471	Lilliefors Test Statistic	0.95
5% Lilliefors Critical Value	0.897	5% Lilliefors Critical Value	0.897
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.119	Mean	-4.246
SD	0.451	SD	1.809
95% DL/2 (t) UCL	0.219	95% H-Stat (DL/2) UCL	0.0859
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.941
		SD in Log Scale	2.688
		Mean in Original Scale	0.11
		SD in Original Scale	0.453
		95% Percentile Bootstrap UCL	0.222
		95% BCA Bootstrap UCL	0.271
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.371	Data appear Lognormal at 5% Significance Level	
Theta Star	0.913		
nu star	13.37		
A-D Test Statistic	1.368	Nonparametric Statistics	
5% A-D Critical Value	0.821	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.821	Mean	0.113
5% K-S Critical Value	0.218	SD	0.448
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0616
		95% KM (t) UCL	0.216
Assuming Gamma Distribution		95% KM (z) UCL	0.214
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.213
Minimum	0.0044	95% KM (bootstrap t) UCL	0.851
Maximum	2.7	95% KM (BCA) UCL	0.216
Mean	0.338	95% KM (Percentile Bootstrap) UCL	0.223
Median	0.333	95% KM (Chebyshev) UCL	0.382
SD	0.424	97.5% KM (Chebyshev) UCL	0.498
k star	1.035	99% KM (Chebyshev) UCL	0.726
Theta star	0.327		
Nu star	115.9	Potential UCLs to Use	
AppChi2	92.02	95% KM (Chebyshev) UCL	0.382
95% Gamma Approximate UCL	0.426		
95% Adjusted Gamma UCL	0.428		
Note: DL/2 is not a recommended method.			

CHRYSENE

General Statistics			
Number of Valid Data	27	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	25
		Percent Non-Detects	92.59%

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2	Minimum Detected	0.693
Maximum Detected	4	Maximum Detected	1.386
Mean of Detected	3	Mean of Detected	1.04
SD of Detected	1.414	SD of Detected	0.49
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	27
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	23.22	Mean	1.745
SD	95.29	SD	0.912
95% DL/2 (t) UCL	54.5	95% H-Stat (DL/2) UCL	14.94
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		
A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	3
5% K-S Critical Value	N/A	SD	1
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1
		95% KM (t) UCL	4.706
Assuming Gamma Distribution		95% KM (z) UCL	4.645
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	5.367
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	4
Mean	N/A	95% KM (Percentile Bootstrap) UCL	N/A
Median	N/A	95% KM (Chebyshev) UCL	7.359
SD	N/A	97.5% KM (Chebyshev) UCL	9.245
k star	N/A	99% KM (Chebyshev) UCL	12.95

Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	4.706
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	N/A
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

COBALT

General Statistics			
Number of Valid Data	56	Number of Detected Data	12
Number of Distinct Detected Data	12	Number of Non-Detect Data	44
		Percent Non-Detects	78.57%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0034	Minimum Detected	-5.684
Maximum Detected	0.367	Maximum Detected	-1.002
Mean of Detected	0.0636	Mean of Detected	-3.519
SD of Detected	0.0999	SD of Detected	1.299
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.09	Maximum Non-Detect	-2.408
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	55
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	1
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	98.21%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.584	Lilliefors Test Statistic	0.971
5% Lilliefors Critical Value	0.859	5% Lilliefors Critical Value	0.859
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0195	Mean	-5.158
SD	0.0512	SD	1.446
95% DL/2 (t) UCL	0.031	95% H-Stat (DL/2) UCL	0.0193
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.718
		SD in Log Scale	2.2
		Mean in Original Scale	0.0145
		SD in Original Scale	0.0516
		95% Percentile Bootstrap UCL	0.0274
		95% BCA Bootstrap UCL	0.0342
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.64	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.0993		
nu star	15.37		
A-D Test Statistic	0.464	Nonparametric Statistics	
5% A-D Critical Value	0.765	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.765	Mean	0.0169
5% K-S Critical Value	0.255	SD	0.0507
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.00711
		95% KM (t) UCL	0.0288
Assuming Gamma Distribution		95% KM (z) UCL	0.0286
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0276
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0486
Maximum	0.675	95% KM (BCA) UCL	0.0374
Mean	0.21	95% KM (Percentile Bootstrap) UCL	0.0321
Median	0.195	95% KM (Chebyshev) UCL	0.0478

SD	0.189	97.5% KM (Chebyshev) UCL	0.0613
k star	0.413	99% KM (Chebyshev) UCL	0.0876
Theta star	0.509		
Nu star	46.25	Potential UCLs to Use	
AppChi2	31.64	95% KM (t) UCL	0.0288
95% Gamma Approximate UCL	0.307		
95% Adjusted Gamma UCL	0.31		

Note: DL/2 is not a recommended method.

COPPER

General Statistics			
Number of Valid Data	56	Number of Detected Data	24
Number of Distinct Detected Data	24	Number of Non-Detect Data	32
		Percent Non-Detects	57.14%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0021	Minimum Detected	-6.166
Maximum Detected	0.651	Maximum Detected	-0.429
Mean of Detected	0.119	Mean of Detected	-3.182
SD of Detected	0.174	SD of Detected	1.604
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.06	Maximum Non-Detect	-2.813
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	46
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	82.14%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.693	Lilliefors Test Statistic	0.966
5% Lilliefors Critical Value	0.916	5% Lilliefors Critical Value	0.916
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0553	Mean	-4.456
SD	0.125	SD	1.741
95% DL/2 (t) UCL	0.0833	95% H-Stat (DL/2) UCL	0.0818
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.302
		SD in Log Scale	2.282
		Mean in Original Scale	0.0519
		SD in Original Scale	0.127
		95% Percentile Bootstrap UCL	0.0819
		95% BCA Bootstrap UCL	0.0898
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.544	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.218		
nu star	26.09		
A-D Test Statistic	0.677	Nonparametric Statistics	
5% A-D Critical Value	0.798	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.798	Mean	0.053
5% K-S Critical Value	0.187	SD	0.125
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0171
		95% KM (t) UCL	0.0816
Assuming Gamma Distribution		95% KM (z) UCL	0.0811
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0806
Minimum	0.0021	95% KM (bootstrap t) UCL	0.0966
Maximum	0.651	95% KM (BCA) UCL	0.0866
Mean	0.117	95% KM (Percentile Bootstrap) UCL	0.0821

Median	0.108	95% KM (Chebyshev) UCL	0.127
SD	0.113	97.5% KM (Chebyshev) UCL	0.16
k star	1.183	99% KM (Chebyshev) UCL	0.223
Theta star	0.099		
Nu star	132.5	Potential UCLs to Use	
AppChi2	106.9	95% KM (t) UCL	0.0816
95% Gamma Approximate UCL	0.145		
95% Adjusted Gamma UCL	0.146		

Note: DL/2 is not a recommended method.

CYANIDE

General Statistics			
Number of Valid Data	28	Number of Detected Data	10
Number of Distinct Detected Data	10	Number of Non-Detect Data	18
		Percent Non-Detects	64.29%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.01	Minimum Detected	-4.605
Maximum Detected	0.643	Maximum Detected	-0.442
Mean of Detected	0.124	Mean of Detected	-2.79
SD of Detected	0.191	SD of Detected	1.172
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.01	Maximum Non-Detect	-4.605
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.604	Shapiro Wilk Test Statistic	0.951
5% Shapiro Wilk Critical Value	0.842	5% Shapiro Wilk Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0476	Mean	-4.402
SD	0.125	SD	1.398
95% DL/2 (t) UCL	0.0878	95% H-Stat (DL/2) UCL	0.0457
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.352
		SD in Log Scale	2.396
		Mean in Original Scale	0.046
		SD in Original Scale	0.125
		95% Percentile Bootstrap UCL	0.0887
		95% BCA Bootstrap UCL	0.114
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.654	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	0.19		
nu star	13.07		
A-D Test Statistic	0.704	Nonparametric Statistics	
5% A-D Critical Value	0.754	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.754	Mean	0.0508
5% K-S Critical Value	0.275	SD	0.122
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.0242
		95% KM (t) UCL	0.092
Assuming Gamma Distribution		95% KM (z) UCL	0.0906
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0848
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.191
Maximum	1.029	95% KM (BCA) UCL	0.113
Mean	0.3	95% KM (Percentile Bootstrap) UCL	0.101
Median	0.157	95% KM (Chebyshev) UCL	0.156
SD	0.323	97.5% KM (Chebyshev) UCL	0.202

k star	0.266	99% KM (Chebyshev) UCL	0.292
Theta star	1.128		
Nu star	14.88	Potential UCLs to Use	
AppChi2	7.18	95% KM (t) UCL	0.092
95% Gamma Approximate UCL	0.621		
95% Adjusted Gamma UCL	0.651		

Note: DL/2 is not a recommended method.

DIBENZOFURAN

General Statistics			
Number of Valid Data	27	Number of Detected Data	2
Number of Distinct Detected Data	2	Number of Non-Detect Data	25
		Percent Non-Detects	92.59%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	2	Minimum Detected	0.693
Maximum Detected	5	Maximum Detected	1.609
Mean of Detected	3.5	Mean of Detected	1.151
SD of Detected	2.121	SD of Detected	0.648
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	1000	Maximum Non-Detect	6.908
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	27
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: Data set has only 2 Distinct Detected Values.
This may not be adequate enough to compute meaningful and reliable test statistics and estimates.
The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).

Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.

The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.
Those methods will return a 'N/A' value on your output display!

It is necessary to have 4 or more Distinct Values for bootstrap methods.
It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	1	Shapiro Wilk Test Statistic	1
5% Shapiro Wilk Critical Value	N/A	5% Shapiro Wilk Critical Value	N/A
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	23.28	Mean	1.757
SD	95.28	SD	0.909
95% DL/2 (t) UCL	54.55	95% H-Stat (DL/2) UCL	14.9
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	N/A
		SD in Log Scale	N/A
		Mean in Original Scale	N/A
		SD in Original Scale	N/A
		95% Percentile Bootstrap UCL	N/A
		95% BCA Bootstrap UCL	N/A
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	N/A	Data do not follow a Discernable Distribution (0.05)	
Theta Star	N/A		
nu star	N/A		

A-D Test Statistic	0.359	Nonparametric Statistics	
5% A-D Critical Value	N/A	Kaplan-Meier (KM) Method	
K-S Test Statistic	N/A	Mean	3.5
5% K-S Critical Value	N/A	SD	1.5
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1.5
		95% KM (t) UCL	6.058
Assuming Gamma Distribution		95% KM (z) UCL	5.967
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7.051
Minimum	N/A	95% KM (bootstrap t) UCL	Infinity
Maximum	N/A	95% KM (BCA) UCL	N/A
Mean	N/A	95% KM (Percentile Bootstrap) UCL	5
Median	N/A	95% KM (Chebyshev) UCL	10.04
SD	N/A	97.5% KM (Chebyshev) UCL	12.87
k star	N/A	99% KM (Chebyshev) UCL	18.42
Theta star	N/A		
Nu star	N/A	Potential UCLs to Use	
AppChi2	N/A	95% KM (t) UCL	6.058
95% Gamma Approximate UCL	N/A	95% KM (% Bootstrap) UCL	5
95% Adjusted Gamma UCL	N/A		

Warning: Recommended UCL exceeds the maximum observation
Note: DL/2 is not a recommended method.

HEXACHLOROBENZENE

General Statistics			
Number of Valid Data	27	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	26
		Percent Non-Detects	96.30%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable HEXACHLOROBENZENE was not processed!

INDENO(1,2,3-CD)PYRENE

General Statistics			
Number of Valid Data	27	Number of Detected Data	2
Number of Distinct Detected Data	1	Number of Non-Detect Data	25
		Percent Non-Detects	92.59%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable INDENO(1,2,3-CD)PYRENE was not processed!

IRON

General Statistics			
Number of Valid Data	55	Number of Detected Data	36
Number of Distinct Detected Data	35	Number of Non-Detect Data	19
		Percent Non-Detects	34.55%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0564	Minimum Detected	-2.875
Maximum Detected	621	Maximum Detected	6.431
Mean of Detected	51.98	Mean of Detected	2.415
SD of Detected	107.9	SD of Detected	2.207
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605

Maximum Non-Detect	20.5	Maximum Non-Detect	3.02
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	37
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	18
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	67.27%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.481	Lilliefors Test Statistic	0.949
5% Lilliefors Critical Value	0.935	5% Lilliefors Critical Value	0.935
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	34.32	Mean	0.571
SD	90.28	SD	3.348
95% DL/2 (t) UCL	54.7	95% H-Stat (DL/2) UCL	1341
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	0.844
		SD in Log Scale	2.833
		Mean in Original Scale	34.07
		SD in Original Scale	90.36
		95% Percentile Bootstrap UCL	57.35
		95% BCA Bootstrap UCL	70.74
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.408	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	127.5		
nu star	29.35		
A-D Test Statistic	0.365	Nonparametric Statistics	
5% A-D Critical Value	0.829	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.829	Mean	34.11
5% K-S Critical Value	0.157	SD	89.53
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	12.24
		95% KM (t) UCL	54.6
Assuming Gamma Distribution		95% KM (z) UCL	54.25
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	54.45
Minimum	1.00E-09	95% KM (bootstrap t) UCL	80.18
Maximum	621	95% KM (BCA) UCL	61.49
Mean	34.91	95% KM (Percentile Bootstrap) UCL	56.44
Median	5.35	95% KM (Chebyshev) UCL	87.47
SD	90.14	97.5% KM (Chebyshev) UCL	110.6
k star	0.109	99% KM (Chebyshev) UCL	155.9
Theta star	318.9		
Nu star	12.04	Potential UCLs to Use	
AppChi2	5.255	95% KM (BCA) UCL	61.49
95% Gamma Approximate UCL	80		
95% Adjusted Gamma UCL	81.88		
Note: DL/2 is not a recommended method.			

LEAD

General Statistics			
Number of Valid Data	58	Number of Detected Data	26
Number of Distinct Detected Data	24	Number of Non-Detect Data	32
		Percent Non-Detects	55.17%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0017	Minimum Detected	-6.377
Maximum Detected	0.488	Maximum Detected	-0.717
Mean of Detected	0.059	Mean of Detected	-4.035
SD of Detected	0.112	SD of Detected	1.5

Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	0.1	Maximum Non-Detect	-2.303
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	53
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.38%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.553	Lilliefors Test Statistic	0.936
5% Lilliefors Critical Value	0.92	5% Lilliefors Critical Value	0.92
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0292	Mean	-5.089
SD	0.0794	SD	1.641
95% DL/2 (t) UCL	0.0466	95% H-Stat (DL/2) UCL	0.0302
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-5.713
		SD in Log Scale	2.089
		Mean in Original Scale	0.0275
		SD in Original Scale	0.0797
		95% Percentile Bootstrap UCL	0.0454
		95% BCA Bootstrap UCL	0.0545
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.489	Data appear Lognormal at 5% Significance Level	
Theta Star	0.121		
nu star	25.42		
A-D Test Statistic	1.968	Nonparametric Statistics	
5% A-D Critical Value	0.806	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.806	Mean	0.0282
5% K-S Critical Value	0.181	SD	0.0788
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0106
		95% KM (t) UCL	0.0458
Assuming Gamma Distribution		95% KM (z) UCL	0.0456
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0454
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0637
Maximum	0.488	95% KM (BCA) UCL	0.0479
Mean	0.0598	95% KM (Percentile Bootstrap) UCL	0.0455
Median	0.0464	95% KM (Chebyshev) UCL	0.0742
SD	0.0766	97.5% KM (Chebyshev) UCL	0.0941
k star	0.65	99% KM (Chebyshev) UCL	0.133
Theta star	0.092		
Nu star	75.35	Potential UCLs to Use	
AppChi2	56.36	95% KM (Chebyshev) UCL	0.0742
95% Gamma Approximate UCL	0.0799		
95% Adjusted Gamma UCL	0.0805		
Note: DL/2 is not a recommended method.			

MANGANESE

General Statistics			
Number of Valid Data	55	Number of Detected Data	41
Number of Distinct Detected Data	39	Number of Non-Detect Data	14
		Percent Non-Detects	25.45%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0032	Minimum Detected	-5.745
Maximum Detected	20.4	Maximum Detected	3.016
Mean of Detected	1.491	Mean of Detected	-0.947

SD of Detected	3.33	SD of Detected	1.862
Minimum Non-Detect	0.001	Minimum Non-Detect	-6.908
Maximum Non-Detect	1.94	Maximum Non-Detect	0.663
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	48
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	7
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	87.27%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.447	Lilliefors Test Statistic	0.978
5% Lilliefors Critical Value	0.941	5% Lilliefors Critical Value	0.941
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	1.135	Mean	-1.837
SD	2.934	SD	2.421
95% DL/2 (t) UCL	1.797	95% H-Stat (DL/2) UCL	5.743
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-1.834
		SD in Log Scale	2.256
		Mean in Original Scale	1.116
		SD in Original Scale	2.938
		95% Percentile Bootstrap UCL	1.845
		95% BCA Bootstrap UCL	2.167
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.457	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	3.264		
nu star	37.46		
A-D Test Statistic	0.762	Nonparametric Statistics	
5% A-D Critical Value	0.819	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.819	Mean	1.121
5% K-S Critical Value	0.146	SD	2.911
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	0.397
		95% KM (t) UCL	1.786
Assuming Gamma Distribution		95% KM (z) UCL	1.775
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	1.782
Minimum	1.00E-09	95% KM (bootstrap t) UCL	2.785
Maximum	20.4	95% KM (BCA) UCL	1.852
Mean	1.137	95% KM (Percentile Bootstrap) UCL	1.824
Median	0.217	95% KM (Chebyshev) UCL	2.854
SD	2.936	97.5% KM (Chebyshev) UCL	3.603
k star	0.147	99% KM (Chebyshev) UCL	5.076
Theta star	7.724		
Nu star	16.19	Potential UCLs to Use	
AppChi2	8.1	95% KM (Chebyshev) UCL	2.854
95% Gamma Approximate UCL	2.274		
95% Adjusted Gamma UCL	2.318		
Note: DL/2 is not a recommended method.			

MERCURY

General Statistics			
Number of Valid Data	62	Number of Detected Data	28
Number of Distinct Detected Data	25	Number of Non-Detect Data	34
		Percent Non-Detects	54.84%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	2.70E-04	Minimum Detected	-8.217
Maximum Detected	0.166	Maximum Detected	-1.796

Mean of Detected	0.0129	Mean of Detected	-6.147
SD of Detected	0.0368	SD of Detected	1.719
Minimum Non-Detect	2.00E-04	Minimum Non-Detect	-8.517
Maximum Non-Detect	0.004	Maximum Non-Detect	-5.521
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	52
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	83.87%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.366	Lilliefors Test Statistic	0.886
5% Lilliefors Critical Value	0.924	5% Lilliefors Critical Value	0.924
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00596	Mean	-7.705
SD	0.0253	SD	1.905
95% DL/2 (t) UCL	0.0113	95% H-Stat (DL/2) UCL	0.00388
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-8.68
		SD in Log Scale	2.869
		Mean in Original Scale	0.00588
		SD in Original Scale	0.0253
		95% Percentile Bootstrap UCL	0.0118
		95% BCA Bootstrap UCL	0.014
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.354	Data do not follow a Discernable Distribution (0.05)	
Theta Star	0.0366		
nu star	19.84		
A-D Test Statistic	2.918	Nonparametric Statistics	
5% A-D Critical Value	0.839	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.839	Mean	0.006
5% K-S Critical Value	0.178	SD	0.0251
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.00325
		95% KM (t) UCL	0.0114
Assuming Gamma Distribution		95% KM (z) UCL	0.0113
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.0113
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.0527
Maximum	0.166	95% KM (BCA) UCL	0.0121
Mean	0.0199	95% KM (Percentile Bootstrap) UCL	0.0123
Median	0.0029	95% KM (Chebyshev) UCL	0.0202
SD	0.0345	97.5% KM (Chebyshev) UCL	0.0263
k star	0.173	99% KM (Chebyshev) UCL	0.0383
Theta star	0.115		
Nu star	21.4	Potential UCLs to Use	
AppChi2	11.89	95% KM (Chebyshev) UCL	0.0202
95% Gamma Approximate UCL	0.0357		
95% Adjusted Gamma UCL	0.0363		
Note: DL/2 is not a recommended method.			

METHYLENE CHLORIDE

General Statistics			
Number of Valid Data	61	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	57
		Percent Non-Detects	93.44%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	2	Minimum Detected	0.693

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Maximum Detected	1300	Maximum Detected	7.17
Mean of Detected	393	Mean of Detected	4.415
SD of Detected	608	SD of Detected	2.704
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	5000	Maximum Non-Detect	8.517
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	61
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.725	Lilliefors Test Statistic	0.918
5% Lilliefors Critical Value	0.748	5% Lilliefors Critical Value	0.748
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	171	Mean	2.052
SD	443.4	SD	2.633
95% DL/2 (t) UCL	265.9	95% H-Stat (DL/2) UCL	859.9
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-6.533
		SD in Log Scale	4.792
		Mean in Original Scale	25.83
		SD in Original Scale	167.6
		95% Percentile Bootstrap UCL	68.42
		95% BCA Bootstrap UCL	92.63
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.271	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	1448		
nu star	2.172		
A-D Test Statistic	0.293	Nonparametric Statistics	
5% A-D Critical Value	0.69	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.69	Mean	30.11
5% K-S Critical Value	0.413	SD	171.7
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	26.31
		95% KM (t) UCL	74.05
Assuming Gamma Distribution		95% KM (z) UCL	73.38
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	108.2
Minimum	1.00E-09	95% KM (bootstrap t) UCL	167.5
Maximum	1300	95% KM (BCA) UCL	N/A
Mean	177.1	95% KM (Percentile Bootstrap) UCL	1300
Median	1.00E-09	95% KM (Chebyshev) UCL	144.8
SD	256	97.5% KM (Chebyshev) UCL	194.4
k star	0.0698	99% KM (Chebyshev) UCL	291.9
Theta star	2537		
Nu star	8.519	Potential UCLs to Use	
AppChi2	3.039	95% KM (t) UCL	74.05
95% Gamma Approximate UCL	496.5		
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

NAPHTHALENE

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

General Statistics			
Number of Valid Data	32	Number of Detected Data	17
Number of Distinct Detected Data	14	Number of Non-Detect Data	15
		Percent Non-Detects	46.88%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	1.1	Minimum Detected	0.0953
Maximum Detected	230	Maximum Detected	5.438
Mean of Detected	42.64	Mean of Detected	2.55
SD of Detected	65.16	SD of Detected	1.679
Minimum Non-Detect	0.5	Minimum Non-Detect	-0.693
Maximum Non-Detect	25	Maximum Non-Detect	3.219
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	26
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	6
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	81.25%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.69	Shapiro Wilk Test Statistic	0.933
5% Shapiro Wilk Critical Value	0.892	5% Shapiro Wilk Critical Value	0.892
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	25.08	Mean	2.044
SD	50.54	SD	1.436
95% DL/2 (t) UCL	40.23	95% H-Stat (DL/2) UCL	44.47
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	1.674
		SD in Log Scale	1.754
		Mean in Original Scale	24.3
		SD in Original Scale	50.89
		95% Percentile Bootstrap UCL	39.68
		95% BCA Bootstrap UCL	46.35
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.471	Data appear Lognormal at 5% Significance Level	
Theta Star	90.55		
nu star	16.01		
A-D Test Statistic	0.867	Nonparametric Statistics	
5% A-D Critical Value	0.796	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.796	Mean	24.32
5% K-S Critical Value	0.221	SD	50.07
Data not Gamma Distributed at 5% Significance Level		SE of Mean	9.137
		95% KM (t) UCL	39.81
Assuming Gamma Distribution		95% KM (z) UCL	39.35
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	39.53
Minimum	1.1	95% KM (bootstrap t) UCL	53.34
Maximum	230	95% KM (BCA) UCL	42.63
Mean	42.62	95% KM (Percentile Bootstrap) UCL	38.84
Median	42.51	95% KM (Chebyshev) UCL	64.14
SD	46.81	97.5% KM (Chebyshev) UCL	81.38
k star	0.848	99% KM (Chebyshev) UCL	115.2
Theta star	50.24		
Nu star	54.3	Potential UCLs to Use	
AppChi2	38.37	99% KM (Chebyshev) UCL	115.2
95% Gamma Approximate UCL	60.32		
95% Adjusted Gamma UCL	61.47		

Note: DL/2 is not a recommended method.

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

NICKEL

General Statistics			
Number of Valid Data	56	Number of Detected Data	19
Number of Distinct Detected Data	18	Number of Non-Detect Data	37
		Percent Non-Detects	66.07%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0105	Minimum Detected	-4.556
Maximum Detected	1.73	Maximum Detected	0.548
Mean of Detected	0.219	Mean of Detected	-2.612
SD of Detected	0.427	SD of Detected	1.445
Minimum Non-Detect	0.01	Minimum Non-Detect	-4.605
Maximum Non-Detect	0.411	Maximum Non-Detect	-0.889
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	54
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	96.43%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.515	Lilliefors Test Statistic	0.943
5% Lilliefors Critical Value	0.901	5% Lilliefors Critical Value	0.901
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.0963	Mean	-3.679
SD	0.263	SD	1.515
95% DL/2 (t) UCL	0.155	95% H-Stat (DL/2) UCL	0.0868
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-4.912
		SD in Log Scale	2.092
		Mean in Original Scale	0.0768
		SD in Original Scale	0.265
		95% Percentile Bootstrap UCL	0.141
		95% BCA Bootstrap UCL	0.175
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.514	Data appear Lognormal at 5% Significance Level	
Theta Star	0.426		
nu star	19.55		
A-D Test Statistic	1.133	Nonparametric Statistics	
5% A-D Critical Value	0.796	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.796	Mean	0.0844
5% K-S Critical Value	0.209	SD	0.261
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.036
		95% KM (t) UCL	0.145
Assuming Gamma Distribution		95% KM (z) UCL	0.144
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.143
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.337
Maximum	1.73	95% KM (BCA) UCL	0.149
Mean	0.25	95% KM (Percentile Bootstrap) UCL	0.151
Median	0.166	95% KM (Chebyshev) UCL	0.241
SD	0.305	97.5% KM (Chebyshev) UCL	0.309
k star	0.343	99% KM (Chebyshev) UCL	0.442
Theta star	0.729		
Nu star	38.45	Potential UCLs to Use	
AppChi2	25.25	95% KM (BCA) UCL	0.149
95% Gamma Approximate UCL	0.381		
95% Adjusted Gamma UCL	0.385		
Note: DL/2 is not a recommended method.			

PHENANTHRENE

General Statistics			
Number of Valid Data	28	Number of Detected Data	8
Number of Distinct Detected Data	5	Number of Non-Detect Data	20
		Percent Non-Detects	71.43%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	2	Minimum Detected	0.693
Maximum Detected	75	Maximum Detected	4.317
Mean of Detected	14.25	Mean of Detected	1.79
SD of Detected	25.04	SD of Detected	1.244
Minimum Non-Detect	10	Minimum Non-Detect	2.303
Maximum Non-Detect	11	Maximum Non-Detect	2.398

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	26
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	2
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	92.86%

Warning: There are only 8 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.561	Shapiro Wilk Test Statistic	0.847
5% Shapiro Wilk Critical Value	0.818	5% Shapiro Wilk Critical Value	0.818
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	7.661	Mean	1.664
SD	13.44	SD	0.639
95% DL/2 (t) UCL	11.99	95% H-Stat (DL/2) UCL	10.29
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	1.407
		SD in Log Scale	0.975
		Mean in Original Scale	7.458
		SD in Original Scale	13.83
		95% Percentile Bootstrap UCL	12.34
		95% BCA Bootstrap UCL	15.49
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.519	Data appear Lognormal at 5% Significance Level	
Theta Star	27.45		
nu star	8.307		
A-D Test Statistic	0.941	Nonparametric Statistics	
5% A-D Critical Value	0.749	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.749	Mean	6.69
5% K-S Critical Value	0.305	SD	13.48
Data not Gamma Distributed at 5% Significance Level		SE of Mean	2.789
		95% KM (t) UCL	11.44
Assuming Gamma Distribution		95% KM (z) UCL	11.28
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	11.26
Minimum	1.00E-09	95% KM (bootstrap t) UCL	20.61
Maximum	75	95% KM (BCA) UCL	12.29
Mean	12.66	95% KM (Percentile Bootstrap) UCL	11.64
Median	10.85	95% KM (Chebyshev) UCL	18.85
SD	14.46	97.5% KM (Chebyshev) UCL	24.11

k star	0.252	99% KM (Chebyshev) UCL	34.44
Theta star	50.25		
Nu star	14.11	Potential UCLs to Use	
AppChi2	6.648	95% KM (BCA) UCL	12.29
95% Gamma Approximate UCL	26.88		
95% Adjusted Gamma UCL	28.22		

Note: DL/2 is not a recommended method.

SELENIUM

General Statistics

Number of Valid Data	48	Number of Detected Data	5
Number of Distinct Detected Data	5	Number of Non-Detect Data	43
		Percent Non-Detects	89.58%

Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.002	Minimum Detected	-6.215
Maximum Detected	0.0218	Maximum Detected	-3.826
Mean of Detected	0.00898	Mean of Detected	-5.075
SD of Detected	0.00813	SD of Detected	0.981
Minimum Non-Detect	0.002	Minimum Non-Detect	-6.215
Maximum Non-Detect	0.0341	Maximum Non-Detect	-3.378

Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	48
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 5 Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics

Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Shapiro Wilk Test Statistic	0.885	Shapiro Wilk Test Statistic	0.963
5% Shapiro Wilk Critical Value	0.762	5% Shapiro Wilk Critical Value	0.762
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00787	Mean	-5.185
SD	0.00466	SD	1.01
95% DL/2 (t) UCL	0.009	95% H-Stat (DL/2) UCL	0.0145

Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-7.058
		SD in Log Scale	1.362
		Mean in Original Scale	0.00215
		SD in Original Scale	0.00378
		95% Percentile Bootstrap UCL	0.00311
		95% BCA Bootstrap UCL	0.00337

Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.744	Data appear Normal at 5% Significance Level	
Theta Star	0.0121		
nu star	7.437		

A-D Test Statistic	0.24	Nonparametric Statistics	
5% A-D Critical Value	0.686	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.686	Mean	0.00337
5% K-S Critical Value	0.362	SD	0.0037
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	8.27E-04

		95% KM (t) UCL	0.00475
Assuming Gamma Distribution		95% KM (z) UCL	0.00473
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00449
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.00489
Maximum	0.102	95% KM (BCA) UCL	0.0122
Mean	0.0361	95% KM (Percentile Bootstrap) UCL	0.0118
Median	0.0317	95% KM (Chebyshev) UCL	0.00697
SD	0.0294	97.5% KM (Chebyshev) UCL	0.00853
k star	0.44	99% KM (Chebyshev) UCL	0.0116
Theta star	0.082		
Nu star	42.27	Potential UCLs to Use	
AppChi2	28.37	95% KM (t) UCL	0.00475
95% Gamma Approximate UCL	0.0538	95% KM (Percentile Bootstrap) UCL	0.0118
95% Adjusted Gamma UCL	0.0545		

Note: DL/2 is not a recommended method.

SILVER

General Statistics			
Number of Valid Data	56	Number of Detected Data	4
Number of Distinct Detected Data	4	Number of Non-Detect Data	52
		Percent Non-Detects	92.86%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0036	Minimum Detected	-5.627
Maximum Detected	0.0354	Maximum Detected	-3.341
Mean of Detected	0.0142	Mean of Detected	-4.614
SD of Detected	0.0144	SD of Detected	0.962
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.0944	Maximum Non-Detect	-2.36
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	56
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%

Warning: There are only 4 Distinct Detected Values in this data
Note: It should be noted that even though bootstrap may be performed on this data set
the resulting calculations may not be reliable enough tp draw conclusions

It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.

UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.809	Lilliefors Test Statistic	0.974
5% Lilliefors Critical Value	0.748	5% Lilliefors Critical Value	0.748
Data appear Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.00796	Mean	-5.597
SD	0.0116	SD	1.144
95% DL/2 (t) UCL	0.0106	95% H-Stat (DL/2) UCL	0.018
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	-8.706
		SD in Log Scale	1.826
		Mean in Original Scale	0.00128
		SD in Original Scale	0.00496
		95% Percentile Bootstrap UCL	0.00248
		95% BCA Bootstrap UCL	0.00311
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.55	Data appear Normal at 5% Significance Level	

Theta Star	0.0258		
nu star	4.402		
A-D Test Statistic	0.324	Nonparametric Statistics	
5% A-D Critical Value	0.662	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.662	Mean	0.00449
5% K-S Critical Value	0.399	SD	0.00458
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	7.53E-04
		95% KM (t) UCL	0.00575
Assuming Gamma Distribution		95% KM (z) UCL	0.00573
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.00673
Minimum	3.55E-04	95% KM (bootstrap t) UCL	0.00673
Maximum	1.087	95% KM (BCA) UCL	0.0123
Mean	0.375	95% KM (Percentile Bootstrap) UCL	0.0127
Median	0.35	95% KM (Chebyshev) UCL	0.00778
SD	0.293	97.5% KM (Chebyshev) UCL	0.0092
k star	0.886	99% KM (Chebyshev) UCL	0.012
Theta star	0.423		
Nu star	99.18	Potential UCLs to Use	
AppChi2	77.2	95% KM (t) UCL	0.00575
95% Gamma Approximate UCL	0.481	95% KM (Percentile Bootstrap) UCL	0.0127
95% Adjusted Gamma UCL	N/A		

Note: DL/2 is not a recommended method.

TETRACHLOROETHENE

General Statistics			
Number of Valid Data	61	Number of Detected Data	1
Number of Distinct Detected Data	1	Number of Non-Detect Data	60
		Percent Non-Detects	98.36%

Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!
It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).

The data set for variable TETRACHLOROETHENE was not processed!

TOLUENE

General Statistics			
Number of Valid Data	61	Number of Detected Data	17
Number of Distinct Detected Data	15	Number of Non-Detect Data	44
		Percent Non-Detects	72.13%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.38	Minimum Detected	-0.968
Maximum Detected	80000	Maximum Detected	11.29
Mean of Detected	12191	Mean of Detected	4.105
SD of Detected	24424	SD of Detected	4.548
Minimum Non-Detect	1	Minimum Non-Detect	0
Maximum Non-Detect	2500	Maximum Non-Detect	7.824
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	56
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	5
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	91.80%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.578	Lilliefors Test Statistic	0.844
5% Lilliefors Critical Value	0.892	5% Lilliefors Critical Value	0.892
Data not Normal at 5% Significance Level		Data not Lognormal at 5% Significance Level	
Assuming Normal Distribution		Assuming Lognormal Distribution	

DL/2 Substitution Method		DL/2 Substitution Method	
Mean	3451	Mean	2.289
SD	13752	SD	3.24
95% DL/2 (t) UCL	6392	95% H-Stat (DL/2) UCL	10543
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-0.131
		SD in Log Scale	4.239
		Mean in Original Scale	3399
		SD in Original Scale	13764
		95% Percentile Bootstrap UCL	6544
		95% BCA Bootstrap UCL	7888
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.159	Data do not follow a Discernable Distribution (0.05)	
Theta Star	76633		
nu star	5.409		
A-D Test Statistic	1.595	Nonparametric Statistics	
5% A-D Critical Value	0.903	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.903	Mean	3399
5% K-S Critical Value	0.233	SD	13650
Data not Gamma Distributed at 5% Significance Level		SE of Mean	1802
		95% KM (t) UCL	6409
Assuming Gamma Distribution		95% KM (z) UCL	6362
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	6343
Minimum	1.00E-09	95% KM (bootstrap t) UCL	12907
Maximum	397798	95% KM (BCA) UCL	6888
Mean	30997	95% KM (Percentile Bootstrap) UCL	6630
Median	3684	95% KM (Chebyshev) UCL	11252
SD	69565	97.5% KM (Chebyshev) UCL	14650
k star	0.0893	99% KM (Chebyshev) UCL	21324
Theta star	347218		
Nu star	10.89	Potential UCLs to Use	
AppChi2	4.506	97.5% KM (Chebyshev) UCL	14650
95% Gamma Approximate UCL	74918		
95% Adjusted Gamma UCL	76609		
Note: DL/2 is not a recommended method.			

VANADIUM

General Statistics			
Number of Valid Data	56	Number of Detected Data	39
Number of Distinct Detected Data	37	Number of Non-Detect Data	17
		Percent Non-Detects	30.36%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0042	Minimum Detected	-5.473
Maximum Detected	2.63	Maximum Detected	0.967
Mean of Detected	0.247	Mean of Detected	-2.794
SD of Detected	0.585	SD of Detected	1.59
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.231	Maximum Non-Detect	-1.465
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	47
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	9
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	83.93%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.43	Lilliefors Test Statistic	0.955
5% Lilliefors Critical Value	0.939	5% Lilliefors Critical Value	0.939
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	0.181	Mean	-3.297
SD	0.497	SD	1.722
95% DL/2 (t) UCL	0.292	95% H-Stat (DL/2) UCL	0.239
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE yields a negative mean		Mean in Log Scale	-3.519
		SD in Log Scale	1.811
		Mean in Original Scale	0.175
		SD in Original Scale	0.498
		95% Percentile Bootstrap UCL	0.293
		95% BCA Bootstrap UCL	0.35
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.442	Data appear Lognormal at 5% Significance Level	
Theta Star	0.559		
nu star	34.5		
A-D Test Statistic	2.501	Nonparametric Statistics	
5% A-D Critical Value	0.822	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.822	Mean	0.176
5% K-S Critical Value	0.15	SD	0.494
Data not Gamma Distributed at 5% Significance Level		SE of Mean	0.0668
		95% KM (t) UCL	0.288
Assuming Gamma Distribution		95% KM (z) UCL	0.286
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	0.288
Minimum	1.00E-09	95% KM (bootstrap t) UCL	0.56
Maximum	2.63	95% KM (BCA) UCL	0.299
Mean	0.196	95% KM (Percentile Bootstrap) UCL	0.293
Median	0.046	95% KM (Chebyshev) UCL	0.468
SD	0.494	97.5% KM (Chebyshev) UCL	0.594
k star	0.282	99% KM (Chebyshev) UCL	0.841
Theta star	0.695		
Nu star	31.6	Potential UCLs to Use	
AppChi2	19.76	97.5% KM (Chebyshev) UCL	0.594
95% Gamma Approximate UCL	0.314		
95% Adjusted Gamma UCL	0.318		
Note: DL/2 is not a recommended method.			

XYLENES, TOTAL

General Statistics			
Number of Valid Data	61	Number of Detected Data	10
Number of Distinct Detected Data	9	Number of Non-Detect Data	51
		Percent Non-Detects	83.61%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.59	Minimum Detected	-0.528
Maximum Detected	43	Maximum Detected	3.761
Mean of Detected	14.36	Mean of Detected	1.76
SD of Detected	16.61	SD of Detected	1.611
Minimum Non-Detect	3	Minimum Non-Detect	1.099
Maximum Non-Detect	7500	Maximum Non-Detect	8.923
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	61
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	0
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	100.00%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.797	Lilliefors Test Statistic	0.919
5% Lilliefors Critical Value	0.842	5% Lilliefors Critical Value	0.842
Data not Normal at 5% Significance Level		Data appear Lognormal at 5% Significance Level	

Assuming Normal Distribution		Assuming Lognormal Distribution	
DL/2 Substitution Method		DL/2 Substitution Method	
Mean	257.5	Mean	2.67
SD	667.4	SD	2.481
95% DL/2 (t) UCL	400.3	95% H-Stat (DL/2) UCL	1163
Maximum Likelihood Estimate(MLE) Method	N/A	Log ROS Method	
MLE method failed to converge properly		Mean in Log Scale	0.316
		SD in Log Scale	1.239
		Mean in Original Scale	3.596
		SD in Original Scale	8.109
		95% Percentile Bootstrap UCL	5.483
		95% BCA Bootstrap UCL	6.161
Gamma Distribution Test with Detected Values Only		Data Distribution Test with Detected Values Only	
k star (bias corrected)	0.537	Data appear Gamma Distributed at 5% Significance Level	
Theta Star	26.73		
nu star	10.74		
A-D Test Statistic	0.369	Nonparametric Statistics	
5% A-D Critical Value	0.763	Kaplan-Meier (KM) Method	
K-S Test Statistic	0.763	Mean	4.422
5% K-S Critical Value	0.277	SD	9.752
Data appear Gamma Distributed at 5% Significance Level		SE of Mean	1.637
		95% KM (t) UCL	7.157
Assuming Gamma Distribution		95% KM (z) UCL	7.114
Gamma ROS Statistics using Extrapolated Data		95% KM (jackknife) UCL	7.074
Minimum	0.59	95% KM (bootstrap t) UCL	8.882
Maximum	43	95% KM (BCA) UCL	8.024
Mean	14.59	95% KM (Percentile Bootstrap) UCL	7.579
Median	14.66	95% KM (Chebyshev) UCL	11.56
SD	6.441	97.5% KM (Chebyshev) UCL	14.64
k star	3.364	99% KM (Chebyshev) UCL	20.71
Theta star	4.337		
Nu star	410.4	Potential UCLs to Use	
AppChi2	364.4	95% KM (t) UCL	7.157
95% Gamma Approximate UCL	16.43		
95% Adjusted Gamma UCL	16.48		

Note: DL/2 is not a recommended method.

ZINC

General Statistics			
Number of Valid Data	57	Number of Detected Data	42
Number of Distinct Detected Data	40	Number of Non-Detect Data	15
		Percent Non-Detects	26.32%
Raw Statistics		Log-transformed Statistics	
Minimum Detected	0.0034	Minimum Detected	-5.684
Maximum Detected	1.94	Maximum Detected	0.663
Mean of Detected	0.172	Mean of Detected	-3.038
SD of Detected	0.34	SD of Detected	1.662
Minimum Non-Detect	0.003	Minimum Non-Detect	-5.809
Maximum Non-Detect	0.155	Maximum Non-Detect	-1.864
Note: Data have multiple DLs - Use of KM Method is recommended		Number treated as Non-Detect	47
For all methods (except KM, DL/2, and ROS Methods),		Number treated as Detected	10
Observations < Largest ND are treated as NDs		Single DL Non-Detect Percentage	82.46%
UCL Statistics			
Normal Distribution Test with Detected Values Only		Lognormal Distribution Test with Detected Values Only	
Lilliefors Test Statistic	0.522	Lilliefors Test Statistic	0.913
5% Lilliefors Critical Value	0.942	5% Lilliefors Critical Value	0.942

APPENDIX K, TABLE 26
RAGS 3.26 - SITE WIDE - GROUND WATER
PRO-UCL OUTPUT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Data not Normal at 5% Significance Level

Assuming Normal Distribution
DL/2 Substitution Method

Mean	0.131
SD	0.299
95% DL/2 (t) UCL	0.197

Maximum Likelihood Estimate(MLE) Method N/A
MLE yields a negative mean

Gamma Distribution Test with Detected Values Only

k star (bias corrected)	0.478
Theta Star	0.359
nu star	40.17
A-D Test Statistic	1.406
5% A-D Critical Value	0.814
K-S Test Statistic	0.814
5% K-S Critical Value	0.144

Data not Gamma Distributed at 5% Significance Level

Assuming Gamma Distribution
Gamma ROS Statistics using Extrapolated Data

Minimum	1.00E-09
Maximum	1.94
Mean	0.136
Median	0.0386
SD	0.299
k star	0.185
Theta star	0.735
Nu star	21.04
AppChi2	11.62
95% Gamma Approximate UCL	0.246
95% Adjusted Gamma UCL	0.25

Note: DL/2 is not a recommended method.

Data not Lognormal at 5% Significance Level

Assuming Lognormal Distribution
DL/2 Substitution Method

Mean	-3.57
SD	1.85
95% H-Stat (DL/2) UCL	0.325

Log ROS Method

Mean in Log Scale	-3.777
SD in Log Scale	1.992
Mean in Original Scale	0.128
SD in Original Scale	0.3
95% Percentile Bootstrap UCL	0.199
95% BCA Bootstrap UCL	0.216

Data Distribution Test with Detected Values Only
Data do not follow a Discernable Distribution (0.05)

Nonparametric Statistics
Kaplan-Meier (KM) Method

Mean	0.129
SD	0.297
SE of Mean	0.0399
95% KM (t) UCL	0.196
95% KM (z) UCL	0.195
95% KM (jackknife) UCL	0.196
95% KM (bootstrap t) UCL	0.267
95% KM (BCA) UCL	0.199
95% KM (Percentile Bootstrap) UCL	0.2
95% KM (Chebyshev) UCL	0.303
97.5% KM (Chebyshev) UCL	0.378
99% KM (Chebyshev) UCL	0.526

Potential UCLs to Use

97.5% KM (Chebyshev) UCL	0.378

ATTACHMENT A

RAGS D Table Series 1 through 7, 9, and 10

ATTACHMENT A

RAGS D Table Series 1 through 7, 9, and 10

Attachment A
RAGS Table 1 Series

TABLE 1.1
SELECTION OF EXPOSURE PATHWAYS
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soils (0-2 ft)	Plant Area Surface Soil	Trespasser	Adolescent (7 to <16 years)	Ingestion	Quantitative	It is possible that trespassing could occur on the Plant Area; incidental ingestion of soil could occur while trespassing. However, there has been no evidence of trespassing on the Plant Area.
						Dermal	Quantitative	It is possible that trespassing could occur on the Plant Area; dermal exposure to soil could occur while trespassing. However, there has been no evidence of trespassing on the Plant Area.
					Adult	Ingestion	Quantitative	It is possible that trespassing could occur on the Plant Area; incidental ingestion of soil could occur while trespassing. However, there has been no evidence of trespassing on the Plant Area.
						Dermal	Quantitative	It is possible that trespassing could occur on the Plant Area; dermal exposure to soil could occur while trespassing. However, there has been no evidence of trespassing on the Plant Area.
				Surveillance Worker	Adult	Ingestion	Quantitative	A surveillance worker could have occasional incidental ingestion of surface soils while performing duties.
						Dermal	Quantitative	A surveillance worker could have occasional dermal exposure to surface soils while performing duties.
Future	Surface Soil	Surface Soils (0-2 ft)	Plant Area Surface Soil	Industrial Worker	Adult	Ingestion	Quantitative	An industrial worker could have occasional incidental ingestion of surface soils while performing duties.
						Dermal	Quantitative	An industrial worker could have occasional dermal exposure to surface soils while performing duties.
	Subsurface Soil	Upper Soils (0-10 ft)	Plant Area Upper Soil	Construction Worker	Adult	Ingestion	Quantitative	A construction worker could have occasional incidental ingestion of subsurface soils while performing duties.
						Dermal	Quantitative	A construction worker could have occasional dermal exposure to subsurface soils while performing duties.
						Inhalation	Quantitative	Construction workers may be exposed to fugitive dust or volatile emissions from Site soils during on-grade construction or excavation activites.
		Intermediate Soils (0-20 ft)	Plant Area Intermediate Soil	Utility Worker	Adult	Ingestion	Quantitative	A utility worker could have occasional incidental ingestion of subsurface soils while performing duties. The sewer in this portion of the Site is below 10 feet.
						Dermal	Quantitative	A utility worker could have occasional incidental ingestion of subsurface soils while performing duties. The sewer in this portion of the Site is below 10 feet.

TABLE 1.1
SELECTION OF EXPOSURE PATHWAYS
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont.)	Groundwater	Intermediate Groundwater (0-20 ft)	Plant Area Intermediate Groundwater	Utility Worker	Adult	Ingestion	Quantitative	A utility worker could have occasional incidental ingestion of groundwater while performing duties. The sewer in this portion of the Site is below 10 feet.
						Dermal	Quantitative	A utility worker could have occasional dermal exposure to groundwater to performing duties.
		Air	Indoor Air -Vapor Intrusion	Industrial Worker	Adult	Inhalation	Quantitative	An industrial worker could inhale affected indoor air while performing duties. Site groundwater data will be compared quantitatively to USEPA (2002) risk-based generic screening levels for vapor intrusion.

TABLE 1.2
SELECTION OF EXPOSURE PATHWAYS
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soils (0-2 ft)	Former Chlorination Building Area Surface Soil	Trespasser	Adolescent (7 to <16 years)	Ingestion	Quantitative	It is possible that trespassing could occur on the Former Chlorination Building Area; incidental ingestion of soil could occur while trespassing. However, there has been no evidence of trespassing on the Former Chlorination Building Area.
						Dermal	Quantitative	It is possible that trespassing could occur on the Former Chlorination Building Area; dermal exposure to soil could occur while trespassing. However, there has been no evidence of trespassing on the Former Chlorination Building Area.
					Adult	Ingestion	Quantitative	It is possible that trespassing could occur on the Former Chlorination Building Area; incidental ingestion of soil could occur while trespassing. However, there has been no evidence of trespassing on the Former Chlorination Building Area.
						Dermal	Quantitative	It is possible that trespassing could occur on the Former Chlorination Building Area; dermal exposure to soil could occur while trespassing. However, there has been no evidence of trespassing on the Former Chlorination Building Area.
				Surveillance Worker	Adult	Ingestion	Quantitative	A surveillance worker could have occasional incidental ingestion of surface soils while performing duties.
						Dermal	Quantitative	A surveillance worker could have occasional dermal exposure to surface soils while performing duties.
Future	Surface Soil	Surface Soils (0-2 ft)	Former Chlorination Building Area Surface Soil	Industrial Worker	Adult	Ingestion	Quantitative	An industrial worker could have occasional incidental ingestion of surface soils while performing duties.
						Dermal	Quantitative	An industrial worker could have occasional dermal exposure to surface soils while performing duties.
	Subsurface Soil	Upper Soils (0-10 ft)	Former Chlorination Building Area Upper Soil	Construction Worker	Adult	Ingestion	Quantitative	A construction worker could have occasional incidental ingestion of subsurface soils while performing duties.
						Dermal	Quantitative	A construction worker could have occasional dermal exposure to subsurface soils while performing duties.
						Inhalation	Quantitative	Construction workers may be exposed to fugitive dust or volatile emissions from Site soils during on-grade construction or excavation activites.
		Intermediate Soils (0-20 ft)	Former Chlorination Building Area Intermediate Soil	Utility Worker	Adult	Ingestion	Quantitative	A utility worker could have occasional incidental ingestion of subsurface soils while performing duties. The sewer in this portion of the Site is generally below 10 feet.
						Dermal	Quantitative	A utility worker could have occasional dermal exposure to subsurface soils while performing duties. The sewer in this portion of the Site is generally below 10 feet.

TABLE 1.2
SELECTION OF EXPOSURE PATHWAYS
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont.)	Groundwater	Intermediate Groundwater (0-20 ft)	Former Chlorination Building Area Intermediate Groundwater	Utility Worker	Adult	Ingestion	Quantitative	A utility worker could have occasional incidental ingestion of groundwater while performing duties. The sewer in this portion of the Site is generally below 10 feet.
						Dermal	Quantitative	A utility worker could have occasional dermal exposure to groundwater to performing duties.
		Air	Indoor Air -Vapor Intrusion	Industrial Worker	Adult	Inhalation	Quantitative	An industrial worker could inhale affected indoor air while performing duties. Site groundwater data will be compared quantitatively to USEPA (2002) risk-based generic screening levels for vapor intrusion.

TABLE 1.3
SELECTION OF EXPOSURE PATHWAYS
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soils (0-2 ft)	On-Site Ditches Surface Soil	Trespasser	Adolescent (7 to <16 years)	Ingestion	Quantitative	It is possible that trespassing could occur on the On-Site Ditches exposure area; incidental ingestion of soil could occur while trespassing. However, there has been no evidence of trespassing on the On-Site Ditches exposure area.
						Dermal	Quantitative	It is possible that trespassing could occur on the On-Site Ditches exposure area; dermal exposure to soil could occur while trespassing. However, there has been no evidence of trespassing on the On-Site Ditches exposure area.
					Adult	Ingestion	Quantitative	It is possible that trespassing could occur on the On-Site Ditches exposure area; incidental ingestion of soil could occur while trespassing. However, there has been no evidence of trespassing on the On-Site Ditches exposure area.
						Dermal	Quantitative	It is possible that trespassing could occur on the On-Site Ditches exposure area; dermal exposure to soil could occur while trespassing. However, there has been no evidence of trespassing on the On-Site Ditches exposure area.
				Surveillance Worker	Adult	Ingestion	Quantitative	A surveillance worker could have occasional incidental ingestion of surface soils while performing duties.
						Dermal	Quantitative	A surveillance worker could have occasional dermal exposure to surface soils while performing duties.
Future	Surface Soil	Surface Soils (0-2 ft)	On-Site Ditches Surface Soil	Industrial Worker	Adult	Ingestion	Quantitative	An industrial worker could have occasional incidental ingestion of surface soils while performing duties.
						Dermal	Quantitative	An industrial worker could have occasional dermal exposure to surface soils while performing duties.
	Subsurface Soil	Upper Soils (0-10 ft)	On-Site Ditches Upper Soil	Construction Worker	Adult	Ingestion	Quantitative	A construction worker could have occasional incidental ingestion of subsurface soils while performing duties.
						Dermal	Quantitative	A construction worker could have occasional dermal exposure to subsurface soils while performing duties.
						Inhalation	Quantitative	Construction workers may be exposed to fugitive dust or volatile emissions from Site soils during on-grade construction or excavation activites.
		Intermediate Soils (0-20 ft)	On-Site Ditches Intermediate Soil	Utility Worker	Adult	Ingestion	Quantitative	A utility worker could have occasional incidental ingestion of subsurface soils while performing duties. The sewer in this portion of the Site is generally below 10 feet.
						Dermal	Quantitative	A utility worker could have occasional dermal exposure to subsurface soils while performing duties. The sewer in this portion of the Site is generally below 10 feet.

TABLE 1.3
SELECTION OF EXPOSURE PATHWAYS
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont.)	Groundwater	Intermediate Groundwater (0-20 ft)	On-Site Ditches Intermediate Groundwater	Utility Worker	Adult	Ingestion	Quantitative	A utility worker could have occasional incidental ingestion of groundwater while performing duties. The sewer in this portion of the Site is generally below 10 feet.
						Dermal	Quantitative	A utility worker could have occasional dermal exposure to groundwater to performing duties.
		Air	Indoor Air -Vapor Intrusion	Industrial Worker	Adult	Inhalation	Quantitative	An industrial worker could inhale affected indoor air while performing duties. Site groundwater data will be compared quantitatively to USEPA (2002) risk-based generic screening levels for vapor intrusion.

TABLE 1.4
SELECTION OF EXPOSURE PATHWAYS
SOUTHWEST OFF-SITE/OUTFALL 006
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soils (0-2 ft)	Southwest Off-Site/Outfall 006 Surface Soil	Trespasser	Adolescent (7 to <16 years)	Ingestion	Quantitative	It is possible that trespassing could occur on the southwest off-site/outfall 006 exposure area; incidental ingestion of soil could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on the southwest off-site/outfall 006 exposure area; dermal exposure to soil could occur while trespassing.
					Adult	Ingestion	Quantitative	It is possible that trespassing could occur on the southwest off-site/outfall 006 exposure area; incidental ingestion of soil could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on the southwest off-site/outfall 006 exposure area; dermal exposure to soil could occur while trespassing.
Future	Surface Soil	Surface Soils (0-2 ft)	Southwest Off-Site/Outfall 006 Surface Soil	Industrial Worker	Adult	Ingestion	Quantitative	An industrial worker could have occasional incidental ingestion of surface soils while performing duties.
						Dermal	Quantitative	An industrial worker could have occasional dermal exposure to surface soils while performing duties.
	Subsurface Soil	Upper Soils (0-10 ft)	Southwest Off-Site/Outfall 006 Upper Soil	Construction Worker	Adult	Ingestion	Quantitative	A construction worker could have occasional incidental ingestion of subsurface soils while performing duties.
						Dermal	Quantitative	A construction worker could have occasional dermal exposure to subsurface soils while performing duties.
						Inhalation	Quantitative	Construction workers may be exposed to fugitive dust or volatile emissions from Site soils during on-grade construction or excavation activites.

TABLE 1.5
SELECTION OF EXPOSURE PATHWAYS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soils (0-2 ft)	State Fair Blvd/Northwest Off-Site/Outfall 004 Surface Soil	Trespasser	Adolescent (7 to <16 years)	Ingestion	Quantitative	It is possible that trespassing could occur on the State Fair Blvd/northwest off-site/outfall 004 area; incidental ingestion of soil could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on the State Fair Blvd/northwest off-site/outfall 004 area; dermal exposure to soil could occur while trespassing.
					Adult	Ingestion	Quantitative	It is possible that trespassing could occur on the State Fair Blvd/northwest off-site/outfall 004 area; incidental ingestion of soil could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on the State Fair Blvd/northwest off-site/outfall 004 area; dermal exposure to soil could occur while trespassing.
				Transient*	Adult	Ingestion	Quantitative	It is possible that walking could occur along State Fair Boulevard during the NYS Fair; incidental ingestion of soil could occur while walking.
						Dermal	Quantitative	It is possible that walking could occur along State Fair Boulevard during the NYS Fair; dermal exposure to soil could occur while walking.
	Subsurface Soil	Upper Soils (0-10 ft)	State Fair Blvd/Northwest Off-Site/Outfall 004 Upper Soil	Utility Worker	Adult	Ingestion	Quantitative	A utility worker could have occasional incidental ingestion of surface soils while performing duties.
						Dermal	Quantitative	A utility worker could have occasional dermal exposure to surface soils while performing duties.

Notes:
* = refers to an adult walking legally along State Fair Boulevard during the NYS fair.

TABLE 1.6
SELECTION OF EXPOSURE PATHWAYS
LAKESHORE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soils (0-2 ft)	Lakeshore Area Surface Soil	Trespasser	Adolescent (7 to <16 years)	Ingestion	Quantitative	It is possible that trespassing could occur on the Lakeshore Property; incidental ingestion of soil could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on the Lakeshore Property; dermal exposure to soil could occur while trespassing.
					Adult	Ingestion	Quantitative	It is possible that trespassing could occur on the Lakeshore Property; incidental ingestion of soil could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on the Lakeshore Property; dermal exposure to soil could occur while trespassing.
	Subsurface Soil	Upper Soils (0-10 ft)	Lakeshore Area Upper Soil	Utility Worker	Adult	Ingestion	Quantitative	A utility worker could have occasional incidental ingestion of surface soils while performing duties.
						Dermal	Quantitative	A utility worker could have occasional dermal exposure to surface soils while performing duties.
	Groundwater	Shallow Groundwater (0-10 ft)	Lakeshore Area Shallow Groundwater	Utility Worker	Adult	Ingestion	Quantitative	A utility worker could have incidental ingestion of groundwater while performing duties.
						Dermal	Quantitative	A utility worker could have occasional dermal exposure to groundwater while performing duties.

TABLE 1.7
SELECTION OF EXPOSURE PATHWAYS
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Water	Surface Water	Tributary 5A Surface Water	Trespasser	Adolescent (7 to <16 years)	Ingestion	Quantitative	It is possible that trespassing could occur along Tributary 5A; incidental ingestion of surface water could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on along Tributary 5A; dermal exposure to surface water could occur while trespassing.
					Adult	Ingestion	Quantitative	It is possible that trespassing could occur along Tributary 5A; incidental ingestion of surface water could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on along Tributary 5A; dermal exposure to surface water could occur while trespassing.
				Utility Worker	Adult	Ingestion	Quantitative	A utility worker could have occasional incidental ingestion of surface water while performing duties.
						Dermal	Quantitative	Utility workers could have dermal exposure to surface water during excavations as part of activities related to on-Site utilities.
	Sediment	Sediment	Tributary 5A Sediment (0-1 ft)	Trespasser	Adolescent (7 to <16 years)	Ingestion	Quantitative	It is possible that trespassing could occur along Tributary 5A; incidential ingestion of sediment could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on along Tributary 5A; dermal exposure to sediment could occur while trespassing.
					Adult	Ingestion	Quantitative	It is possible that trespassing could occur along Tributary 5A; incidential ingestion of sediment could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on along Tributary 5A; dermal exposure to sediment could occur while trespassing.
			Tributary 5A Sediment (0-10 ft)	Utility Worker	Adult	Ingestion	Quantitative	Utility workers could incidentally ingest sediment during excavations as part activities related to on-Site utilities.
						Dermal	Quantitative	Utility workers could have dermal exposure to sediment during excavations as part of activities related to on-Site utilities.
		Fish Tissue	Fish Tissue	Trespasser	Adult	Ingestion	None	Exposure via fish consumption is considered an incomplete exposure pathway based on habitat, fish population sampling, and limited access.

TABLE 1.8
SELECTION OF EXPOSURE PATHWAYS
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soils (0-2 ft)	Petroleum Storage Area Surface Soil	Trespasser	Adolescent (7 to <16 years)	Ingestion	Quantitative	It is possible that trespassing could occur on the petroleum storage area; incidental ingestion of soil could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on the petroleum storage area; dermal exposure to soil could occur while trespassing.
					Adult	Ingestion	Quantitative	It is possible that trespassing could occur on the petroleum storage area; incidental ingestion of soil could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on the petroleum storage area; dermal exposure to soil could occur while trespassing.
Future	Surface Soil	Surface Soils (0-2 ft)	Petroleum Storage Area Surface Soil	Industrial Worker	Adult	Ingestion	Quantitative	An industrial worker could have occasional incidental ingestion of surface soils while performing duties.
						Dermal	Quantitative	An industrial worker could have occasional dermal exposure to surface soils while performing duties.
	Subsurface Soil	Upper Soils (0-10 ft)	Petroleum Storage Area Upper Soil	Construction Worker	Adult	Ingestion	Quantitative	A construction worker could have occasional incidental ingestion of subsurface soils while performing duties.
						Dermal	Quantitative	A construction worker could have occasional dermal exposure to subsurface soils while performing duties.
						Inhalation	Quantitative	Construction workers may be exposed to fugitive dust or volatile emissions from Site soils during on-grade construction or excavation activites.
				Utility Worker	Adult	Ingestion	Quantitative	A utility worker could have occasional incidental ingestion of subsurface soils while performing duties. The sewer is generally not deeper than 10 ft in this area.
						Dermal	Quantitative	A utility worker could have occasional dermal exposure to subsurface soils while performing duties. The sewer is generally not deeper than 10 ft in this area.

TABLE 1.8
SELECTION OF EXPOSURE PATHWAYS
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont.)	Groundwater	Shallow Groundwater (0-10 ft)	Petroleum Storage Area Shallow Groundwater	Utility Worker	Adult	Ingestion	Quantitative	A utility worker could incidentally ingest groundwater while performing his/her duties.
						Dermal	Quantitative	A utility worker could have occasional dermal exposure to groundwater while performing duties.
				Construction Worker	Adult	Ingestion	Quantitative	A construction worker could incidentally ingest groundwater while performing his/her duties.
						Dermal	Quantitative	A construction worker could have occasional dermal exposure to groundwater while performing duties.
		Air	Indoor Air -Vapor Intrusion	Industrial Worker	Adult	Inhalation	Quantitative	An industrial worker could inhale affected indoor air while performing duties. Site groundwater data will be compared quantitatively to USEPA (2002) risk-based generic screening levels for vapor intrusion.

TABLE 1.9
SELECTION OF EXPOSURE PATHWAYS
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Surface Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area Surface Soil	Trespasser	Adolescent (7 to <16 years)	Ingestion	Quantitative	It is possible that trespassing could occur on the chlorobenzene hot spot area; incidental ingestion of soil could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on the chlorobenzene hot spot area; dermal exposure to soil could occur while trespassing.
					Adult	Ingestion	Quantitative	It is possible that trespassing could occur on the chlorobenzene hot spot area; incidental ingestion of soil could occur while trespassing.
						Dermal	Quantitative	It is possible that trespassing could occur on the chlorobenzene hot spot area; dermal exposure to soil could occur while trespassing.
Future	Surface Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area Surface Soil	Industrial Worker	Adult	Ingestion	Quantitative	An industrial worker could have occasional incidental ingestion of surface soils while performing duties.
						Dermal	Quantitative	An industrial worker could have occasional dermal exposure to surface soils while performing duties.
	Subsurface Soil	Upper Soils (0-10 ft)	Chlorobenzene Hot-Spot Area Upper Soil	Construction Worker	Adult	Ingestion	Quantitative	A construction worker could have occasional incidental ingestion of subsurface soils while performing duties.
						Dermal	Quantitative	A construction worker could have occasional dermal exposure to subsurface soils while performing duties.
						Inhalation	Quantitative	Construction workers may be exposed to fugitive dust or volatile emissions from Site soils during on-grade construction or excavation activites.
				Utility Worker	Adult	Ingestion	Quantitative	A utility worker could have occasional incidental ingestion to subsurface soils while performing duties. The sewer is generally not deeper than 10 ft in this area.
						Dermal	Quantitative	A utility worker could have occasional dermal exposure of subsurface soils while performing duties. The sewer is generally not deeper than 10 feet in this area.

TABLE 1.9
SELECTION OF EXPOSURE PATHWAYS
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future (cont.)	Groundwater	Shallow Groundwater (0-10 ft)	Chlorobenzene Hot-Spot Area Shallow Groundwater	Utility Worker	Adult	Ingestion	Quantitative	A utility worker could incidentally ingest groundwater while performing his/her duties.
						Dermal	Quantitative	A utility worker could have occasional dermal exposure to groundwater while performing duties.
				Construction Worker	Adult	Ingestion	Quantitative	A construction worker could incidentally ingest groundwater while performing his/her duties.
						Dermal	Quantitative	A construction worker could have occasional dermal exposure to groundwater while performing duties.
		Air	Indoor Air -Vapor Intrusion	Industrial Worker	Adult	Inhalation	Quantitative	An industrial worker could inhale affected indoor air while performing duties. Site groundwater data will be compared quantitatively to USEPA (2002) risk-based generic screening levels for vapor intrusion.

TABLE 1.10
SELECTION OF EXPOSURE PATHWAYS
SITE WIDE GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Groundwater	Site Wide Groundwater (All Depths)	Potable Water	Resident	Adult	Ingestion	Quantitative	This is a hypothetical scenario; the Site is zoned as industrial and is unlikely to be developed as a residential area.
					Child (<6 years)	Ingestion	Quantitative	This is a hypothetical scenario; the Site is zoned as industrial and is unlikely to be developed as a residential area.

Attachment A
RAGS Table 2 Series

TABLE 2.1a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Plant Area - Surface Soil	METALS																	
	7429-90-5	ALUMINUM	1350	15600	mg/kg	WA-MPS-SS	12/12	-	1.56E+04			7.82E+03	N	7.61E+03	nc	7.61E+03	Y	ASL
	7440-36-0	ANTIMONY	1 J	1.1 J	mg/kg	WA-SB-1	2/12	0.61-0.75	1.10E+00			3.13E+00	N	3.13E+00	nc	3.13E+00	N	BSL
	7440-38-2	ARSENIC	5.2	65.7	mg/kg	WA-SB-9	12/12	-	6.57E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	22.4 J	557	mg/kg	WA-SB-7	12/12	-	5.57E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	Y	ASL
	7440-41-7	BERYLLIUM	0.29 J	1.4 J	mg/kg	WA-SB-11	12/12	-	1.40E+00		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.12 J	1.2 J	mg/kg	WA-SB-7	11/12	0.08-0.08	1.20E+00		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	7430	283000	mg/kg	WA-SB-12	12/12	-	2.83E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	8.9 J	29	mg/kg	WA-MPS-SS	12/12	-	2.90E+01		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	3.1 J	17.7	mg/kg	WA-SB-6	12/12	-	1.77E+01			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	12.2	225	mg/kg	WA-SB-1	12/12	-	2.25E+02		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	57-12-5	CYANIDE	2.3	5	mg/kg	WA-SB-7	2/12	0.53-0.64	5.00E+00			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	7439-89-6	IRON	8850	45800	mg/kg	WA-SB-6	12/12	-	4.58E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	13.9	340 J	mg/kg	WA-SB-11	12/12	-	3.40E+02		4.00E+02	NV		4.00E+02	nc	4.00E+02	N	BSL
	7439-95-4	MAGNESIUM	2830	16500	mg/kg	WA-SB-7	12/12	-	1.65E+04			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	154 J	643 J	mg/kg	WA-MPS-SS	12/12	-	6.43E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	0.43	2440 J	mg/kg	WA-SB-7	12/12	-	2.44E+03			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.00261 J	.00261 J	mg/kg	WA-MPS-SS	1/1	-	2.61E-03			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	8.3 J	4040	mg/kg	WA-SB-5	12/12	-	4.04E+03		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	Y	ASL
	7440-09-7	POTASSIUM	113 J	3190	mg/kg	WA-MPS-SS	12/12	-	3.19E+03			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	1.2	2	mg/kg	WA-SB-6	3/12	1-1.5	2.00E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-22-4	SILVER	1.7 J	1.7 J	mg/kg	WA-SB-1	1/12	0.2-0.29	1.70E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	176 J	896 J	mg/kg	WA-SB-7	11/12	83.9-83.9	8.96E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	5.7 J	31.6	mg/kg	WA-MPS-SS	12/12	-	3.16E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	35.7	1240	mg/kg	WA-SB-6	12/12	-	1.24E+03		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.034	3.1	mg/kg	WA-SB-12	7/12	-	3.10E+00			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	72-55-9	4,4'-DDE	0.0027 J	0.063 J	mg/kg	WA-SB-11	4/12	0.0042-3.7	6.30E-02		8.90E+00	1.88E+00	C	1.72E+00	ca	1.72E+00	N	BSL
	319-84-6	ALPHA-BHC	0.02	0.02	mg/kg	WA-SB-4	1/12	0.002-1.9	2.00E-02		4.80E-01	1.01E-01	C	9.02E-02	ca	9.02E-02	N	BSL
	319-86-8	DELTA-BHC	0.0069 J	0.0069 J	mg/kg	WA-SB-4	1/12	0.002-1.9	6.90E-03		1.00E+02	NV		NV		NV	Y	NTX
	60-57-1	DIELDRIN	0.13	0.13	mg/kg	WA-SB-4	1/12	0.004-3.7	1.30E-01		2.00E-01	3.99E-02	C	3.04E-02	ca	3.04E-02	Y	ASL
	33213-65-9	ENDOSULFAN II[d]	0.0036 J	0.07 J	mg/kg	WA-SB-1	7/12	0.0042-3.7	7.00E-02		2.40E+01	4.69E+01	N	3.67E+01	nc	3.67E+01	N	BSL
	7421-93-4	ENDRIN ALDEHYDE[e]	1.2 J	1.2 J	mg/kg	WA-SB-5	1/9	0.0042-0.86	1.20E+00		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.022	0.076	mg/kg	WA-SB-4	3/11	0.0042-3.7	7.60E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	76-44-8	HEPTACHLOR	0.018 J	0.018 J	mg/kg	WA-SB-7	1/11	0.002-0.43	1.80E-02		2.10E+00	1.42E-01	C	1.08E-01	ca	1.08E-01	N	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.0035 J	0.047 J	mg/kg	WA-SB-4	3/12	0.002-0.43	4.70E-02			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
		TOTAL CHLORDANE[f]	0.014	0.029	mg/kg	WA-SB-1	2/12	-	2.90E-02			1.82E+00	C	1.62E-01	nc	1.62E-01	N	BSL
	SVOC																	
	105-67-9	2,4-DIMETHYLPHENOL	0.045 J	0.4 J	mg/kg	WA-SB-7	2/12	0.36-12	4.00E-01			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.06 J	1.1	mg/kg	WA-SB-7	7/12	0.4-12	1.10E+00			3.13E+01	N	NV		3.13E+01	N	BSL
	95-48-7	2-METHYLPHENOL	0.28 J	0.28 J	mg/kg	WA-SB-7	1/12	0.36-12	2.80E-01		1.00E+02	3.91E+02	N	3.06E+02	nc	3.06E+02	N	BSL
	106-47-8	4-CHLOROANILINE	0.058 J	0.058 J	mg/kg	WA-SB-9	1/12	0.37-12	5.80E-02			3.13E+01	N	2.44E+01	nc	2.44E+01	N	BSL
	106-44-5	4-METHYLPHENOL	0.048 J	0.74	mg/kg	WA-SB-7	3/12	0.36-12	7.40E-01		1.00E+02	3.91E+01	N	3.06E+01	nc	3.06E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.093 J	2.4	mg/kg	WA-SB-7	8/12	0.4-12	2.40E+00		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.078 J	0.42 J	mg/kg	WA-SB-7	5/12	0.37-12	4.20E-01		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.11 J	6.7	mg/kg	WA-SB-7	9/12	0.42-12	6.70E+00		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.12 J	16 J	mg/kg	WA-SB-7	12/12	-	1.60E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.12 J	18 J	mg/kg	WA-SB-7	11/12	9.1-9.1	1.80E+01		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.19 J	23 J	mg/kg	WA-SB-7	12/12	-	2.30E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.063 J	23 J	mg/kg	WA-SB-7	12/12	-	2.30E+01		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.068 J	7.6 J	mg/kg	WA-SB-7	11/12	9.1-9.1	7.60E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.88 J	15	mg/kg	WA-SB-1	9/12	0.42-12	1.50E+01			4.56E+01	C	3.47E+01	ca	3.47E+01	N	BSL
	86-74-8	CARBAZOLE	0.042 J	2.5 J	mg/kg	WA-SB-1	9/12	0.42-12	2.50E+00			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	0.16 J	17 J	mg/kg	WA-SB-7	12/12	-	1.70E+01		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.085 J	5.8 J	mg/kg	WA-SB-7	8/12	0.42-12	5.80E+00		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.09 J	1.7	mg/kg	WA-SB-7	8/12	0.4-12	1.70E+00		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	84-74-2	DI-N-BUTYL PHTHALATE	0.043 J	0.18 J	mg/kg	WA-SB-4	8/12	0.42-12	1.80E-01			7.82E+02	N	6.11E+02	nc	6.11E+02	N	BSL
	206-44-0	FLUORANTHENE	0.23 J	27	mg/kg	WA-SB-1	12/12	-	2.70E+01		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.064 J	2.2	mg/kg	WA-SB-7	9/12	0.42-12	2.20E+00		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL

TABLE 2.1a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	118-74-1	HEXACHLOROBENZENE	0.086 J	28	mg/kg	WA-SB-5	6/12	0.37-12	2.80E+01		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	Y	ASL
	87-68-3	HEXACHLOROBUTADIENE	0.12 J	1.8	mg/kg	WA-SB-5	2/12	0.36-12	1.80E+00			8.19E+00	C	6.24E-01	nc	6.24E-01	Y	ASL
	77-47-4	HEXACHLOROCYCLOPENTADIENE	0.12 J	0.12 J	mg/kg	WA-SB-5	1/12	0.36-12	1.20E-01			4.69E+01	N	3.65E+01	nc	3.65E+01	N	BSL
	67-72-1	HEXACHLOROETHANE	0.85	0.85	mg/kg	WA-SB-5	1/12	0.36-12	8.50E-01			4.56E+01	C	3.47E+00	nc	3.47E+00	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.057 J	18 J	mg/kg	WA-SB-7	11/12	9.1-9.1	1.80E+01		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.062 J	4.1	mg/kg	WA-SB-6	9/12	0.42-12	4.10E+00		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	0.2 J	20	mg/kg	WA-SB-7	11/12	12-12	2.00E+01		1.00E+02	NV		NV		NV	Y	NTX
	108-95-2	PHENOL	0.046 J	0.24 J	mg/kg	WA-SB-7	6/12	0.36-12	2.40E-01		1.00E+02	2.35E+03	N	1.83E+03	nc	1.83E+03	N	BSL
	129-00-0	PYRENE	0.26 J	31 J	mg/kg	WA-SB-7	12/12	-	3.10E+01		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	0.061 J	13	mg/kg	WA-SB-12	8/12	0.4-11	1.30E+01			7.82E+01	N	6.22E+00	nc	6.22E+00	Y	ASL
	95-50-1	1,2-DICHLOROBENZENE	0.14 J	420	mg/kg	WA-SB-12	10/12	0.42-11	4.20E+02		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	Y	ASL
	541-73-1	1,3-DICHLOROBENZENE	0.064 J	31	mg/kg	WA-SB-11	5/12	0.36-11	3.10E+01		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	Y	ASL
	106-46-7	1,4-DICHLOROBENZENE	0.14 J	2600	mg/kg	WA-SB-11	10/12	0.42-11	2.60E+03		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	Y	ASL
	78-93-3	2-BUTANONE	0.003 J	0.034	mg/kg	WA-SB-6	3/12	0.011-13	3.40E-02		1.00E+02	4.69E+03	N	2.23E+03	nc	2.23E+03	N	BSL
	67-64-1	ACETONE	0.061	0.12 J	mg/kg	WA-SB-6	3/12	0.011-13	1.20E-01		1.00E+02	7.04E+03	N	1.41E+03	nc	1.41E+03	N	BSL
	71-43-2	BENZENE	0.002 J	0.014	mg/kg	WA-SB-5	7/12	0.011-13	1.40E-02		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	75-15-0	CARBON DISULFIDE	0.001 J	0.002 J	mg/kg	WA-SB-7, WA-SB-6	4/12	0.011-13	2.00E-03			7.82E+02	N	3.55E+01	nc	3.55E+01	N	BSL
	108-90-7	CHLOROBENZENE	0.001 J	150	mg/kg	WA-SB-12	9/12	0.011-0.013	1.50E+02		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	Y	ASL
	67-66-3	CHLOROFORM	0.002 J	0.027	mg/kg	WA-SB-5	6/12	0.011-13	2.70E-02		4.90E+01	7.82E+01	N	2.21E-01	ca	2.21E-01	N	BSL
	75-09-2	METHYLENE CHLORIDE	0.018	0.047	mg/kg	WA-SB-2	6/12	0.011-13	4.70E-02		1.00E+02	8.52E+01	C	9.11E+00	ca	9.11E+00	N	BSL
	127-18-4	TETRACHLOROETHENE	0.003 J	0.17 J	mg/kg	WA-SB-6	6/12	0.011-13	1.70E-01		1.90E+01	1.18E+00	C	4.84E-01	ca	4.84E-01	N	BSL
	108-88-3	TOLUENE	0.001 J	0.007 J	mg/kg	WA-SB-2	6/12	0.011-13	7.00E-03		1.00E+02	6.26E+02	N	5.20E+01	nc	5.20E+01	N	BSL
	79-01-6	TRICHLOROETHENE	0.002 J	0.019	mg/kg	WA-SB-5	3/12	0.011-13	1.90E-02		2.10E+01	1.60E+00	C	5.30E-02	ca	5.30E-02	N	BSL
	1330-20-7	XYLENES, TOTAL	0.002 J	1.7 J	mg/kg	WA-SB-12	4/12	0.011-0.013	1.70E+00		1.00E+02	1.56E+03	N	2.71E+01	nc	2.71E+01	N	BSL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.0000036	0.0021	mg/kg	WA-SB-5	16/16	-	2.09E-03			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT - Compound is an essential nutrient.
- = Compound detected in 100% of samples.
NA = Not applicable, minimum and maximum values are calculated.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.
f = RBC value for chlordane (CAS# 57749) and PRG value for technical chlordane (CAS# 12789-03-6) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007

TABLE 2.1b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-MPS-SS	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	12.3	12.3	ng/kg	J	0.01	0.123
WA-MPS-SS	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	5.54	5.54	ng/kg	J	0.01	0.0554
WA-MPS-SS	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1.97	1.97	ng/kg	J	0.01	0.0197
WA-MPS-SS	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.36	0.36	ng/kg	J	0.1	0.036
WA-MPS-SS	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	5.31	5.31	ng/kg	J	0.1	0.531
WA-MPS-SS	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	0.67	0.67	ng/kg	J	0.1	0.067
WA-MPS-SS	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1.39	1.39	ng/kg	J	0.1	0.139
WA-MPS-SS	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.67	0.67	ng/kg	J	0.1	0.067
WA-MPS-SS	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.28	0.28	ng/kg	J	0.1	0.028
WA-MPS-SS	10/26/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	0.3	0.3	ng/kg	J	1	0.3
WA-MPS-SS	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	4.07	4.07	ng/kg		0.03	0.1221
WA-MPS-SS	10/26/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	0.78	0.78	ng/kg	J	0.1	0.078
WA-MPS-SS	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	2.63	2.63	ng/kg		0.03	0.789
WA-MPS-SS	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	0.14	0.14	ng/kg	J	1	0.14
WA-MPS-SS	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	17.8	17.8	ng/kg		0.1	1.78
WA-MPS-SS	10/26/1999	0	0.5	3268-87-9	OCDD	Y	87.8	87.8	ng/kg	J	0.0003	0.02634
WA-MPS-SS	10/26/1999	0	0.5	39001-02-0	OCDF	Y	15.8	15.8	ng/kg	J	0.0003	0.00474
											Sample Location TEQ =	**4.3**
WA-SB-1	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2950	2950	ng/kg		0.01	29.5
WA-SB-1	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	336	336	ng/kg		0.01	3.36
WA-SB-1	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	93.1	93.1	ng/kg		0.01	0.931
WA-SB-1	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	34.4	34.4	ng/kg		0.1	3.44
WA-SB-1	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	266	266	ng/kg		0.1	26.6
WA-SB-1	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	47.7	47.7	ng/kg		0.1	4.77
WA-SB-1	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	70.3	70.3	ng/kg		0.1	7.03
WA-SB-1	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	35.1	35.1	ng/kg		0.1	3.51
WA-SB-1	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	4.18	4.18	ng/kg		0.1	0.418
WA-SB-1	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	4.8	4.8	ng/kg		1	4.8
WA-SB-1	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	95.7	95.7	ng/kg		0.03	2.871
WA-SB-1	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	20.9	20.9	ng/kg		0.1	2.09
WA-SB-1	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	90	90	ng/kg		0.3	27
WA-SB-1	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	3.41	3.41	ng/kg		1	3.41
WA-SB-1	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	249	249	ng/kg		0.1	24.9
WA-SB-1	9/29/1998	0.5	1	3268-87-9	OCDD	Y	24100	24100	ng/kg		0.0003	7.23
WA-SB-1	9/29/1998	0.5	1	39001-02-0	OCDF	Y	1470	1470	ng/kg		0.0003	0.441
											Sample Location TEQ =	**152.3**

TABLE 2.1b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-10	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	61.4	61.4	ng/kg		0.01	0.614
WA-SB-10	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	158	158	ng/kg		0.01	1.58
WA-SB-10	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	70.4	70.4	ng/kg		0.01	0.704
WA-SB-10	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.35	4.35	ng/kg		0.1	0.435
WA-SB-10	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	610	610	ng/kg		0.1	61
WA-SB-10	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	9.98	9.98	ng/kg		0.1	0.998
WA-SB-10	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	108	108	ng/kg		0.1	10.8
WA-SB-10	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	8.67	8.67	ng/kg		0.1	0.867
WA-SB-10	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	23.3	23.3	ng/kg		0.1	2.33
WA-SB-10	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	3.5	3.5	ng/kg		1	3.5
WA-SB-10	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	1000	1000	ng/kg		0.03	30
WA-SB-10	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	38.6	38.6	ng/kg		0.1	3.86
WA-SB-10	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	724	724	ng/kg		0.3	217.2
WA-SB-10	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	2.81	2.81	ng/kg		1	2.81
WA-SB-10	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	3000	3000	ng/kg		0.1	300
WA-SB-10	9/28/1998	0.5	1	3268-87-9	OCDD	Y	369	369	ng/kg		0.0003	0.1107
WA-SB-10	9/28/1998	0.5	1	39001-02-0	OCDF	Y	623	623	ng/kg		0.0003	0.1869
											Sample Location TEQ =	**637.0**
WA-SB-10	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	11.9	11.9	ng/kg		0.01	0.119
WA-SB-10	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	107	107	ng/kg		0.01	1.07
WA-SB-10	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	68.1	68.1	ng/kg		0.01	0.681
WA-SB-10	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.87	0.87	ng/kg		0.1	0.087
WA-SB-10	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	123	123	ng/kg		0.1	12.3
WA-SB-10	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	4.42	4.42	ng/kg		0.1	0.442
WA-SB-10	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	28	28	ng/kg		0.1	2.8
WA-SB-10	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	3.81	3.81	ng/kg		0.1	0.381
WA-SB-10	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	4.47	4.47	ng/kg		0.1	0.447
WA-SB-10	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	43.7	43.7	ng/kg		0.03	1.311
WA-SB-10	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	12	12	ng/kg		0.1	1.2
WA-SB-10	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	56.2	56.2	ng/kg		0.3	16.86
WA-SB-10	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	133	133	ng/kg		0.1	13.3
WA-SB-10	9/28/1998	1	2	3268-87-9	OCDD	Y	29.8	29.8	ng/kg		0.0003	0.00894
WA-SB-10	9/28/1998	1	2	39001-02-0	OCDF	Y	937	937	ng/kg		0.0003	0.2811
											Sample Location TEQ =	**51.3**

TABLE 2.1b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-11	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	40.4	40.4	ng/kg		0.01	0.404
WA-SB-11	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	98.6	98.6	ng/kg		0.01	0.986
WA-SB-11	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	33.4	33.4	ng/kg		0.01	0.334
WA-SB-11	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	2.61	2.61	ng/kg		0.1	0.261
WA-SB-11	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	144	144	ng/kg		0.1	14.4
WA-SB-11	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	8.81	8.81	ng/kg		0.1	0.881
WA-SB-11	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3707	3707	ng/kg		0.1	370.7
WA-SB-11	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	5.88	5.88	ng/kg		0.1	0.588
WA-SB-11	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	4.52	4.52	ng/kg		0.1	0.452
WA-SB-11	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	4.3	4.3	ng/kg		1	4.3
WA-SB-11	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	150	150	ng/kg		0.03	4.5
WA-SB-11	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	19.5	19.5	ng/kg		0.1	1.95
WA-SB-11	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	178	178	ng/kg		0.3	53.4
WA-SB-11	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	4.38	4.38	ng/kg		1	4.38
WA-SB-11	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	453	453	ng/kg		0.1	45.3
WA-SB-11	9/28/1998	0.5	1	3268-87-9	OCDD	Y	195	195	ng/kg		0.0003	0.0585
WA-SB-11	9/28/1998	0.5	1	39001-02-0	OCDF	Y	390	390	ng/kg		0.0003	0.117
										Sample Location TEQ =		**503.0**
WA-SB-11	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	19.4	19.4	ng/kg		0.01	0.194
WA-SB-11	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	48.2	48.2	ng/kg		0.01	0.482
WA-SB-11	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	20.8	20.8	ng/kg		0.01	0.208
WA-SB-11	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.26	1.26	ng/kg		0.1	0.126
WA-SB-11	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	74.7	74.7	ng/kg		0.1	7.47
WA-SB-11	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	3.23	3.23	ng/kg		0.1	0.323
WA-SB-11	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	17.5	17.5	ng/kg		0.1	1.75
WA-SB-11	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.64	2.64	ng/kg		0.1	0.264
WA-SB-11	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.1	2.1	ng/kg		0.1	0.21
WA-SB-11	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	2.48	2.48	ng/kg		1	2.48
WA-SB-11	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	80.7	80.7	ng/kg		0.03	2.421
WA-SB-11	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7.69	7.69	ng/kg		0.1	0.769
WA-SB-11	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	87.7	87.7	ng/kg		0.3	26.31
WA-SB-11	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	3.81	3.81	ng/kg		1	3.81
WA-SB-11	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	211	211	ng/kg		0.1	21.1
WA-SB-11	9/28/1998	1	2	3268-87-9	OCDD	Y	107	107	ng/kg		0.0003	0.0321
WA-SB-11	9/28/1998	1	2	39001-02-0	OCDF	Y	269	269	ng/kg		0.0003	0.0807
										Sample Location TEQ =		**68.0**

TABLE 2.1b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-12	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	77.2	77.2	ng/kg		0.01	0.772
WA-SB-12	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	53.5	53.5	ng/kg		0.01	0.535
WA-SB-12	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	15.8	15.8	ng/kg		0.01	0.158
WA-SB-12	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.54	4.54	ng/kg		0.1	0.454
WA-SB-12	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	45.6	45.6	ng/kg		0.1	4.56
WA-SB-12	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	13.5	13.5	ng/kg		0.1	1.35
WA-SB-12	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	9.64	9.64	ng/kg		0.1	0.964
WA-SB-12	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	7.8	7.8	ng/kg		0.1	0.78
WA-SB-12	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.57	1.57	ng/kg		0.1	0.157
WA-SB-12	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	17.2	17.2	ng/kg		0.03	0.516
WA-SB-12	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3.57	3.57	ng/kg		0.1	0.357
WA-SB-12	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	89.9	89.9	ng/kg		0.3	26.97
WA-SB-12	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	4.8	4.8	ng/kg		1	4.8
WA-SB-12	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	68.6	68.6	ng/kg		0.1	6.86
WA-SB-12	9/28/1998	0.5	1	3268-87-9	OCDD	Y	348	348	ng/kg		0.0003	0.1044
WA-SB-12	9/28/1998	0.5	1	39001-02-0	OCDF	Y	205	205	ng/kg		0.0003	0.0615
											Sample Location TEQ =	**49.4**
WA-SB-12	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	48.2	48.2	ng/kg	J	0.01	0.482
WA-SB-12	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	151	151	ng/kg	J	0.01	1.51
WA-SB-12	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	67.2	67.2	ng/kg	J	0.01	0.672
WA-SB-12	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.5	4.5	ng/kg	J	0.1	0.45
WA-SB-12	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	137	137	ng/kg	J	0.1	13.7
WA-SB-12	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	12.3	12.3	ng/kg	J	0.1	1.23
WA-SB-12	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	27.5	27.5	ng/kg	J	0.1	2.75
WA-SB-12	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	7.64	7.64	ng/kg	J	0.1	0.764
WA-SB-12	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3.28	3.28	ng/kg	J	0.1	0.328
WA-SB-12	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	8.59	8.59	ng/kg	J	1	8.59
WA-SB-12	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	39.4	39.4	ng/kg	J	0.03	1.182
WA-SB-12	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	8.49	8.49	ng/kg	J	0.1	0.849
WA-SB-12	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	140	140	ng/kg	J	0.3	42
WA-SB-12	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	2.18	2.18	ng/kg	J	1	2.18
WA-SB-12	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	158	158	ng/kg		0.1	15.8
WA-SB-12	9/28/1998	1	2	3268-87-9	OCDD	Y	180	180	ng/kg	J	0.0003	0.054
WA-SB-12	9/28/1998	1	2	39001-02-0	OCDF	Y	626	626	ng/kg	J	0.0003	0.1878
											Sample Location TEQ =	**92.7**

TABLE 2.1b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-2	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	19.3	19.3	ng/kg		0.01	0.193
WA-SB-2	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	92.3	92.3	ng/kg		0.01	0.923
WA-SB-2	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	58.4	58.4	ng/kg		0.01	0.584
WA-SB-2	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	109	109	ng/kg		0.1	10.9
WA-SB-2	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	26.1	26.1	ng/kg		0.1	2.61
WA-SB-2	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	5.05	5.05	ng/kg		0.1	0.505
WA-SB-2	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.53	2.53	ng/kg		0.1	0.253
WA-SB-2	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	46	46	ng/kg		0.03	1.38
WA-SB-2	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	9.86	9.86	ng/kg		0.1	0.986
WA-SB-2	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	47.3	47.3	ng/kg		0.3	14.19
WA-SB-2	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	143	143	ng/kg		0.1	14.3
WA-SB-2	9/29/1998	0.5	1	3268-87-9	OCDD	Y	60.5	60.5	ng/kg		0.0003	0.01815
WA-SB-2	9/29/1998	0.5	1	39001-02-0	OCDF	Y	734	734	ng/kg		0.0003	0.2202
											Sample Location TEQ =	**47.1**
WA-SB-3	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	787	787	ng/kg		0.01	7.87
WA-SB-3	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	118	118	ng/kg		0.01	1.18
WA-SB-3	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	64.7	64.7	ng/kg		0.01	0.647
WA-SB-3	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	9.18	9.18	ng/kg		0.1	0.918
WA-SB-3	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	220	220	ng/kg		0.1	22
WA-SB-3	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	12.3	12.3	ng/kg		0.1	1.23
WA-SB-3	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	52.8	52.8	ng/kg		0.1	5.28
WA-SB-3	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	36.9	36.9	ng/kg		0.1	3.69
WA-SB-3	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	6.26	6.26	ng/kg		0.1	0.626
WA-SB-3	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	3.26	3.26	ng/kg		1	3.26
WA-SB-3	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	214	214	ng/kg		0.03	6.42
WA-SB-3	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	12	12	ng/kg		0.1	1.2
WA-SB-3	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	124	124	ng/kg		0.3	37.2
WA-SB-3	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	3.36	3.36	ng/kg		1	3.36
WA-SB-3	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	912	912	ng/kg		0.1	91.2
WA-SB-3	9/29/1998	0.5	1	3268-87-9	OCDD	Y	4920	4920	ng/kg		0.0003	1.476
WA-SB-3	9/29/1998	0.5	1	39001-02-0	OCDF	Y	628	628	ng/kg		0.0003	0.1884
											Sample Location TEQ =	**187.7**

TABLE 2.1b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-4	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	126	126	ng/kg		0.01	1.26
WA-SB-4	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	56.9	56.9	ng/kg		0.01	0.569
WA-SB-4	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	21.6	21.6	ng/kg		0.01	0.216
WA-SB-4	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.46	1.46	ng/kg		0.1	0.146
WA-SB-4	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	51.8	51.8	ng/kg		0.1	5.18
WA-SB-4	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	4.43	4.43	ng/kg		0.1	0.443
WA-SB-4	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	14.4	14.4	ng/kg		0.1	1.44
WA-SB-4	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	3.9	3.9	ng/kg		0.1	0.39
WA-SB-4	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.45	1.45	ng/kg		0.1	0.145
WA-SB-4	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	1.64	1.64	ng/kg		1	1.64
WA-SB-4	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	19.1	19.1	ng/kg		0.03	0.573
WA-SB-4	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7.25	7.25	ng/kg		0.1	0.725
WA-SB-4	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	24.7	24.7	ng/kg		0.3	7.41
WA-SB-4	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	3.89	3.89	ng/kg		1	3.89
WA-SB-4	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	56.2	56.2	ng/kg		0.1	5.62
WA-SB-4	9/29/1998	0.5	1	3268-87-9	OCDD	Y	1580	1580	ng/kg		0.0003	0.474
WA-SB-4	9/29/1998	0.5	1	39001-02-0	OCDF	Y	266	266	ng/kg		0.0003	0.0798
											Sample Location TEQ =	**30.2**
WA-SB-5	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	1260	1260	ng/kg		0.01	12.6
WA-SB-5	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	618	618	ng/kg		0.01	6.18
WA-SB-5	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	N	11.3	5.65	ng/kg	U	0.1	0.565
WA-SB-5	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3660	3660	ng/kg		0.1	366
WA-SB-5	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	N	11.3	5.65	ng/kg	U	0.1	0.565
WA-SB-5	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	748	748	ng/kg		0.1	74.8
WA-SB-5	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	N	11.3	5.65	ng/kg	U	0.1	0.565
WA-SB-5	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	N	91.9	45.95	ng/kg	U	0.1	4.595
WA-SB-5	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	N	2.23	1.115	ng/kg	U	1	1.115
WA-SB-5	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	4060	4060	ng/kg	J	0.03	121.8
WA-SB-5	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	197	197	ng/kg		0.1	19.7
WA-SB-5	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	2290	2290	ng/kg		0.3	687
WA-SB-5	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	4.33	4.33	ng/kg		1	4.33
WA-SB-5	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	7890	7890	ng/kg		0.1	789
WA-SB-5	9/29/1998	0.5	1	3268-87-9	OCDD	Y	247	247	ng/kg		0.0003	0.0741
WA-SB-5	9/29/1998	0.5	1	39001-02-0	OCDF	Y	2630	2630	ng/kg		0.0003	0.789
											Sample Location TEQ =	**2089.7**

TABLE 2.1b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-6	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2.8	2.8	ng/kg		0.01	0.028
WA-SB-6	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	7.5	7.5	ng/kg		0.01	0.075
WA-SB-6	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	N	0.93	0.465	ng/kg	U	0.01	0.00465
WA-SB-6	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.44	0.44	ng/kg		0.1	0.044
WA-SB-6	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3.9	3.9	ng/kg		0.1	0.39
WA-SB-6	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	0.5	0.5	ng/kg		0.1	0.05
WA-SB-6	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	2.24	2.24	ng/kg		0.1	0.224
WA-SB-6	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.63	0.63	ng/kg		0.1	0.063
WA-SB-6	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.38	0.19	ng/kg	U	0.1	0.019
WA-SB-6	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	0.51	0.51	ng/kg		1	0.51
WA-SB-6	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	3.11	3.11	ng/kg		0.03	0.0933
WA-SB-6	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1.33	1.33	ng/kg		0.1	0.133
WA-SB-6	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	2.76	2.76	ng/kg		0.3	0.828
WA-SB-6	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	0.34	0.34	ng/kg		1	0.34
WA-SB-6	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	8.16	8.16	ng/kg		0.1	0.816
WA-SB-6	9/29/1998	0.5	1	39001-02-0	OCDF	Y	5.43	5.43	ng/kg		0.0003	0.001629
											Sample Location TEQ =	**3.6**
WA-SB-7	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	366	366	ng/kg		0.01	3.66
WA-SB-7	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	1950	1950	ng/kg		0.01	19.5
WA-SB-7	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	730	730	ng/kg		0.01	7.3
WA-SB-7	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	20.8	20.8	ng/kg		0.1	2.08
WA-SB-7	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2670	2670	ng/kg		0.1	267
WA-SB-7	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	42.3	42.3	ng/kg		0.1	4.23
WA-SB-7	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	810	810	ng/kg		0.1	81
WA-SB-7	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	45.2	45.2	ng/kg		0.1	4.52
WA-SB-7	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	54.4	54.4	ng/kg		0.1	5.44
WA-SB-7	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	23.3	23.3	ng/kg		1	23.3
WA-SB-7	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	1900	1900	ng/kg		0.03	57
WA-SB-7	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	323	323	ng/kg		0.1	32.3
WA-SB-7	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	21.8	21.8	ng/kg		1	21.8
WA-SB-7	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	5370	5370	ng/kg		0.1	537
WA-SB-7	9/29/1998	0.5	1	3268-87-9	OCDD	Y	2030	2030	ng/kg		0.0003	0.609
WA-SB-7	9/29/1998	0.5	1	39001-02-0	OCDF	Y	4310	4310	ng/kg		0.0003	1.293
											Sample Location TEQ =	**1068.0**

TABLE 2.1b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [(1)]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-9	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	61.2	61.2	ng/kg		0.01	0.612
WA-SB-9	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	122	122	ng/kg		0.01	1.22
WA-SB-9	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	44.8	44.8	ng/kg		0.01	0.448
WA-SB-9	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	36.7	36.7	ng/kg		0.1	3.67
WA-SB-9	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	108	108	ng/kg		0.1	10.8
WA-SB-9	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	15.3	15.3	ng/kg		0.1	1.53
WA-SB-9	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	29	29	ng/kg		0.1	2.9
WA-SB-9	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	28.2	28.2	ng/kg		0.1	2.82
WA-SB-9	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.98	2.98	ng/kg		0.1	0.298
WA-SB-9	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	12.6	12.6	ng/kg		1	12.6
WA-SB-9	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	73.8	73.8	ng/kg		0.03	2.214
WA-SB-9	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7.15	7.15	ng/kg		0.1	0.715
WA-SB-9	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	116	116	ng/kg		0.3	34.8
WA-SB-9	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	43.7	43.7	ng/kg		1	43.7
WA-SB-9	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	261	261	ng/kg		0.1	26.1
WA-SB-9	9/28/1998	0.5	1	3268-87-9	OCDD	Y	252	252	ng/kg		0.0003	0.0756
WA-SB-9	9/28/1998	0.5	1	39001-02-0	OCDF	Y	545	545	ng/kg		0.0003	0.1635
											Sample Location TEQ =	**144.7**

TABLE 2.1b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-9	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	26.7	26.7	ng/kg		0.01	0.267
WA-SB-9	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	112	112	ng/kg		0.01	1.12
WA-SB-9	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	45.3	45.3	ng/kg		0.01	0.453
WA-SB-9	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	5.62	5.62	ng/kg		0.1	0.562
WA-SB-9	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	126	126	ng/kg		0.1	12.6
WA-SB-9	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	9.35	9.35	ng/kg		0.1	0.935
WA-SB-9	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	30	30	ng/kg		0.1	3
WA-SB-9	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	8.14	8.14	ng/kg		0.1	0.814
WA-SB-9	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3.57	3.57	ng/kg		0.1	0.357
WA-SB-9	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	9.47	9.47	ng/kg		1	9.47
WA-SB-9	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	113	113	ng/kg		0.03	3.39
WA-SB-9	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	6.62	6.62	ng/kg		0.1	0.662
WA-SB-9	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	148	148	ng/kg		0.3	44.4
WA-SB-9	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	7.05	7.05	ng/kg		1	7.05
WA-SB-9	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	376	376	ng/kg		0.1	37.6
WA-SB-9	9/28/1998	1	2	3268-87-9	OCDD	Y	109	109	ng/kg		0.0003	0.0327
WA-SB-9	9/28/1998	1	2	39001-02-0	OCDF	Y	639	639	ng/kg		0.0003	0.1917
											Sample Location TEQ =	**122.9**

NOTES:

TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans

PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans

HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans

HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans

OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans

N/A = not applicable

EMPC = Estimated Maximum Possible Concentration

(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.1c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-MPS-SS	Highly Chlorinated PCBs	0	0.5	10/26/1999	0.034	mg/kg
WA-SB-6	Highly Chlorinated PCBs	0	2	9/29/1998	0.26	mg/kg
WA-SB-2	Highly Chlorinated PCBs	0	2	9/29/1998	0.31	mg/kg
WA-SB-10	Highly Chlorinated PCBs	0	2	9/28/1998	0.65	mg/kg
WA-SB-9	Highly Chlorinated PCBs	0	2	9/28/1998	0.77	mg/kg
WA-SB-4	Highly Chlorinated PCBs	0	2	9/29/1998	3	mg/kg
WA-SB-12	Highly Chlorinated PCBs	0	2	9/28/1998	3.1	mg/kg

Notes:
* Less chlorinated PCBs were defined as Aroclors 1221, 1232, 1016, and 1242. Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.1d
DERIVATION OF TOTAL CHLORDANES
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location Chlordane Concentration	Units
WA-SB-9	0	2	9/28/1998	0.014	mg/kg
WA-SB-1	0	2	9/29/1998	0.029	mg/kg

TABLE 2.2a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Plant Area - Upper Soil	METALS																	
	7429-90-5	ALUMINUM	1350	15600	mg/kg	WA-MPS-SS	14/14	-	1.56E+04			7.82E+03	N	7.61E+03	nc	7.61E+03	Y	ASL
	7440-36-0	ANTIMONY	1 J	1.1 J	mg/kg	WA-SB-1	2/14	0.61-16.7	1.10E+00			3.13E+00	N	3.13E+00	nc	3.13E+00	N	BSL
	7440-38-2	ARSENIC	5.2	65.7	mg/kg	WA-SB-9	14/14	-	6.57E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	22.4 J	557	mg/kg	WA-SB-7	14/14	-	5.57E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	Y	ASL
	7440-41-7	BERYLLIUM	0.29 J	1.4 J	mg/kg	WA-SB-11	13/14	0.67-0.67	1.40E+00		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.12 J	1.2 J	mg/kg	WA-SB-7	11/14	0.08-2	1.20E+00		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	7430	283000	mg/kg	WA-SB-12	14/14	-	2.83E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	8.9 J	29	mg/kg	WA-MPS-SS	14/14	-	2.90E+01		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	3.1 J	17.7	mg/kg	WA-SB-6	13/14	2.7-2.7	1.77E+01			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	12.2	225	mg/kg	WA-SB-1	14/14	-	2.25E+02		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	57-12-5	CYANIDE	2.3	5	mg/kg	WA-SB-7	2/13	0.53-1.7	5.00E+00			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	7439-89-6	IRON	8850	45800	mg/kg	WA-SB-6	14/14	-	4.58E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	5	340 J	mg/kg	WA-SB-11	14/14	-	3.40E+02		4.00E+02	NV		4.00E+02	nc	4.00E+02	N	BSL
	7439-95-4	MAGNESIUM	2830	45700 J	mg/kg	WA-WA-B2	14/14	-	4.57E+04			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	154	643 J	mg/kg	WA-MPS-SS	14/14	-	6.43E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	0.43	2440 J	mg/kg	WA-SB-7	23/23	-	2.44E+03			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.00261 J	.00261 J	mg/kg	WA-MPS-SS	1/1	-	2.61E-03			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	8.3 J	4040	mg/kg	WA-SB-5	14/14	-	4.04E+03		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	Y	ASL
	7440-09-7	POTASSIUM	113 J	3190	mg/kg	WA-MPS-SS	12/14	997-1330	3.19E+03			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	1.2	2	mg/kg	WA-SB-6	3/14	1-2	2.00E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-22-4	SILVER	1	1.7 J	mg/kg	WA-SB-1	2/14	0.2-2	1.70E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	176 J	1330 J	mg/kg	WA-WA-B2	12/14	83.9-649	1.33E+03			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	5.7 J	43.6	mg/kg	WA-WA-B8	14/14	-	4.36E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	19 J	1240	mg/kg	WA-SB-6	13/14	26.4-26.4	1.24E+03		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.034	3.1	mg/kg	WA-SB-12	11/16	-	3.10E+00			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	72-55-9	4,4'-DDE	0.0027 J	0.063 J	mg/kg	WA-SB-11	4/16	0.0042-3.7	6.30E-02		8.90E+00	1.88E+00	C	1.72E+00	ca	1.72E+00	N	BSL
	319-84-6	ALPHA-BHC	0.02	0.02	mg/kg	WA-SB-4	1/16	0.002-1.9	2.00E-02		4.80E-01	1.01E-01	C	9.02E-02	ca	9.02E-02	N	BSL
	319-86-8	DELTA-BHC	0.0069 J	0.0069 J	mg/kg	WA-SB-4	1/16	0.002-1.9	6.90E-03		1.00E+02	NV		NV		NV	Y	NTX
	60-57-1	DIELDRIN	0.13	0.13	mg/kg	WA-SB-4	1/16	0.004-3.7	1.30E-01		2.00E-01	3.99E-02	C	3.04E-02	ca	3.04E-02	Y	ASL
	33213-65-9	ENDOSULFAN II[d]	0.0036 J	0.07 J	mg/kg	WA-SB-1	7/16	0.0042-3.7	7.00E-02		2.40E+01	4.69E+01	N	3.67E+01	nc	3.67E+01	N	BSL
	7421-93-4	ENDRIN ALDEHYDE[e]	1.2 J	1.2 J	mg/kg	WA-SB-5	1/13	0.0042-0.86	1.20E+00		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.022	0.076	mg/kg	WA-SB-4	3/11	0.0042-3.7	7.60E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	76-44-8	HEPTACHLOR	0.018 J	0.018 J	mg/kg	WA-SB-7	1/15	0.002-0.43	1.80E-02		2.10E+00	1.42E-01	C	1.08E-01	ca	1.08E-01	N	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.0035 J	0.047 J	mg/kg	WA-SB-4	3/16	0.002-0.43	4.70E-02			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
		TOTAL CHLORDANE[f]	0.014	0.029	mg/kg	WA-SB-1	2/16	-	2.90E-02			1.82E+00	C	1.62E-01	nc	1.62E-01	N	BSL
	SVOC																	
	105-67-9	2,4-DIMETHYLPHENOL	0.045 J	0.4 J	mg/kg	WA-SB-7	2/14	0.36-56	4.00E-01			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.06 J	1.1	mg/kg	WA-SB-7	7/14	0.4-56	1.10E+00			3.13E+01	N			3.13E+01	N	BSL
	95-48-7	2-METHYLPHENOL	0.28 J	0.28 J	mg/kg	WA-SB-7	1/14	0.36-56	2.80E-01		1.00E+02	3.91E+02	N	3.06E+02	nc	3.06E+02	N	BSL
	106-47-8	4-CHLOROANILINE	0.058 J	0.058 J	mg/kg	WA-SB-9	1/14	0.37-56	5.80E-02			3.13E+01	N	2.44E+01	nc	2.44E+01	N	BSL
	106-44-5	4-METHYLPHENOL	0.048 J	0.74	mg/kg	WA-SB-7	3/14	0.36-56	7.40E-01		1.00E+02	3.91E+01	N	3.06E+01	nc	3.06E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.093 J	2.4	mg/kg	WA-SB-7	8/14	0.4-56	2.40E+00		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.078 J	0.42 J	mg/kg	WA-SB-7	5/14	0.37-56	4.20E-01		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.11 J	6.7	mg/kg	WA-SB-7	9/14	0.42-56	6.70E+00		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.12 J	16 J	mg/kg	WA-SB-7	12/14	1.1-56	1.60E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.12 J	18 J	mg/kg	WA-SB-7	11/14	1.1-56	1.80E+01		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.19 J	23 J	mg/kg	WA-SB-7	12/14	1.1-56	2.30E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.063 J	23 J	mg/kg	WA-SB-7	12/14	1.1-56	2.30E+01		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.068 J	7.6 J	mg/kg	WA-SB-7	11/14	1.1-56	7.60E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.88 J	15	mg/kg	WA-SB-1	9/14	0.42-56	1.50E+01			4.56E+01	C	3.47E+01	ca	3.47E+01	N	BSL
	86-74-8	CARBAZOLE	0.042 J	2.5 J	mg/kg	WA-SB-1	9/12	0.42-12	2.50E+00			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	0.16 J	17 J	mg/kg	WA-SB-7	12/14	1.1-56	1.70E+01		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.085 J	5.8 J	mg/kg	WA-SB-7	8/14	0.42-56	5.80E+00		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.09 J	1.7	mg/kg	WA-SB-7	8/14	0.4-56	1.70E+00		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	84-74-2	DI-N-BUTYL PHTHALATE	0.043 J	0.18 J	mg/kg	WA-SB-4	9/14	0.42-56	1.80E-01			7.82E+02	N	6.11E+02	nc	6.11E+02	N	BSL
	206-44-0	FLUORANTHENE	0.13 J	27	mg/kg	WA-SB-1	13/14	56-56	2.70E+01		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.064 J	2.2	mg/kg	WA-SB-7	9/14	0.42-56	2.20E+00		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.007	28	mg/kg	WA-SB-5	10/18	0.37-56	2.80E+01		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	Y	ASL
	87-68-3	HEXACHLOROBUTADIENE	0.12 J	1.8	mg/kg	WA-SB-5	2/18	0.003-56	1.80E+00			8.19E+00	C	6.24E-01	nc	6.24E-01	Y	ASL
	77-47-4	HEXACHLOROCYCLOPENTADIENE	0.12 J	0.12 J	mg/kg	WA-SB-5	1/14	0.36-56	1.20E-01			4.69E+01	N	3.65E+01	nc	3.65E+01	N	BSL

TABLE 2.2a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	67-72-1	HEXACHLOROETHANE	0.85	0.85	mg/kg	WA-SB-5	1/14	0.36-56	8.50E-01			4.56E+01	C	3.47E+00	nc	3.47E+00	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.057 J	18 J	mg/kg	WA-SB-7	11/14	1.1-56	1.80E+01		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.0017 J	4.1	mg/kg	WA-SB-6	11/18	0.003-56	4.10E+00		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	0.2 J	20	mg/kg	WA-SB-7	11/14	1.1-56	2.00E+01		1.00E+02	NV		NV		NV	Y	NTX
	108-95-2	PHENOL	0.046 J	0.24 J	mg/kg	WA-SB-7	6/14	0.36-56	2.40E-01		1.00E+02	2.35E+03	N	1.83E+03	nc	1.83E+03	N	BSL
	129-00-0	PYRENE	0.26 J	31 J	mg/kg	WA-SB-7	12/14	1.1-56	3.10E+01		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL
	VOC																	
	87-61-6	1,2,3-TRICHLOROBENZENE	0.0033 J	0.0033 J	mg/kg	WA-SS#2	1/4	0.003-0.0033	3.30E-03			NV		NV		NV	Y	NTX
	120-82-1	1,2,4-TRICHLOROBENZENE	0.0013 J	19 J	mg/kg	WA-WA-B8	12/18	0.0033-11	1.90E+01			7.82E+01	N	6.22E+00	nc	6.22E+00	Y	ASL
	95-50-1	1,2-DICHLOROBENZENE	0.0025 J	420	mg/kg	WA-SB-12	15/18	0.0033-11	4.20E+02		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	Y	ASL
	541-73-1	1,3-DICHLOROBENZENE	0.026	31	mg/kg	WA-SB-11	6/18	0.003-56	3.10E+01		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	Y	ASL
	106-46-7	1,4-DICHLOROBENZENE	0.0053 J	2600	mg/kg	WA-SB-11	14/18	0.0033-11	2.60E+03		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	Y	ASL
	78-93-3	2-BUTANONE	0.003 J	0.034	mg/kg	WA-SB-6	3/14	0.011-13	3.40E-02		1.00E+02	4.69E+03	N	2.23E+03	nc	2.23E+03	N	BSL
	67-64-1	ACETONE	0.061	0.12 J	mg/kg	WA-SB-6	3/14	0.011-13	1.20E-01		1.00E+02	7.04E+03	N	1.41E+03	nc	1.41E+03	N	BSL
	71-43-2	BENZENE	0.0017 J	3.2 J	mg/kg	WA-WA-B8	10/18	0.003-13	3.20E+00		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	75-15-0	CARBON DISULFIDE	0.001 J	0.002 J	mg/kg	WA-SB-6, WA-SB-7	4/14	0.011-13	2.00E-03			7.82E+02	N	3.55E+01	nc	3.55E+01	N	BSL
	108-90-7	CHLOROBENZENE	0.001 J	150	mg/kg	WA-SB-12	12/18	0.0032-0.016	1.50E+02		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	Y	ASL
	67-66-3	CHLOROFORM	0.002 J	0.027	mg/kg	WA-SB-5	8/18	0.003-13	2.70E-02		4.90E+01	7.82E+01	N	2.21E-01	ca	2.21E-01	N	BSL
	75-09-2	METHYLENE CHLORIDE	0.0018 J	0.047	mg/kg	WA-SB-2	7/18	0.006-13	4.70E-02		1.00E+02	8.52E+01	C	9.11E+00	ca	9.11E+00	N	BSL
	127-18-4	TETRACHLOROETHENE	0.0015 J	0.17 J	mg/kg	WA-SB-6	9/18	0.0033-13	1.70E-01		1.90E+01	1.18E+00	C	4.84E-01	ca	4.84E-01	N	BSL
	108-88-3	TOLUENE	0.001 J	0.007 J	mg/kg	WA-SB-2	7/18	0.003-13	7.00E-03		1.00E+02	6.26E+02	N	5.20E+01	nc	5.20E+01	N	BSL
	79-01-6	TRICHLOROETHENE	0.00095 J	0.019	mg/kg	WA-SB-5	7/18	0.011-13	1.90E-02		2.10E+01	1.60E+00	C	5.30E-02	ca	5.30E-02	N	BSL
	1330-20-7	XYLENES, TOTAL	0.002 J	1.7 J	mg/kg	WA-SB-12	4/18	0.003-4.2	1.70E+00		1.00E+02	1.56E+03	N	2.71E+01	nc	2.71E+01	N	BSL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.0000013	0.0021	mg/kg	WA-SB-5	27/27		2.09E-03			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT - Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
NA = Not applicable, minimum and maximum values are calculated.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.
f = RBC value for chlordane (CAS# 57749) and PRG value for technical chlordane (CAS# 12789-03-6) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-MPS-SS	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	12.3	12.3	ng/kg	J	0.01	0.123
WA-MPS-SS	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	5.54	5.54	ng/kg	J	0.01	0.0554
WA-MPS-SS	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1.97	1.97	ng/kg	J	0.01	0.0197
WA-MPS-SS	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.36	0.36	ng/kg	J	0.1	0.036
WA-MPS-SS	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	5.31	5.31	ng/kg	J	0.1	0.531
WA-MPS-SS	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	0.67	0.67	ng/kg	J	0.1	0.067
WA-MPS-SS	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1.39	1.39	ng/kg	J	0.1	0.139
WA-MPS-SS	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.67	0.67	ng/kg	J	0.1	0.067
WA-MPS-SS	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.28	0.28	ng/kg	J	0.1	0.028
WA-MPS-SS	10/26/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	0.3	0.3	ng/kg	J	1	0.3
WA-MPS-SS	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	4.07	4.07	ng/kg		0.03	0.1221
WA-MPS-SS	10/26/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	0.78	0.78	ng/kg	J	0.1	0.078
WA-MPS-SS	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	2.63	2.63	ng/kg		0.03	0.789
WA-MPS-SS	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	0.14	0.14	ng/kg	J	1	0.14
WA-MPS-SS	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	17.8	17.8	ng/kg		0.1	1.78
WA-MPS-SS	10/26/1999	0	0.5	3268-87-9	OCDD	Y	87.8	87.8	ng/kg	J	0.0003	0.02634
WA-MPS-SS	10/26/1999	0	0.5	39001-02-0	OCDF	Y	15.8	15.8	ng/kg	J	0.0003	0.00474
											Sample Location TEQ =	**4.3**
WA-SB-1	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2950	2950	ng/kg		0.01	29.5
WA-SB-1	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	336	336	ng/kg		0.01	3.36
WA-SB-1	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	93.1	93.1	ng/kg		0.01	0.931
WA-SB-1	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	34.4	34.4	ng/kg		0.1	3.44
WA-SB-1	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	266	266	ng/kg		0.1	26.6
WA-SB-1	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	47.7	47.7	ng/kg		0.1	4.77
WA-SB-1	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	70.3	70.3	ng/kg		0.1	7.03
WA-SB-1	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	35.1	35.1	ng/kg		0.1	3.51
WA-SB-1	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	4.18	4.18	ng/kg		0.1	0.418
WA-SB-1	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	4.8	4.8	ng/kg		1	4.8
WA-SB-1	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	95.7	95.7	ng/kg		0.03	2.871
WA-SB-1	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	20.9	20.9	ng/kg		0.1	2.09
WA-SB-1	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	90	90	ng/kg		0.3	27
WA-SB-1	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	3.41	3.41	ng/kg		1	3.41
WA-SB-1	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	249	249	ng/kg		0.1	24.9
WA-SB-1	9/29/1998	0.5	1	3268-87-9	OCDD	Y	24100	24100	ng/kg		0.0003	7.23
WA-SB-1	9/29/1998	0.5	1	39001-02-0	OCDF	Y	1470	1470	ng/kg		0.0003	0.441
											Sample Location TEQ =	**152.3**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-10	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	61.4	61.4	ng/kg		0.01	0.614
WA-SB-10	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	158	158	ng/kg		0.01	1.58
WA-SB-10	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	70.4	70.4	ng/kg		0.01	0.704
WA-SB-10	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.35	4.35	ng/kg		0.1	0.435
WA-SB-10	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	610	610	ng/kg		0.1	61
WA-SB-10	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	9.98	9.98	ng/kg		0.1	0.998
WA-SB-10	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	108	108	ng/kg		0.1	10.8
WA-SB-10	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	8.67	8.67	ng/kg		0.1	0.867
WA-SB-10	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	23.3	23.3	ng/kg		0.1	2.33
WA-SB-10	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	3.5	3.5	ng/kg		1	3.5
WA-SB-10	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	1000	1000	ng/kg		0.03	30
WA-SB-10	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	38.6	38.6	ng/kg		0.1	3.86
WA-SB-10	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	724	724	ng/kg		0.3	217.2
WA-SB-10	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	2.81	2.81	ng/kg		1	2.81
WA-SB-10	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	3000	3000	ng/kg		0.1	300
WA-SB-10	9/28/1998	0.5	1	3268-87-9	OCDD	Y	369	369	ng/kg		0.0003	0.1107
WA-SB-10	9/28/1998	0.5	1	39001-02-0	OCDF	Y	623	623	ng/kg		0.0003	0.1869
											Sample Location TEQ =	**637.0**
WA-SB-10	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	11.9	11.9	ng/kg		0.01	0.119
WA-SB-10	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	107	107	ng/kg		0.01	1.07
WA-SB-10	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	68.1	68.1	ng/kg		0.01	0.681
WA-SB-10	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.87	0.87	ng/kg		0.1	0.087
WA-SB-10	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	123	123	ng/kg		0.1	12.3
WA-SB-10	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	4.42	4.42	ng/kg		0.1	0.442
WA-SB-10	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	28	28	ng/kg		0.1	2.8
WA-SB-10	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	3.81	3.81	ng/kg		0.1	0.381
WA-SB-10	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	4.47	4.47	ng/kg		0.1	0.447
WA-SB-10	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	43.7	43.7	ng/kg		0.03	1.311
WA-SB-10	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	12	12	ng/kg		0.1	1.2
WA-SB-10	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	56.2	56.2	ng/kg		0.3	16.86
WA-SB-10	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	133	133	ng/kg		0.1	13.3
WA-SB-10	9/28/1998	1	2	3268-87-9	OCDD	Y	29.8	29.8	ng/kg		0.0003	0.00894
WA-SB-10	9/28/1998	1	2	39001-02-0	OCDF	Y	937	937	ng/kg		0.0003	0.2811
											Sample Location TEQ =	**51.3**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-10	9/28/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	23	23	ng/kg		0.01	0.23
WA-SB-10	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	221	221	ng/kg		0.01	2.21
WA-SB-10	9/28/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	130	130	ng/kg		0.01	1.3
WA-SB-10	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.67	1.67	ng/kg		0.1	0.167
WA-SB-10	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	253	253	ng/kg		0.1	25.3
WA-SB-10	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	9.11	9.11	ng/kg		0.1	0.911
WA-SB-10	9/28/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	58.6	58.6	ng/kg		0.1	5.86
WA-SB-10	9/28/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	6.68	6.68	ng/kg		0.1	0.668
WA-SB-10	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	Y	7.81	7.81	ng/kg		0.1	0.781
WA-SB-10	9/28/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	2.59	2.59	ng/kg		1	2.59
WA-SB-10	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	64.6	64.6	ng/kg		0.03	1.938
WA-SB-10	9/28/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	23.2	23.2	ng/kg		0.1	2.32
WA-SB-10	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	98.7	98.7	ng/kg		0.3	29.61
WA-SB-10	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	140	140	ng/kg		0.1	14
WA-SB-10	9/28/1998	2	3	3268-87-9	OCDD	Y	51.7	51.7	ng/kg		0.0003	0.01551
WA-SB-10	9/28/1998	2	3	39001-02-0	OCDF	Y	1750	1750	ng/kg		0.0003	0.525
											Sample Location TEQ =	**88.4**
WA-SB-10	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	10.7	10.7	ng/kg		0.01	0.107
WA-SB-10	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	65.5	65.5	ng/kg		0.01	0.655
WA-SB-10	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	41.2	41.2	ng/kg		0.01	0.412
WA-SB-10	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.7	0.7	ng/kg		0.1	0.07
WA-SB-10	9/28/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	77.8	77.8	ng/kg		0.1	7.78
WA-SB-10	9/28/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2.94	2.94	ng/kg		0.1	0.294
WA-SB-10	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	17.9	17.9	ng/kg		0.1	1.79
WA-SB-10	9/28/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.61	2.61	ng/kg		0.1	0.261
WA-SB-10	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.88	2.88	ng/kg		0.1	0.288
WA-SB-10	9/28/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	1.13	1.13	ng/kg		1	1.13
WA-SB-10	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	26.5	26.5	ng/kg		0.03	0.795
WA-SB-10	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7.7	7.7	ng/kg		0.1	0.77
WA-SB-10	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	33.4	33.4	ng/kg		0.3	10.02
WA-SB-10	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	71.6	71.6	ng/kg		0.1	7.16
WA-SB-10	9/28/1998	3	4	3268-87-9	OCDD	Y	37.4	37.4	ng/kg		0.0003	0.01122
WA-SB-10	9/28/1998	3	4	39001-02-0	OCDF	Y	487	487	ng/kg		0.0003	0.1461
											Sample Location TEQ =	**31.7**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-10	9/28/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	20.8	20.8	ng/kg		0.01	0.208
WA-SB-10	9/28/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	204	204	ng/kg		0.01	2.04
WA-SB-10	9/28/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	125	125	ng/kg		0.01	1.25
WA-SB-10	9/28/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.52	1.52	ng/kg		0.1	0.152
WA-SB-10	9/28/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	219	219	ng/kg		0.1	21.9
WA-SB-10	9/28/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	7.54	7.54	ng/kg		0.1	0.754
WA-SB-10	9/28/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	51.4	51.4	ng/kg		0.1	5.14
WA-SB-10	9/28/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	6.32	6.32	ng/kg		0.1	0.632
WA-SB-10	9/28/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	8.54	8.54	ng/kg		0.1	0.854
WA-SB-10	9/28/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	2.29	2.29	ng/kg		1	2.29
WA-SB-10	9/28/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	57.4	57.4	ng/kg		0.03	1.722
WA-SB-10	9/28/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	21.7	21.7	ng/kg		0.1	2.17
WA-SB-10	9/28/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	88.7	88.7	ng/kg		0.3	26.61
WA-SB-10	9/28/1998	4	5	1746-01-6	2,3,7,8-TCDD	Y	4.51	4.51	ng/kg		1	4.51
WA-SB-10	9/28/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	125	125	ng/kg		0.1	12.5
WA-SB-10	9/28/1998	4	5	3268-87-9	OCDD	Y	45.8	45.8	ng/kg		0.0003	0.01374
WA-SB-10	9/28/1998	4	5	39001-02-0	OCDF	Y	1530	1530	ng/kg		0.0003	0.459
											Sample Location TEQ =	**83.2**
WA-SB-11	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	40.4	40.4	ng/kg		0.01	0.404
WA-SB-11	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	98.6	98.6	ng/kg		0.01	0.986
WA-SB-11	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	33.4	33.4	ng/kg		0.01	0.334
WA-SB-11	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	2.61	2.61	ng/kg		0.1	0.261
WA-SB-11	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	144	144	ng/kg		0.1	14.4
WA-SB-11	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	8.81	8.81	ng/kg		0.1	0.881
WA-SB-11	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3707	3707	ng/kg		0.1	370.7
WA-SB-11	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	5.88	5.88	ng/kg		0.1	0.588
WA-SB-11	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	4.52	4.52	ng/kg		0.1	0.452
WA-SB-11	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	4.3	4.3	ng/kg		1	4.3
WA-SB-11	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	150	150	ng/kg		0.03	4.5
WA-SB-11	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	19.5	19.5	ng/kg		0.1	1.95
WA-SB-11	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	178	178	ng/kg		0.3	53.4
WA-SB-11	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	4.38	4.38	ng/kg		1	4.38
WA-SB-11	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	453	453	ng/kg		0.1	45.3
WA-SB-11	9/28/1998	0.5	1	3268-87-9	OCDD	Y	195	195	ng/kg		0.0003	0.0585
WA-SB-11	9/28/1998	0.5	1	39001-02-0	OCDF	Y	390	390	ng/kg		0.0003	0.117
											Sample Location TEQ =	**503.0**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-11	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	19.4	19.4	ng/kg		0.01	0.194
WA-SB-11	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	48.2	48.2	ng/kg		0.01	0.482
WA-SB-11	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	20.8	20.8	ng/kg		0.01	0.208
WA-SB-11	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.26	1.26	ng/kg		0.1	0.126
WA-SB-11	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	74.7	74.7	ng/kg		0.1	7.47
WA-SB-11	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	3.23	3.23	ng/kg		0.1	0.323
WA-SB-11	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	17.5	17.5	ng/kg		0.1	1.75
WA-SB-11	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.64	2.64	ng/kg		0.1	0.264
WA-SB-11	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.1	2.1	ng/kg		0.1	0.21
WA-SB-11	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	2.48	2.48	ng/kg		1	2.48
WA-SB-11	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	80.7	80.7	ng/kg		0.03	2.421
WA-SB-11	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7.69	7.69	ng/kg		0.1	0.769
WA-SB-11	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	87.7	87.7	ng/kg		0.3	26.31
WA-SB-11	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	3.81	3.81	ng/kg		1	3.81
WA-SB-11	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	211	211	ng/kg		0.1	21.1
WA-SB-11	9/28/1998	1	2	3268-87-9	OCDD	Y	107	107	ng/kg		0.0003	0.0321
WA-SB-11	9/28/1998	1	2	39001-02-0	OCDF	Y	269	269	ng/kg		0.0003	0.0807
											Sample Location TEQ =	**68.0**
WA-SB-11	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	0.77	0.77	ng/kg		0.01	0.0077
WA-SB-11	9/28/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	0.027	0.027	ng/kg		0.01	0.00027
WA-SB-11	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	N	0.1	0.05	ng/kg	U	0.1	0.005
WA-SB-11	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	1.26	1.26	ng/kg		0.1	0.126
WA-SB-11	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	N	0.1	0.05	ng/kg	U	0.1	0.005
WA-SB-11	9/28/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	0.38	0.38	ng/kg		0.1	0.038
WA-SB-11	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.1	0.05	ng/kg	U	0.1	0.005
WA-SB-11	9/28/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	N	0.1	0.05	ng/kg	U	1	0.05
WA-SB-11	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	1.32	1.32	ng/kg		0.03	0.0396
WA-SB-11	9/28/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	0.18	0.18	ng/kg		0.1	0.018
WA-SB-11	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	1.41	1.41	ng/kg		0.3	0.423
WA-SB-11	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	5.36	5.36	ng/kg		0.1	0.536
											Sample Location TEQ =	**1.3**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-11	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	4.4	4.4	ng/kg		0.01	0.044
WA-SB-11	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	7.31	7.31	ng/kg		0.01	0.0731
WA-SB-11	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2.25	2.25	ng/kg		0.01	0.0225
WA-SB-11	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.22	0.22	ng/kg		0.1	0.022
WA-SB-11	9/28/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	8.6	8.6	ng/kg		0.1	0.86
WA-SB-11	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	2.32	2.32	ng/kg		0.1	0.232
WA-SB-11	9/28/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.51	0.51	ng/kg		0.1	0.051
WA-SB-11	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.23	0.23	ng/kg		0.1	0.023
WA-SB-11	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	8.82	8.82	ng/kg		0.03	0.2646
WA-SB-11	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1.25	1.25	ng/kg		0.1	0.125
WA-SB-11	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	9.44	9.44	ng/kg		0.3	2.832
WA-SB-11	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	24.6	24.6	ng/kg		0.1	2.46
WA-SB-11	9/28/1998	3	4	3268-87-9	OCDD	Y	28.1	28.1	ng/kg		0.0003	0.00843
WA-SB-11	9/28/1998	3	4	39001-02-0	OCDF	Y	25.2	25.2	ng/kg		0.0003	0.00756
											Sample Location TEQ =	**7.0**
WA-SB-12	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	77.2	77.2	ng/kg		0.01	0.772
WA-SB-12	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	53.5	53.5	ng/kg		0.01	0.535
WA-SB-12	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	15.8	15.8	ng/kg		0.01	0.158
WA-SB-12	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.54	4.54	ng/kg		0.1	0.454
WA-SB-12	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	45.6	45.6	ng/kg		0.1	4.56
WA-SB-12	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	13.5	13.5	ng/kg		0.1	1.35
WA-SB-12	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	9.64	9.64	ng/kg		0.1	0.964
WA-SB-12	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	7.8	7.8	ng/kg		0.1	0.78
WA-SB-12	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.57	1.57	ng/kg		0.1	0.157
WA-SB-12	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	17.2	17.2	ng/kg		0.03	0.516
WA-SB-12	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3.57	3.57	ng/kg		0.1	0.357
WA-SB-12	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	89.9	89.9	ng/kg		0.3	26.97
WA-SB-12	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	4.8	4.8	ng/kg		1	4.8
WA-SB-12	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	68.6	68.6	ng/kg		0.1	6.86
WA-SB-12	9/28/1998	0.5	1	3268-87-9	OCDD	Y	348	348	ng/kg		0.0003	0.1044
WA-SB-12	9/28/1998	0.5	1	39001-02-0	OCDF	Y	205	205	ng/kg		0.0003	0.0615
											Sample Location TEQ =	**49.4**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-12	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	48.2	48.2	ng/kg	J	0.01	0.482
WA-SB-12	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	151	151	ng/kg	J	0.01	1.51
WA-SB-12	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	67.2	67.2	ng/kg	J	0.01	0.672
WA-SB-12	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.5	4.5	ng/kg	J	0.1	0.45
WA-SB-12	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	137	137	ng/kg	J	0.1	13.7
WA-SB-12	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	12.3	12.3	ng/kg	J	0.1	1.23
WA-SB-12	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	27.5	27.5	ng/kg	J	0.1	2.75
WA-SB-12	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	7.64	7.64	ng/kg	J	0.1	0.764
WA-SB-12	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3.28	3.28	ng/kg	J	0.1	0.328
WA-SB-12	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	8.59	8.59	ng/kg	J	1	8.59
WA-SB-12	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	39.4	39.4	ng/kg	J	0.03	1.182
WA-SB-12	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	8.49	8.49	ng/kg	J	0.1	0.849
WA-SB-12	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	140	140	ng/kg	J	0.3	42
WA-SB-12	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	2.18	2.18	ng/kg	J	1	2.18
WA-SB-12	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	158	158	ng/kg		0.1	15.8
WA-SB-12	9/28/1998	1	2	3268-87-9	OCDD	Y	180	180	ng/kg	J	0.0003	0.054
WA-SB-12	9/28/1998	1	2	39001-02-0	OCDF	Y	626	626	ng/kg	J	0.0003	0.1878
										Sample Location TEQ =		**92.7**
WA-SB-12	9/28/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	33.1	33.1	ng/kg		0.01	0.331
WA-SB-12	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	75.8	75.8	ng/kg		0.01	0.758
WA-SB-12	9/28/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	52.7	52.7	ng/kg		0.01	0.527
WA-SB-12	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	2.25	2.25	ng/kg		0.1	0.225
WA-SB-12	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	88.1	88.1	ng/kg		0.1	8.81
WA-SB-12	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	7.02	7.02	ng/kg		0.1	0.702
WA-SB-12	9/28/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	17.3	17.3	ng/kg		0.1	1.73
WA-SB-12	9/28/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	5.15	5.15	ng/kg		0.1	0.515
WA-SB-12	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3.08	3.08	ng/kg		0.1	0.308
WA-SB-12	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	31.8	31.8	ng/kg		0.03	0.954
WA-SB-12	9/28/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	6.09	6.09	ng/kg		0.1	0.609
WA-SB-12	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	115	115	ng/kg		0.3	34.5
WA-SB-12	9/28/1998	2	3	1746-01-6	2,3,7,8-TCDD	Y	2.23	2.23	ng/kg		1	2.23
WA-SB-12	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	120	120	ng/kg		0.1	12
WA-SB-12	9/28/1998	2	3	3268-87-9	OCDD	Y	126	126	ng/kg		0.0003	0.0378
WA-SB-12	9/28/1998	2	3	39001-02-0	OCDF	Y	570	570	ng/kg		0.0003	0.171
										Sample Location TEQ =		**64.4**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-12	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	12.7	12.7	ng/kg	J	0.01	0.127
WA-SB-12	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	18.2	18.2	ng/kg	J	0.01	0.182
WA-SB-12	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	12.8	12.8	ng/kg	J	0.01	0.128
WA-SB-12	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.67	1.67	ng/kg	J	0.1	0.167
WA-SB-12	9/28/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	4.04	4.04	ng/kg	J	0.1	0.404
WA-SB-12	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	5.09	5.09	ng/kg	J	0.1	0.509
WA-SB-12	9/28/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.84	2.84	ng/kg	J	0.1	0.284
WA-SB-12	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.33	1.33	ng/kg	J	0.1	0.133
WA-SB-12	9/28/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	2.43	2.43	ng/kg	J	1	2.43
WA-SB-12	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	11.6	11.6	ng/kg	J	0.03	0.348
WA-SB-12	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2.13	2.13	ng/kg	J	0.1	0.213
WA-SB-12	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	45.8	45.8	ng/kg	J	0.3	13.74
WA-SB-12	9/28/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	0.76	0.76	ng/kg	J	1	0.76
WA-SB-12	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	61.5	61.5	ng/kg		0.1	6.15
WA-SB-12	9/28/1998	3	4	3268-87-9	OCDD	Y	28.8	28.8	ng/kg	J	0.0003	0.00864
WA-SB-12	9/28/1998	3	4	39001-02-0	OCDF	Y	116	116	ng/kg	J	0.0003	0.0348
										Sample Location TEQ =		**25.6**
WA-SB-12	9/28/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	6.2	6.2	ng/kg	J	0.01	0.062
WA-SB-12	9/28/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	12.5	12.5	ng/kg	J	0.01	0.125
WA-SB-12	9/28/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	8.04	8.04	ng/kg	J	0.01	0.0804
WA-SB-12	9/28/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.93	0.93	ng/kg	J	0.1	0.093
WA-SB-12	9/28/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	25.6	25.6	ng/kg	J	0.1	2.56
WA-SB-12	9/28/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1.63	1.63	ng/kg	J	0.1	0.163
WA-SB-12	9/28/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3.72	3.72	ng/kg	J	0.1	0.372
WA-SB-12	9/28/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	1.31	1.31	ng/kg	J	0.1	0.131
WA-SB-12	9/28/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	N	1.03	0.515	ng/kg	UJ	0.1	0.0515
WA-SB-12	9/28/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	1.34	1.34	ng/kg	J	1	1.34
WA-SB-12	9/28/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	8.23	8.23	ng/kg	J	0.03	0.2469
WA-SB-12	9/28/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	N	1.03	0.515	ng/kg	UJ	0.1	0.0515
WA-SB-12	9/28/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	55.2	55.2	ng/kg	J	0.3	16.56
WA-SB-12	9/28/1998	4	5	1746-01-6	2,3,7,8-TCDD	N	0.34	0.17	ng/kg	UJ	1	0.17
WA-SB-12	9/28/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	50.4	50.4	ng/kg		0.1	5.04
WA-SB-12	9/28/1998	4	5	3268-87-9	OCDD	Y	19.3	19.3	ng/kg	J	0.0003	0.00579
WA-SB-12	9/28/1998	4	5	39001-02-0	OCDF	Y	59.4	59.4	ng/kg	J	0.0003	0.01782
										Sample Location TEQ =		**27.1**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-2	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	19.3	19.3	ng/kg		0.01	0.193
WA-SB-2	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	92.3	92.3	ng/kg		0.01	0.923
WA-SB-2	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	58.4	58.4	ng/kg		0.01	0.584
WA-SB-2	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	109	109	ng/kg		0.1	10.9
WA-SB-2	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	26.1	26.1	ng/kg		0.1	2.61
WA-SB-2	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	5.05	5.05	ng/kg		0.1	0.505
WA-SB-2	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.53	2.53	ng/kg		0.1	0.253
WA-SB-2	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	46	46	ng/kg		0.03	1.38
WA-SB-2	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	9.86	9.86	ng/kg		0.1	0.986
WA-SB-2	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	47.3	47.3	ng/kg		0.3	14.19
WA-SB-2	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	143	143	ng/kg		0.1	14.3
WA-SB-2	9/29/1998	0.5	1	3268-87-9	OCDD	Y	60.5	60.5	ng/kg		0.0003	0.01815
WA-SB-2	9/29/1998	0.5	1	39001-02-0	OCDF	Y	734	734	ng/kg		0.0003	0.2202
											Sample Location TEQ =	**47.1**
WA-SB-3	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	787	787	ng/kg		0.01	7.87
WA-SB-3	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	118	118	ng/kg		0.01	1.18
WA-SB-3	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	64.7	64.7	ng/kg		0.01	0.647
WA-SB-3	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	9.18	9.18	ng/kg		0.1	0.918
WA-SB-3	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	220	220	ng/kg		0.1	22
WA-SB-3	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	12.3	12.3	ng/kg		0.1	1.23
WA-SB-3	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	52.8	52.8	ng/kg		0.1	5.28
WA-SB-3	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	36.9	36.9	ng/kg		0.1	3.69
WA-SB-3	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	6.26	6.26	ng/kg		0.1	0.626
WA-SB-3	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	3.26	3.26	ng/kg		1	3.26
WA-SB-3	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	214	214	ng/kg		0.03	6.42
WA-SB-3	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	12	12	ng/kg		0.1	1.2
WA-SB-3	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	124	124	ng/kg		0.3	37.2
WA-SB-3	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	3.36	3.36	ng/kg		1	3.36
WA-SB-3	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	912	912	ng/kg		0.1	91.2
WA-SB-3	9/29/1998	0.5	1	3268-87-9	OCDD	Y	4920	4920	ng/kg		0.0003	1.476
WA-SB-3	9/29/1998	0.5	1	39001-02-0	OCDF	Y	628	628	ng/kg		0.0003	0.1884
											Sample Location TEQ =	**187.7**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-4	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	126	126	ng/kg		0.01	1.26
WA-SB-4	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	56.9	56.9	ng/kg		0.01	0.569
WA-SB-4	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	21.6	21.6	ng/kg		0.01	0.216
WA-SB-4	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.46	1.46	ng/kg		0.1	0.146
WA-SB-4	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	51.8	51.8	ng/kg		0.1	5.18
WA-SB-4	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	4.43	4.43	ng/kg		0.1	0.443
WA-SB-4	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	14.4	14.4	ng/kg		0.1	1.44
WA-SB-4	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	3.9	3.9	ng/kg		0.1	0.39
WA-SB-4	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.45	1.45	ng/kg		0.1	0.145
WA-SB-4	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	1.64	1.64	ng/kg		1	1.64
WA-SB-4	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	19.1	19.1	ng/kg		0.03	0.573
WA-SB-4	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7.25	7.25	ng/kg		0.1	0.725
WA-SB-4	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	24.7	24.7	ng/kg		0.3	7.41
WA-SB-4	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	3.89	3.89	ng/kg		1	3.89
WA-SB-4	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	56.2	56.2	ng/kg		0.1	5.62
WA-SB-4	9/29/1998	0.5	1	3268-87-9	OCDD	Y	1580	1580	ng/kg		0.0003	0.474
WA-SB-4	9/29/1998	0.5	1	39001-02-0	OCDF	Y	266	266	ng/kg		0.0003	0.0798
										Sample Location TEQ =		**30.2**
WA-SB-5	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	1260	1260	ng/kg		0.01	12.6
WA-SB-5	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	618	618	ng/kg		0.01	6.18
WA-SB-5	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	N	11.3	5.65	ng/kg	U	0.1	0.565
WA-SB-5	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3660	3660	ng/kg		0.1	366
WA-SB-5	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	N	11.3	5.65	ng/kg	U	0.1	0.565
WA-SB-5	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	748	748	ng/kg		0.1	74.8
WA-SB-5	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	N	11.3	5.65	ng/kg	U	0.1	0.565
WA-SB-5	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	N	91.9	45.95	ng/kg	U	0.1	4.595
WA-SB-5	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	N	2.23	1.115	ng/kg	U	1	1.115
WA-SB-5	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	4060	4060	ng/kg	J	0.03	121.8
WA-SB-5	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	197	197	ng/kg		0.1	19.7
WA-SB-5	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	2290	2290	ng/kg		0.3	687
WA-SB-5	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	4.33	4.33	ng/kg		1	4.33
WA-SB-5	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	7890	7890	ng/kg		0.1	789
WA-SB-5	9/29/1998	0.5	1	3268-87-9	OCDD	Y	247	247	ng/kg		0.0003	0.0741
WA-SB-5	9/29/1998	0.5	1	39001-02-0	OCDF	Y	2630	2630	ng/kg		0.0003	0.789
										Sample Location TEQ =		**2089.7**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-6	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2.8	2.8	ng/kg		0.01	0.028
WA-SB-6	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	7.5	7.5	ng/kg		0.01	0.075
WA-SB-6	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	N	0.93	0.465	ng/kg	U	0.01	0.00465
WA-SB-6	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.44	0.44	ng/kg		0.1	0.044
WA-SB-6	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3.9	3.9	ng/kg		0.1	0.39
WA-SB-6	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	0.5	0.5	ng/kg		0.1	0.05
WA-SB-6	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	2.24	2.24	ng/kg		0.1	0.224
WA-SB-6	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.63	0.63	ng/kg		0.1	0.063
WA-SB-6	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.38	0.19	ng/kg	U	0.1	0.019
WA-SB-6	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	0.51	0.51	ng/kg		1	0.51
WA-SB-6	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	3.11	3.11	ng/kg		0.03	0.0933
WA-SB-6	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1.33	1.33	ng/kg		0.1	0.133
WA-SB-6	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	2.76	2.76	ng/kg		0.3	0.828
WA-SB-6	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	0.34	0.34	ng/kg		1	0.34
WA-SB-6	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	8.16	8.16	ng/kg		0.1	0.816
WA-SB-6	9/29/1998	0.5	1	39001-02-0	OCDF	Y	5.43	5.43	ng/kg		0.0003	0.001629
											Sample Location TEQ =	**3.6**
WA-SB-7	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	366	366	ng/kg		0.01	3.66
WA-SB-7	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	1950	1950	ng/kg		0.01	19.5
WA-SB-7	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	730	730	ng/kg		0.01	7.3
WA-SB-7	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	20.8	20.8	ng/kg		0.1	2.08
WA-SB-7	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2670	2670	ng/kg		0.1	267
WA-SB-7	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	42.3	42.3	ng/kg		0.1	4.23
WA-SB-7	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	810	810	ng/kg		0.1	81
WA-SB-7	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	45.2	45.2	ng/kg		0.1	4.52
WA-SB-7	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	54.4	54.4	ng/kg		0.1	5.44
WA-SB-7	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	23.3	23.3	ng/kg		1	23.3
WA-SB-7	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	1900	1900	ng/kg		0.03	57
WA-SB-7	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	323	323	ng/kg		0.1	32.3
WA-SB-7	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	21.8	21.8	ng/kg		1	21.8
WA-SB-7	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	5370	5370	ng/kg		0.1	537
WA-SB-7	9/29/1998	0.5	1	3268-87-9	OCDD	Y	2030	2030	ng/kg		0.0003	0.609
WA-SB-7	9/29/1998	0.5	1	39001-02-0	OCDF	Y	4310	4310	ng/kg		0.0003	1.293
											Sample Location TEQ =	**1068.0**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-9	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	61.2	61.2	ng/kg		0.01	0.612
WA-SB-9	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	122	122	ng/kg		0.01	1.22
WA-SB-9	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	44.8	44.8	ng/kg		0.01	0.448
WA-SB-9	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	36.7	36.7	ng/kg		0.1	3.67
WA-SB-9	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	108	108	ng/kg		0.1	10.8
WA-SB-9	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	15.3	15.3	ng/kg		0.1	1.53
WA-SB-9	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	29	29	ng/kg		0.1	2.9
WA-SB-9	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	28.2	28.2	ng/kg		0.1	2.82
WA-SB-9	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.98	2.98	ng/kg		0.1	0.298
WA-SB-9	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	12.6	12.6	ng/kg		1	12.6
WA-SB-9	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	73.8	73.8	ng/kg		0.03	2.214
WA-SB-9	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7.15	7.15	ng/kg		0.1	0.715
WA-SB-9	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	116	116	ng/kg		0.3	34.8
WA-SB-9	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	43.7	43.7	ng/kg		1	43.7
WA-SB-9	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	261	261	ng/kg		0.1	26.1
WA-SB-9	9/28/1998	0.5	1	3268-87-9	OCDD	Y	252	252	ng/kg		0.0003	0.0756
WA-SB-9	9/28/1998	0.5	1	39001-02-0	OCDF	Y	545	545	ng/kg		0.0003	0.1635
											Sample Location TEQ =	**144.7**
WA-SB-9	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	26.7	26.7	ng/kg		0.01	0.267
WA-SB-9	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	112	112	ng/kg		0.01	1.12
WA-SB-9	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	45.3	45.3	ng/kg		0.01	0.453
WA-SB-9	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	5.62	5.62	ng/kg		0.1	0.562
WA-SB-9	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	126	126	ng/kg		0.1	12.6
WA-SB-9	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	9.35	9.35	ng/kg		0.1	0.935
WA-SB-9	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	30	30	ng/kg		0.1	3
WA-SB-9	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	8.14	8.14	ng/kg		0.1	0.814
WA-SB-9	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3.57	3.57	ng/kg		0.1	0.357
WA-SB-9	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	9.47	9.47	ng/kg		1	9.47
WA-SB-9	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	113	113	ng/kg		0.03	3.39
WA-SB-9	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	6.62	6.62	ng/kg		0.1	0.662
WA-SB-9	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	148	148	ng/kg		0.3	44.4
WA-SB-9	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	7.05	7.05	ng/kg		1	7.05
WA-SB-9	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	376	376	ng/kg		0.1	37.6
WA-SB-9	9/28/1998	1	2	3268-87-9	OCDD	Y	109	109	ng/kg		0.0003	0.0327
WA-SB-9	9/28/1998	1	2	39001-02-0	OCDF	Y	639	639	ng/kg		0.0003	0.1917
											Sample Location TEQ =	**122.9**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-9	9/28/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	0.68	0.68	ng/kg		0.01	0.0068
WA-SB-9	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2.3	2.3	ng/kg		0.01	0.023
WA-SB-9	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	N	0.15	0.075	ng/kg	U	0.1	0.0075
WA-SB-9	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2.44	2.44	ng/kg		0.1	0.244
WA-SB-9	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	N	0.15	0.075	ng/kg	U	0.1	0.0075
WA-SB-9	9/28/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	N	0.15	0.075	ng/kg	U	0.1	0.0075
WA-SB-9	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.18	0.09	ng/kg	U	0.1	0.009
WA-SB-9	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	2.19	2.19	ng/kg		0.03	0.0657
WA-SB-9	9/28/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	N	0.18	0.09	ng/kg	U	0.1	0.009
WA-SB-9	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	2.83	2.83	ng/kg		0.3	0.849
WA-SB-9	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	7.89	7.89	ng/kg	J	0.1	0.789
WA-SB-9	9/28/1998	2	3	3268-87-9	OCDD	Y	3.87	3.87	ng/kg		0.0003	0.001161
WA-SB-9	9/28/1998	2	3	39001-02-0	OCDF	Y	13.4	13.4	ng/kg		0.0003	0.00402
										Sample Location TEQ =		**2.0**
WA-SB-9	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	11.1	11.1	ng/kg		0.01	0.111
WA-SB-9	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	18.1	18.1	ng/kg		0.01	0.181
WA-SB-9	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	4.59	4.59	ng/kg		0.01	0.0459
WA-SB-9	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.83	1.83	ng/kg		0.1	0.183
WA-SB-9	9/28/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	15.7	15.7	ng/kg		0.1	1.57
WA-SB-9	9/28/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2.36	2.36	ng/kg		0.1	0.236
WA-SB-9	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	4.81	4.81	ng/kg		0.1	0.481
WA-SB-9	9/28/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.7	2.7	ng/kg		0.1	0.27
WA-SB-9	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.52	0.52	ng/kg		0.1	0.052
WA-SB-9	9/28/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	1.84	1.84	ng/kg		1	1.84
WA-SB-9	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	10.3	10.3	ng/kg		0.03	0.309
WA-SB-9	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2.18	2.18	ng/kg		0.1	0.218
WA-SB-9	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	13.2	13.2	ng/kg		0.3	3.96
WA-SB-9	9/28/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	5.31	5.31	ng/kg		1	5.31
WA-SB-9	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	27.8	27.8	ng/kg		0.1	2.78
WA-SB-9	9/28/1998	3	4	3268-87-9	OCDD	Y	52.3	52.3	ng/kg		0.0003	0.01569
WA-SB-9	9/28/1998	3	4	39001-02-0	OCDF	Y	46.5	46.5	ng/kg		0.0003	0.01395
										Sample Location TEQ =		**17.6**

TABLE 2.2b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-SB-9	9/28/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	6.54	6.54	ng/kg		0.01	0.0654
WA-SB-9	9/28/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	23.7	23.7	ng/kg		0.01	0.237
WA-SB-9	9/28/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	12.4	12.4	ng/kg		0.01	0.124
WA-SB-9	9/28/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	2.86	2.86	ng/kg		0.1	0.286
WA-SB-9	9/28/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	36.2	36.2	ng/kg		0.1	3.62
WA-SB-9	9/28/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2.95	2.95	ng/kg		0.1	0.295
WA-SB-9	9/28/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	8.75	8.75	ng/kg		0.1	0.875
WA-SB-9	9/28/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	4.01	4.01	ng/kg		0.1	0.401
WA-SB-9	9/28/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.5	1.5	ng/kg		0.1	0.15
WA-SB-9	9/28/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	2.7	2.7	ng/kg		1	2.7
WA-SB-9	9/28/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	20.8	20.8	ng/kg		0.03	0.624
WA-SB-9	9/28/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3.09	3.09	ng/kg		0.1	0.309
WA-SB-9	9/28/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	19.4	19.4	ng/kg		0.3	5.82
WA-SB-9	9/28/1998	4	5	1746-01-6	2,3,7,8-TCDD	Y	3.24	3.24	ng/kg		1	3.24
WA-SB-9	9/28/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	39.9	39.9	ng/kg		0.1	3.99
WA-SB-9	9/28/1998	4	5	3268-87-9	OCDD	Y	13.1	13.1	ng/kg		0.0003	0.00393
WA-SB-9	9/28/1998	4	5	39001-02-0	OCDF	Y	125	125	ng/kg		0.0003	0.0375
											Sample Location TEQ =	**22.8**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration
(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicologic Sciences 93(2), 223–241.

TABLE 2.2c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
PLANT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK.

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-MPS-SS	Highly chlorinated PCBs	0	0.5	10/26/1999	0.034	mg/kg
WA-SWMATP1	Highly chlorinated PCBs	2	6	9/22/1997	0.042	mg/kg
WA-SB-6	Highly chlorinated PCBs	0	2	9/29/1998	0.26	mg/kg
WA-SB-2	Highly chlorinated PCBs	0	2	9/29/1998	0.31	mg/kg
WA-SS#2	Highly chlorinated PCBs	9	9	9/15/1997	0.45	mg/kg
WA-NWMATP#2	Highly chlorinated PCBs	5	7	9/16/1997	0.6	mg/kg
WA-SB-10	Highly chlorinated PCBs	0	2	9/28/1998	0.65	mg/kg
WA-SB-9	Highly chlorinated PCBs	0	2	9/28/1998	0.77	mg/kg
WA-NWMATP#1	Highly chlorinated PCBs	3	5	9/16/1997	0.86	mg/kg
WA-SB-4	Highly chlorinated PCBs	0	2	9/29/1998	3	mg/kg
WA-SB-12	Highly chlorinated PCBs	0	2	9/28/1998	3.1	mg/kg

Notes:
*Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.2d
DERIVATION OF TOTAL CHLORDANES
PLANT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location Chlordane Concentration	Units
WA-SB-9	0	2	9/28/1998	0.014	mg/kg
WA-SB-1	0	2	9/29/1998	0.029	mg/kg

TABLE 2.3a
OCCURANCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Intermediate Soil (0-20 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Plant Area - Intermediate Soil	METALS																	
	7429-90-5	ALUMINUM	1350	27100 J	mg/kg	WA-WA-B3	20/20	-	2.71E+04			7.82E+03	N	7.61E+03	nc	7.61E+03	Y	ASL
	7440-36-0	ANTIMONY	1 J	1.1 J	mg/kg	WA-SB-1	2/20	0.61-16.7	1.10E+00			3.13E+00	N	3.13E+00	nc	3.13E+00	N	BSL
	7440-38-2	ARSENIC	5.2	65.7	mg/kg	WA-SB-9	20/20	-	6.57E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	22.4 J	958	mg/kg	WA-WA-B5	20/20	-	9.58E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	Y	ASL
	7440-41-7	BERYLLIUM	0.29 J	1.6	mg/kg	WA-WA-B3	16/20	0.35-0.67	1.60E+00		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.12 J	1.2 J	mg/kg	WA-SB-7	11/20	0.08-2	1.20E+00		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	7430	283000	mg/kg	WA-SB-12	20/20	-	2.83E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	8 J	29	mg/kg	WA-MPS-SS	20/20	-	2.90E+01		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	3.1	17.7	mg/kg	WA-SB-6	19/20	2.7-2.7	1.77E+01			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	12.2	225	mg/kg	WA-SB-1	20/20	-	2.25E+02		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	57-12-5	CYANIDE	2.3	5	mg/kg	WA-SB-7	3/18	0.53-1.7	5.00E+00			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	7439-89-6	IRON	6370 J	45800	mg/kg	WA-SB-6	20/20	-	4.58E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	2.7 J	340 J	mg/kg	WA-SB-11	20/20	-	3.40E+02		4.00E+02	NV		4.00E+02	nc	4.00E+02	N	BSL
	7439-95-4	MAGNESIUM	2830	45700 J	mg/kg	WA-WA-B2	20/20	-	4.57E+04			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	58.4	643 J	mg/kg	WA-MPS-SS	20/20	-	6.43E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	0.3 J	2440 J	mg/kg	WA-SB-7	35/36	0.2-0.2	2.44E+03			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.00261 J	.00261 J	mg/kg	WA-MPS-SS	1/1	-	2.61E-03			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	7.6 J	4040	mg/kg	WA-SB-5	20/20	-	4.04E+03		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	Y	ASL
	7440-09-7	POTASSIUM	113 J	16100	mg/kg	WA-WA-B3	16/20	300-1330	1.61E+04			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	1.2	2.1 J	mg/kg	WA-WA-B5	4/20	0.79-2	2.10E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-22-4	SILVER	1	1.7 J	mg/kg	WA-SB-1	2/20	0.2-2	1.70E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	176 J	11600 J	mg/kg	WA-WA-B5	17/20	83.9-1280	1.16E+04			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	5.7 J	53.6	mg/kg	WA-WA-B3	20/20	-	5.36E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	19 J	1240	mg/kg	WA-SB-6	15/20	15.9-52.6	1.24E+03		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.034	3.1	mg/kg	WA-SB-12	11/16	-	3.10E+00			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	72-55-9	4,4'-DDE	0.0027 J	0.063 J	mg/kg	WA-SB-11	4/16	0.0042-3.7	6.30E-02		8.90E+00	1.88E+00	C	1.72E+00	ca	1.72E+00	N	BSL
	319-84-6	ALPHA-BHC	0.02	0.02	mg/kg	WA-SB-4	1/16	0.002-1.9	2.00E-02		4.80E-01	1.01E-01	C	9.02E-02	ca	9.02E-02	N	BSL
	319-86-8	DELTA-BHC	0.0069 J	0.0069 J	mg/kg	WA-SB-4	1/16	0.002-1.9	6.90E-03		1.00E+02	NV		NV		NV	Y	NTX
	60-57-1	DIELDRIN	0.13	0.13	mg/kg	WA-SB-4	1/16	0.004-3.7	1.30E-01		2.00E-01	3.99E-02	C	3.04E-02	ca	3.04E-02	Y	ASL
	33213-65-9	ENDOSULFAN IIe	0.0036 J	0.07 J	mg/kg	WA-SB-1	7/16	0.0042-3.7	7.00E-02		2.40E+01	4.69E+01	N	3.67E+01	nc	3.67E+01	N	BSL
	7421-93-4	ENDRIN ALDEHYDE[d]	1.2 J	1.2 J	mg/kg	WA-SB-5	1/13	0.0042-0.86	1.20E+00		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.022	0.076	mg/kg	WA-SB-4	3/11	0.0042-3.7	7.60E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	76-44-8	HEPTACHLOR	0.018 J	0.018 J	mg/kg	WA-SB-7	1/15	0.002-0.43	1.80E-02		2.10E+00	1.42E-01	C	1.08E-01	ca	1.08E-01	N	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.0035 J	0.047 J	mg/kg	WA-SB-4	3/16	0.002-0.43	4.70E-02			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
		TOTAL CHLORDANE[f]	0.014	0.029	mg/kg	WA-SB-1	2/16	-	2.90E-02			1.82E+00	C	1.62E-01	nc	1.62E-01	N	BSL
	SVOC																	
	105-67-9	2,4-DIMETHYLPHENOL	0.045 J	0.4 J	mg/kg	WA-SB-7	2/20	0.36-490	4.00E-01			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.06 J	7.7 J	mg/kg	WA-WA-B5	8/20	0.4-490	7.70E+00			3.13E+01	N	NV		3.13E+01	N	BSL
	95-48-7	2-METHYLPHENOL	0.28 J	0.28 J	mg/kg	WA-SB-7	1/20	0.36-490	2.80E-01		1.00E+02	3.91E+02	N	3.06E+02	nc	3.06E+02	N	BSL
	106-47-8	4-CHLOROANILINE	0.058 J	0.058 J	mg/kg	WA-SB-9	1/20	0.37-490	5.80E-02			3.13E+01	N	2.44E+01	nc	2.44E+01	N	BSL
	106-44-5	4-METHYLPHENOL	0.048 J	0.74	mg/kg	WA-SB-7	3/20	0.36-490	7.40E-01		1.00E+02	3.91E+01	N	3.06E+01	nc	3.06E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.093 J	2.4	mg/kg	WA-SB-7	8/20	0.4-490	2.40E+00		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.078 J	6.8 J	mg/kg	WA-WA-B5	6/20	0.37-490	6.80E+00		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.11 J	8.2 J	mg/kg	WA-WA-B5	10/20	0.42-490	8.20E+00		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.12 J	16 J	mg/kg	WA-SB-7	14/20	0.79-490	1.60E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.12 J	18 J	mg/kg	WA-SB-7	12/20	0.79-490	1.80E+01		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.19 J	23 J	mg/kg	WA-SB-7	12/20	0.79-490	2.30E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.063 J	23 J	mg/kg	WA-SB-7	12/20	0.79-490	2.30E+01		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.068 J	12 J	mg/kg	WA-WA-B5	12/20	0.79-490	1.20E+01		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.88 J	15	mg/kg	WA-SB-1	9/20	0.42-490	1.50E+01			4.56E+01	C	3.47E+01	ca	3.47E+01	N	BSL
	86-74-8	CARBAZOLE	0.042 J	2.5 J	mg/kg	WA-SB-1	9/12	0.42-12	2.50E+00			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	0.16 J	17 J	mg/kg	WA-SB-7	13/20	0.79-490	1.70E+01		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.085 J	5.8 J	mg/kg	WA-SB-7	8/20	0.42-490	5.80E+00		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.09 J	6.8 J	mg/kg	WA-WA-B5	9/20	0.4-490	6.80E+00		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	84-74-2	DI-N-BUTYL PHTHALATE	0.043 J	0.18 J	mg/kg	WA-SB-4	9/20	0.42-490	1.80E-01			7.82E+02	N	6.11E+02	nc	6.11E+02	N	BSL
	206-44-0	FLUORANTHENE	0.13 J	29 J	mg/kg	WA-WA-B5	15/20	0.79-490	2.90E+01		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.064 J	6.5 J	mg/kg	WA-WA-B5	10/20	0.42-490	6.50E+00		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.007	28	mg/kg	WA-SB-5	10/24	0.37-490	2.80E+01		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	Y	ASL
	87-68-3	HEXACHLOROBUTADIENE	0.12 J	1.8	mg/kg	WA-SB-5	2/24	0.003-490	1.80E+00			8.19E+00	C	6.24E-01	nc	6.24E-01	Y	ASL
	77-47-4	HEXACHLOROCYCLOPENTADIENE	0.12 J	0.12 J	mg/kg	WA-SB-5	1/20	0.36-490	1.20E-01			4.69E+01	N	3.65E+01	nc	3.65E+01	N	BSL
	67-72-1	HEXACHLOROETHANE	0.85	0.85	mg/kg	WA-SB-5	1/20	0.36-490	8.50E-01			4.56E+01	C	3.47E+00	nc	3.47E+00	N	BSL

TABLE 2.3a
OCCURANCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Intermediate Soil (0-20 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.057 J	18 J	mg/kg	WA-SB-7	12/20	0.79-490	1.80E+01		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.0017 J	43 J	mg/kg	WA-WA-B5	15/24	0.003-490	4.30E+01		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	Y	ASL
	85-01-8	PHENANTHRENE	0.2 J	42 J	mg/kg	WA-WA-B5	13/20	0.79-490	4.20E+01		1.00E+02	NV		NV		NV	Y	NTX
	108-95-2	PHENOL	0.046 J	0.24 J	mg/kg	WA-SB-7	6/20	0.36-490	2.40E-01		1.00E+02	2.35E+03	N	1.83E+03	nc	1.83E+03	N	BSL
	129-00-0	PYRENE	0.26 J	31 J	mg/kg	WA-SB-7	14/20	0.79-490	3.10E+01		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL
	VOC																	
	87-61-6	1,2,3-TRICHLOROBENZENE	0.0033 J	0.0033 J	mg/kg	WA-SS#2	1/4	0.003-0.0033	3.30E-03			NV		NV		NV	Y	NTX
	120-82-1	1,2,4-TRICHLOROBENZENE	0.0013 J	360 J	mg/kg	WA-WA-B6	15/24	0.0033-57	3.60E+02			7.82E+01	N	6.22E+00	nc	6.22E+00	Y	ASL
	95-50-1	1,2-DICHLOROBENZENE	0.0025 J	2200	mg/kg	WA-WA-B6	20/24	0.0033-57	2.20E+03		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	Y	ASL
	541-73-1	1,3-DICHLOROBENZENE	0.026	290 J	mg/kg	WA-WA-B6	10/24	0.003-57	2.90E+02		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	Y	ASL
	106-46-7	1,4-DICHLOROBENZENE	0.0053 J	2600	mg/kg	WA-SB-11	19/24	0.0033-57	2.60E+03		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	Y	ASL
	78-93-3	2-BUTANONE	0.003 J	0.034	mg/kg	WA-SB-6	3/20	0.011-18	3.40E-02		1.00E+02	4.69E+03	N	2.23E+03	nc	2.23E+03	N	BSL
	108-10-1	4-METHYL-2-PENTANONE	2.1 J	2.1 J	mg/kg	WA-WA-B5	1/20	0.011-18	2.10E+00			NV		5.28E+02	nc	5.28E+02	N	BSL
	67-64-1	ACETONE	0.061	0.12 J	mg/kg	WA-SB-6	3/20	0.011-18	1.20E-01		1.00E+02	7.04E+03	N	1.41E+03	nc	1.41E+03	N	BSL
	71-43-2	BENZENE	0.0017 J	4.3 J	mg/kg	WA-WA-B5	14/24	0.003-13	4.30E+00		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	75-15-0	CARBON DISULFIDE	0.001 J	0.002 J	mg/kg	WA-SB-7, WA-SB-6	4/20	0.009-13	2.00E-03			7.82E+02	N	3.55E+01	nc	3.55E+01	N	BSL
	108-90-7	CHLOROBENZENE	0.001 J	230 J	mg/kg	WA-WA-B5	16/24	0.0032-1.5	2.30E+02		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	Y	ASL
	67-66-3	CHLOROFORM	0.002 J	0.027	mg/kg	WA-SB-5	8/24	0.003-13	2.70E-02		4.90E+01	7.82E+01	N	2.21E-01	ca	2.21E-01	N	BSL
	75-09-2	METHYLENE CHLORIDE	0.0018 J	0.047	mg/kg	WA-SB-2	7/24	0.006-13	4.70E-02		1.00E+02	8.52E+01	C	9.11E+00	ca	9.11E+00	N	BSL
	127-18-4	TETRACHLOROETHENE	0.0015 J	0.17 J	mg/kg	WA-SB-6	9/24	0.0033-13	1.70E-01		1.90E+01	1.18E+00	C	4.84E-01	ca	4.84E-01	N	BSL
	108-88-3	TOLUENE	0.001 J	0.76 J	mg/kg	WA-WA-B7	9/24	0.003-13	7.60E-01		1.00E+02	6.26E+02	N	5.20E+01	nc	5.20E+01	N	BSL
	79-01-6	TRICHLOROETHENE	0.00095 J	0.019	mg/kg	WA-SB-5	7/24	0.009-13	1.90E-02		2.10E+01	1.60E+00	C	5.30E-02	ca	5.30E-02	N	BSL
	1330-20-7	XYLENES, TOTAL	0.002 J	1.7 J	mg/kg	WA-SB-12	5/24	0.003-9.2	1.70E+00		1.00E+02	1.56E+03	N	2.71E+01	nc	2.71E+01	N	BSL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.000001	0.0021	mg/kg	WA-SB-5	27/27		2.09E-03			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT - Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
NA = Not applicable, minimum and maximum values are calculated.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.
f = RBC value for chlordane (CAS# 57749) and PRG value for technical chlordane (CAS# 12789-03-6) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-MPS-SS	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	12.3	12.3	ng/kg	J	0.01	0.123
WA-MPS-SS	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	5.54	5.54	ng/kg	J	0.01	0.0554
WA-MPS-SS	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1.97	1.97	ng/kg	J	0.01	0.0197
WA-MPS-SS	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.36	0.36	ng/kg	J	0.1	0.036
WA-MPS-SS	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	5.31	5.31	ng/kg	J	0.1	0.531
WA-MPS-SS	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	0.67	0.67	ng/kg	J	0.1	0.067
WA-MPS-SS	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1.39	1.39	ng/kg	J	0.1	0.139
WA-MPS-SS	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.67	0.67	ng/kg	J	0.1	0.067
WA-MPS-SS	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.28	0.28	ng/kg	J	0.1	0.028
WA-MPS-SS	10/26/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	0.3	0.3	ng/kg	J	1	0.3
WA-MPS-SS	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	4.07	4.07	ng/kg		0.03	0.1221
WA-MPS-SS	10/26/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	0.78	0.78	ng/kg	J	0.1	0.078
WA-MPS-SS	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	2.63	2.63	ng/kg		0.03	0.789
WA-MPS-SS	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	0.14	0.14	ng/kg	J	1	0.14
WA-MPS-SS	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	17.8	17.8	ng/kg		0.1	1.78
WA-MPS-SS	10/26/1999	0	0.5	3268-87-9	OCDD	Y	87.8	87.8	ng/kg	J	0.0003	0.02634
WA-MPS-SS	10/26/1999	0	0.5	39001-02-0	OCDF	Y	15.8	15.8	ng/kg	J	0.0003	0.00474
											Sample Location TEQ =	**4.3**
WA-SB-1	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2950	2950	ng/kg		0.01	29.5
WA-SB-1	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	336	336	ng/kg		0.01	3.36
WA-SB-1	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	93.1	93.1	ng/kg		0.01	0.931
WA-SB-1	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	34.4	34.4	ng/kg		0.1	3.44
WA-SB-1	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	266	266	ng/kg		0.1	26.6
WA-SB-1	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	47.7	47.7	ng/kg		0.1	4.77
WA-SB-1	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	70.3	70.3	ng/kg		0.1	7.03
WA-SB-1	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	35.1	35.1	ng/kg		0.1	3.51
WA-SB-1	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	4.18	4.18	ng/kg		0.1	0.418
WA-SB-1	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	4.8	4.8	ng/kg		1	4.8
WA-SB-1	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	95.7	95.7	ng/kg		0.03	2.871
WA-SB-1	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	20.9	20.9	ng/kg		0.1	2.09
WA-SB-1	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	90	90	ng/kg		0.3	27
WA-SB-1	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	3.41	3.41	ng/kg		1	3.41
WA-SB-1	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	249	249	ng/kg		0.1	24.9
WA-SB-1	9/29/1998	0.5	1	3268-87-9	OCDD	Y	24100	24100	ng/kg		0.0003	7.23
WA-SB-1	9/29/1998	0.5	1	39001-02-0	OCDF	Y	1470	1470	ng/kg		0.0003	0.441
											Sample Location TEQ =	**152.3**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-10	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	61.4	61.4	ng/kg		0.01	0.614
WA-SB-10	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	158	158	ng/kg		0.01	1.58
WA-SB-10	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	70.4	70.4	ng/kg		0.01	0.704
WA-SB-10	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.35	4.35	ng/kg		0.1	0.435
WA-SB-10	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	610	610	ng/kg		0.1	61
WA-SB-10	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	9.98	9.98	ng/kg		0.1	0.998
WA-SB-10	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	108	108	ng/kg		0.1	10.8
WA-SB-10	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	8.67	8.67	ng/kg		0.1	0.867
WA-SB-10	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	23.3	23.3	ng/kg		0.1	2.33
WA-SB-10	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	3.5	3.5	ng/kg		1	3.5
WA-SB-10	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	1000	1000	ng/kg		0.03	30
WA-SB-10	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	38.6	38.6	ng/kg		0.1	3.86
WA-SB-10	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	724	724	ng/kg		0.3	217.2
WA-SB-10	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	2.81	2.81	ng/kg		1	2.81
WA-SB-10	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	3000	3000	ng/kg		0.1	300
WA-SB-10	9/28/1998	0.5	1	3268-87-9	OCDD	Y	369	369	ng/kg		0.0003	0.1107
WA-SB-10	9/28/1998	0.5	1	39001-02-0	OCDF	Y	623	623	ng/kg		0.0003	0.1869
											Sample Location TEQ =	**637.0**
WA-SB-10	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	11.9	11.9	ng/kg		0.01	0.119
WA-SB-10	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	107	107	ng/kg		0.01	1.07
WA-SB-10	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	68.1	68.1	ng/kg		0.01	0.681
WA-SB-10	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.87	0.87	ng/kg		0.1	0.087
WA-SB-10	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	123	123	ng/kg		0.1	12.3
WA-SB-10	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	4.42	4.42	ng/kg		0.1	0.442
WA-SB-10	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	28	28	ng/kg		0.1	2.8
WA-SB-10	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	3.81	3.81	ng/kg		0.1	0.381
WA-SB-10	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	4.47	4.47	ng/kg		0.1	0.447
WA-SB-10	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	43.7	43.7	ng/kg		0.03	1.311
WA-SB-10	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	12	12	ng/kg		0.1	1.2
WA-SB-10	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	56.2	56.2	ng/kg		0.3	16.86
WA-SB-10	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	133	133	ng/kg		0.1	13.3
WA-SB-10	9/28/1998	1	2	3268-87-9	OCDD	Y	29.8	29.8	ng/kg		0.0003	0.00894
WA-SB-10	9/28/1998	1	2	39001-02-0	OCDF	Y	937	937	ng/kg		0.0003	0.2811
											Sample Location TEQ =	**51.3**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-10	9/28/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	23	23	ng/kg		0.01	0.23
WA-SB-10	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	221	221	ng/kg		0.01	2.21
WA-SB-10	9/28/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	130	130	ng/kg		0.01	1.3
WA-SB-10	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.67	1.67	ng/kg		0.1	0.167
WA-SB-10	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	253	253	ng/kg		0.1	25.3
WA-SB-10	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	9.11	9.11	ng/kg		0.1	0.911
WA-SB-10	9/28/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	58.6	58.6	ng/kg		0.1	5.86
WA-SB-10	9/28/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	6.68	6.68	ng/kg		0.1	0.668
WA-SB-10	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	Y	7.81	7.81	ng/kg		0.1	0.781
WA-SB-10	9/28/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	2.59	2.59	ng/kg		1	2.59
WA-SB-10	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	64.6	64.6	ng/kg		0.03	1.938
WA-SB-10	9/28/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	23.2	23.2	ng/kg		0.1	2.32
WA-SB-10	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	98.7	98.7	ng/kg		0.3	29.61
WA-SB-10	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	140	140	ng/kg		0.1	14
WA-SB-10	9/28/1998	2	3	3268-87-9	OCDD	Y	51.7	51.7	ng/kg		0.0003	0.01551
WA-SB-10	9/28/1998	2	3	39001-02-0	OCDF	Y	1750	1750	ng/kg		0.0003	0.525
											Sample Location TEQ =	**88.4**
WA-SB-10	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	10.7	10.7	ng/kg		0.01	0.107
WA-SB-10	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	65.5	65.5	ng/kg		0.01	0.655
WA-SB-10	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	41.2	41.2	ng/kg		0.01	0.412
WA-SB-10	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.7	0.7	ng/kg		0.1	0.07
WA-SB-10	9/28/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	77.8	77.8	ng/kg		0.1	7.78
WA-SB-10	9/28/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2.94	2.94	ng/kg		0.1	0.294
WA-SB-10	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	17.9	17.9	ng/kg		0.1	1.79
WA-SB-10	9/28/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.61	2.61	ng/kg		0.1	0.261
WA-SB-10	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.88	2.88	ng/kg		0.1	0.288
WA-SB-10	9/28/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	1.13	1.13	ng/kg		1	1.13
WA-SB-10	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	26.5	26.5	ng/kg		0.03	0.795
WA-SB-10	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7.7	7.7	ng/kg		0.1	0.77
WA-SB-10	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	33.4	33.4	ng/kg		0.3	10.02
WA-SB-10	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	71.6	71.6	ng/kg		0.1	7.16
WA-SB-10	9/28/1998	3	4	3268-87-9	OCDD	Y	37.4	37.4	ng/kg		0.0003	0.01122
WA-SB-10	9/28/1998	3	4	39001-02-0	OCDF	Y	487	487	ng/kg		0.0003	0.1461
											Sample Location TEQ =	**31.7**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-10	9/28/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	20.8	20.8	ng/kg		0.01	0.208
WA-SB-10	9/28/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	204	204	ng/kg		0.01	2.04
WA-SB-10	9/28/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	125	125	ng/kg		0.01	1.25
WA-SB-10	9/28/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.52	1.52	ng/kg		0.1	0.152
WA-SB-10	9/28/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	219	219	ng/kg		0.1	21.9
WA-SB-10	9/28/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	7.54	7.54	ng/kg		0.1	0.754
WA-SB-10	9/28/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	51.4	51.4	ng/kg		0.1	5.14
WA-SB-10	9/28/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	6.32	6.32	ng/kg		0.1	0.632
WA-SB-10	9/28/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	8.54	8.54	ng/kg		0.1	0.854
WA-SB-10	9/28/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	2.29	2.29	ng/kg		1	2.29
WA-SB-10	9/28/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	57.4	57.4	ng/kg		0.03	1.722
WA-SB-10	9/28/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	21.7	21.7	ng/kg		0.1	2.17
WA-SB-10	9/28/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	88.7	88.7	ng/kg		0.3	26.61
WA-SB-10	9/28/1998	4	5	1746-01-6	2,3,7,8-TCDD	Y	4.51	4.51	ng/kg		1	4.51
WA-SB-10	9/28/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	125	125	ng/kg		0.1	12.5
WA-SB-10	9/28/1998	4	5	3268-87-9	OCDD	Y	45.8	45.8	ng/kg		0.0003	0.01374
WA-SB-10	9/28/1998	4	5	39001-02-0	OCDF	Y	1530	1530	ng/kg		0.0003	0.459
											Sample Location TEQ =	**83.2**
WA-SB-11	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	40.4	40.4	ng/kg		0.01	0.404
WA-SB-11	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	98.6	98.6	ng/kg		0.01	0.986
WA-SB-11	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	33.4	33.4	ng/kg		0.01	0.334
WA-SB-11	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	2.61	2.61	ng/kg		0.1	0.261
WA-SB-11	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	144	144	ng/kg		0.1	14.4
WA-SB-11	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	8.81	8.81	ng/kg		0.1	0.881
WA-SB-11	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3707	3707	ng/kg		0.1	370.7
WA-SB-11	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	5.88	5.88	ng/kg		0.1	0.588
WA-SB-11	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	4.52	4.52	ng/kg		0.1	0.452
WA-SB-11	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	4.3	4.3	ng/kg		1	4.3
WA-SB-11	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	150	150	ng/kg		0.03	4.5
WA-SB-11	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	19.5	19.5	ng/kg		0.1	1.95
WA-SB-11	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	178	178	ng/kg		0.3	53.4
WA-SB-11	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	4.38	4.38	ng/kg		1	4.38
WA-SB-11	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	453	453	ng/kg		0.1	45.3
WA-SB-11	9/28/1998	0.5	1	3268-87-9	OCDD	Y	195	195	ng/kg		0.0003	0.0585
WA-SB-11	9/28/1998	0.5	1	39001-02-0	OCDF	Y	390	390	ng/kg		0.0003	0.117
											Sample Location TEQ =	**503.0**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-11	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	19.4	19.4	ng/kg		0.01	0.194
WA-SB-11	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	48.2	48.2	ng/kg		0.01	0.482
WA-SB-11	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	20.8	20.8	ng/kg		0.01	0.208
WA-SB-11	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.26	1.26	ng/kg		0.1	0.126
WA-SB-11	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	74.7	74.7	ng/kg		0.1	7.47
WA-SB-11	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	3.23	3.23	ng/kg		0.1	0.323
WA-SB-11	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	17.5	17.5	ng/kg		0.1	1.75
WA-SB-11	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.64	2.64	ng/kg		0.1	0.264
WA-SB-11	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.1	2.1	ng/kg		0.1	0.21
WA-SB-11	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	2.48	2.48	ng/kg		1	2.48
WA-SB-11	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	80.7	80.7	ng/kg		0.03	2.421
WA-SB-11	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7.69	7.69	ng/kg		0.1	0.769
WA-SB-11	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	87.7	87.7	ng/kg		0.3	26.31
WA-SB-11	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	3.81	3.81	ng/kg		1	3.81
WA-SB-11	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	211	211	ng/kg		0.1	21.1
WA-SB-11	9/28/1998	1	2	3268-87-9	OCDD	Y	107	107	ng/kg		0.0003	0.0321
WA-SB-11	9/28/1998	1	2	39001-02-0	OCDF	Y	269	269	ng/kg		0.0003	0.0807
										Sample Location TEQ =		**68.0**
WA-SB-11	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	0.77	0.77	ng/kg		0.01	0.0077
WA-SB-11	9/28/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	0.027	0.027	ng/kg		0.01	0.00027
WA-SB-11	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	N	0.1	0.05	ng/kg	U	0.1	0.005
WA-SB-11	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	1.26	1.26	ng/kg		0.1	0.126
WA-SB-11	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	N	0.1	0.05	ng/kg	U	0.1	0.005
WA-SB-11	9/28/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	0.38	0.38	ng/kg		0.1	0.038
WA-SB-11	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.1	0.05	ng/kg	U	0.1	0.005
WA-SB-11	9/28/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	N	0.1	0.05	ng/kg	U	1	0.05
WA-SB-11	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	1.32	1.32	ng/kg		0.03	0.0396
WA-SB-11	9/28/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	0.18	0.18	ng/kg		0.1	0.018
WA-SB-11	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	1.41	1.41	ng/kg		0.3	0.423
WA-SB-11	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	5.36	5.36	ng/kg		0.1	0.536
										Sample Location TEQ =		**1.3**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-11	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	4.4	4.4	ng/kg		0.01	0.044
WA-SB-11	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	7.31	7.31	ng/kg		0.01	0.0731
WA-SB-11	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2.25	2.25	ng/kg		0.01	0.0225
WA-SB-11	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.22	0.22	ng/kg		0.1	0.022
WA-SB-11	9/28/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	8.6	8.6	ng/kg		0.1	0.86
WA-SB-11	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	2.32	2.32	ng/kg		0.1	0.232
WA-SB-11	9/28/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.51	0.51	ng/kg		0.1	0.051
WA-SB-11	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.23	0.23	ng/kg		0.1	0.023
WA-SB-11	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	8.82	8.82	ng/kg		0.03	0.2646
WA-SB-11	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1.25	1.25	ng/kg		0.1	0.125
WA-SB-11	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	9.44	9.44	ng/kg		0.3	2.832
WA-SB-11	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	24.6	24.6	ng/kg		0.1	2.46
WA-SB-11	9/28/1998	3	4	3268-87-9	OCDD	Y	28.1	28.1	ng/kg		0.0003	0.00843
WA-SB-11	9/28/1998	3	4	39001-02-0	OCDF	Y	25.2	25.2	ng/kg		0.0003	0.00756
											Sample Location TEQ =	**7.0**
WA-SB-12	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	77.2	77.2	ng/kg		0.01	0.772
WA-SB-12	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	53.5	53.5	ng/kg		0.01	0.535
WA-SB-12	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	15.8	15.8	ng/kg		0.01	0.158
WA-SB-12	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.54	4.54	ng/kg		0.1	0.454
WA-SB-12	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	45.6	45.6	ng/kg		0.1	4.56
WA-SB-12	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	13.5	13.5	ng/kg		0.1	1.35
WA-SB-12	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	9.64	9.64	ng/kg		0.1	0.964
WA-SB-12	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	7.8	7.8	ng/kg		0.1	0.78
WA-SB-12	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.57	1.57	ng/kg		0.1	0.157
WA-SB-12	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	17.2	17.2	ng/kg		0.03	0.516
WA-SB-12	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3.57	3.57	ng/kg		0.1	0.357
WA-SB-12	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	89.9	89.9	ng/kg		0.3	26.97
WA-SB-12	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	4.8	4.8	ng/kg		1	4.8
WA-SB-12	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	68.6	68.6	ng/kg		0.1	6.86
WA-SB-12	9/28/1998	0.5	1	3268-87-9	OCDD	Y	348	348	ng/kg		0.0003	0.1044
WA-SB-12	9/28/1998	0.5	1	39001-02-0	OCDF	Y	205	205	ng/kg		0.0003	0.0615
											Sample Location TEQ =	**49.4**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-12	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	48.2	48.2	ng/kg	J	0.01	0.482
WA-SB-12	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	151	151	ng/kg	J	0.01	1.51
WA-SB-12	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	67.2	67.2	ng/kg	J	0.01	0.672
WA-SB-12	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.5	4.5	ng/kg	J	0.1	0.45
WA-SB-12	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	137	137	ng/kg	J	0.1	13.7
WA-SB-12	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	12.3	12.3	ng/kg	J	0.1	1.23
WA-SB-12	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	27.5	27.5	ng/kg	J	0.1	2.75
WA-SB-12	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	7.64	7.64	ng/kg	J	0.1	0.764
WA-SB-12	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3.28	3.28	ng/kg	J	0.1	0.328
WA-SB-12	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	8.59	8.59	ng/kg	J	1	8.59
WA-SB-12	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	39.4	39.4	ng/kg	J	0.03	1.182
WA-SB-12	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	8.49	8.49	ng/kg	J	0.1	0.849
WA-SB-12	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	140	140	ng/kg	J	0.3	42
WA-SB-12	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	2.18	2.18	ng/kg	J	1	2.18
WA-SB-12	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	158	158	ng/kg		0.1	15.8
WA-SB-12	9/28/1998	1	2	3268-87-9	OCDD	Y	180	180	ng/kg	J	0.0003	0.054
WA-SB-12	9/28/1998	1	2	39001-02-0	OCDF	Y	626	626	ng/kg	J	0.0003	0.1878
										Sample Location TEQ =		**92.7**
WA-SB-12	9/28/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	33.1	33.1	ng/kg		0.01	0.331
WA-SB-12	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	75.8	75.8	ng/kg		0.01	0.758
WA-SB-12	9/28/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	52.7	52.7	ng/kg		0.01	0.527
WA-SB-12	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	2.25	2.25	ng/kg		0.1	0.225
WA-SB-12	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	88.1	88.1	ng/kg		0.1	8.81
WA-SB-12	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	7.02	7.02	ng/kg		0.1	0.702
WA-SB-12	9/28/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	17.3	17.3	ng/kg		0.1	1.73
WA-SB-12	9/28/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	5.15	5.15	ng/kg		0.1	0.515
WA-SB-12	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3.08	3.08	ng/kg		0.1	0.308
WA-SB-12	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	31.8	31.8	ng/kg		0.03	0.954
WA-SB-12	9/28/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	6.09	6.09	ng/kg		0.1	0.609
WA-SB-12	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	115	115	ng/kg		0.3	34.5
WA-SB-12	9/28/1998	2	3	1746-01-6	2,3,7,8-TCDD	Y	2.23	2.23	ng/kg		1	2.23
WA-SB-12	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	120	120	ng/kg		0.1	12
WA-SB-12	9/28/1998	2	3	3268-87-9	OCDD	Y	126	126	ng/kg		0.0003	0.0378
WA-SB-12	9/28/1998	2	3	39001-02-0	OCDF	Y	570	570	ng/kg		0.0003	0.171
										Sample Location TEQ =		**64.4**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-12	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	12.7	12.7	ng/kg	J	0.01	0.127
WA-SB-12	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	18.2	18.2	ng/kg	J	0.01	0.182
WA-SB-12	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	12.8	12.8	ng/kg	J	0.01	0.128
WA-SB-12	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.67	1.67	ng/kg	J	0.1	0.167
WA-SB-12	9/28/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	4.04	4.04	ng/kg	J	0.1	0.404
WA-SB-12	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	5.09	5.09	ng/kg	J	0.1	0.509
WA-SB-12	9/28/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.84	2.84	ng/kg	J	0.1	0.284
WA-SB-12	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.33	1.33	ng/kg	J	0.1	0.133
WA-SB-12	9/28/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	2.43	2.43	ng/kg	J	1	2.43
WA-SB-12	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	11.6	11.6	ng/kg	J	0.03	0.348
WA-SB-12	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2.13	2.13	ng/kg	J	0.1	0.213
WA-SB-12	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	45.8	45.8	ng/kg	J	0.3	13.74
WA-SB-12	9/28/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	0.76	0.76	ng/kg	J	1	0.76
WA-SB-12	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	61.5	61.5	ng/kg		0.1	6.15
WA-SB-12	9/28/1998	3	4	3268-87-9	OCDD	Y	28.8	28.8	ng/kg	J	0.0003	0.00864
WA-SB-12	9/28/1998	3	4	39001-02-0	OCDF	Y	116	116	ng/kg	J	0.0003	0.0348
										Sample Location TEQ =		**25.6**
WA-SB-12	9/28/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	6.2	6.2	ng/kg	J	0.01	0.062
WA-SB-12	9/28/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	12.5	12.5	ng/kg	J	0.01	0.125
WA-SB-12	9/28/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	8.04	8.04	ng/kg	J	0.01	0.0804
WA-SB-12	9/28/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.93	0.93	ng/kg	J	0.1	0.093
WA-SB-12	9/28/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	25.6	25.6	ng/kg	J	0.1	2.56
WA-SB-12	9/28/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1.63	1.63	ng/kg	J	0.1	0.163
WA-SB-12	9/28/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3.72	3.72	ng/kg	J	0.1	0.372
WA-SB-12	9/28/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	1.31	1.31	ng/kg	J	0.1	0.131
WA-SB-12	9/28/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	N	1.03	0.515	ng/kg	UJ	0.1	0.0515
WA-SB-12	9/28/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	1.34	1.34	ng/kg	J	1	1.34
WA-SB-12	9/28/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	8.23	8.23	ng/kg	J	0.03	0.2469
WA-SB-12	9/28/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	N	1.03	0.515	ng/kg	UJ	0.1	0.0515
WA-SB-12	9/28/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	55.2	55.2	ng/kg	J	0.3	16.56
WA-SB-12	9/28/1998	4	5	1746-01-6	2,3,7,8-TCDD	N	0.34	0.17	ng/kg	UJ	1	0.17
WA-SB-12	9/28/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	50.4	50.4	ng/kg		0.1	5.04
WA-SB-12	9/28/1998	4	5	3268-87-9	OCDD	Y	19.3	19.3	ng/kg	J	0.0003	0.00579
WA-SB-12	9/28/1998	4	5	39001-02-0	OCDF	Y	59.4	59.4	ng/kg	J	0.0003	0.01782
										Sample Location TEQ =		**27.1**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-2	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	19.3	19.3	ng/kg		0.01	0.193
WA-SB-2	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	92.3	92.3	ng/kg		0.01	0.923
WA-SB-2	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	58.4	58.4	ng/kg		0.01	0.584
WA-SB-2	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	109	109	ng/kg		0.1	10.9
WA-SB-2	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	26.1	26.1	ng/kg		0.1	2.61
WA-SB-2	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	5.05	5.05	ng/kg		0.1	0.505
WA-SB-2	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.53	2.53	ng/kg		0.1	0.253
WA-SB-2	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	46	46	ng/kg		0.03	1.38
WA-SB-2	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	9.86	9.86	ng/kg		0.1	0.986
WA-SB-2	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	47.3	47.3	ng/kg		0.3	14.19
WA-SB-2	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	143	143	ng/kg		0.1	14.3
WA-SB-2	9/29/1998	0.5	1	3268-87-9	OCDD	Y	60.5	60.5	ng/kg		0.0003	0.01815
WA-SB-2	9/29/1998	0.5	1	39001-02-0	OCDF	Y	734	734	ng/kg		0.0003	0.2202
											Sample Location TEQ =	**47.1**
WA-SB-3	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	787	787	ng/kg		0.01	7.87
WA-SB-3	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	118	118	ng/kg		0.01	1.18
WA-SB-3	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	64.7	64.7	ng/kg		0.01	0.647
WA-SB-3	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	9.18	9.18	ng/kg		0.1	0.918
WA-SB-3	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	220	220	ng/kg		0.1	22
WA-SB-3	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	12.3	12.3	ng/kg		0.1	1.23
WA-SB-3	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	52.8	52.8	ng/kg		0.1	5.28
WA-SB-3	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	36.9	36.9	ng/kg		0.1	3.69
WA-SB-3	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	6.26	6.26	ng/kg		0.1	0.626
WA-SB-3	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	3.26	3.26	ng/kg		1	3.26
WA-SB-3	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	214	214	ng/kg		0.03	6.42
WA-SB-3	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	12	12	ng/kg		0.1	1.2
WA-SB-3	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	124	124	ng/kg		0.3	37.2
WA-SB-3	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	3.36	3.36	ng/kg		1	3.36
WA-SB-3	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	912	912	ng/kg		0.1	91.2
WA-SB-3	9/29/1998	0.5	1	3268-87-9	OCDD	Y	4920	4920	ng/kg		0.0003	1.476
WA-SB-3	9/29/1998	0.5	1	39001-02-0	OCDF	Y	628	628	ng/kg		0.0003	0.1884
											Sample Location TEQ =	**187.7**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-4	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	126	126	ng/kg		0.01	1.26
WA-SB-4	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	56.9	56.9	ng/kg		0.01	0.569
WA-SB-4	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	21.6	21.6	ng/kg		0.01	0.216
WA-SB-4	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.46	1.46	ng/kg		0.1	0.146
WA-SB-4	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	51.8	51.8	ng/kg		0.1	5.18
WA-SB-4	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	4.43	4.43	ng/kg		0.1	0.443
WA-SB-4	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	14.4	14.4	ng/kg		0.1	1.44
WA-SB-4	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	3.9	3.9	ng/kg		0.1	0.39
WA-SB-4	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.45	1.45	ng/kg		0.1	0.145
WA-SB-4	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	1.64	1.64	ng/kg		1	1.64
WA-SB-4	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	19.1	19.1	ng/kg		0.03	0.573
WA-SB-4	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7.25	7.25	ng/kg		0.1	0.725
WA-SB-4	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	24.7	24.7	ng/kg		0.3	7.41
WA-SB-4	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	3.89	3.89	ng/kg		1	3.89
WA-SB-4	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	56.2	56.2	ng/kg		0.1	5.62
WA-SB-4	9/29/1998	0.5	1	3268-87-9	OCDD	Y	1580	1580	ng/kg		0.0003	0.474
WA-SB-4	9/29/1998	0.5	1	39001-02-0	OCDF	Y	266	266	ng/kg		0.0003	0.0798
											Sample Location TEQ =	**30.2**
WA-SB-5	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	1260	1260	ng/kg		0.01	12.6
WA-SB-5	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	618	618	ng/kg		0.01	6.18
WA-SB-5	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	N	11.3	5.65	ng/kg	U	0.1	0.565
WA-SB-5	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3660	3660	ng/kg		0.1	366
WA-SB-5	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	N	11.3	5.65	ng/kg	U	0.1	0.565
WA-SB-5	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	748	748	ng/kg		0.1	74.8
WA-SB-5	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	N	11.3	5.65	ng/kg	U	0.1	0.565
WA-SB-5	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	N	91.9	45.95	ng/kg	U	0.1	4.595
WA-SB-5	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	N	2.23	1.115	ng/kg	U	1	1.115
WA-SB-5	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	4060	4060	ng/kg	J	0.03	121.8
WA-SB-5	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	197	197	ng/kg		0.1	19.7
WA-SB-5	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	2290	2290	ng/kg		0.3	687
WA-SB-5	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	4.33	4.33	ng/kg		1	4.33
WA-SB-5	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	7890	7890	ng/kg		0.1	789
WA-SB-5	9/29/1998	0.5	1	3268-87-9	OCDD	Y	247	247	ng/kg		0.0003	0.0741
WA-SB-5	9/29/1998	0.5	1	39001-02-0	OCDF	Y	2630	2630	ng/kg		0.0003	0.789
											Sample Location TEQ =	**2089.7**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-6	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2.8	2.8	ng/kg		0.01	0.028
WA-SB-6	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	7.5	7.5	ng/kg		0.01	0.075
WA-SB-6	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	N	0.93	0.465	ng/kg	U	0.01	0.00465
WA-SB-6	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.44	0.44	ng/kg		0.1	0.044
WA-SB-6	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3.9	3.9	ng/kg		0.1	0.39
WA-SB-6	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	0.5	0.5	ng/kg		0.1	0.05
WA-SB-6	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	2.24	2.24	ng/kg		0.1	0.224
WA-SB-6	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.63	0.63	ng/kg		0.1	0.063
WA-SB-6	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.38	0.19	ng/kg	U	0.1	0.019
WA-SB-6	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	0.51	0.51	ng/kg		1	0.51
WA-SB-6	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	3.11	3.11	ng/kg		0.03	0.0933
WA-SB-6	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1.33	1.33	ng/kg		0.1	0.133
WA-SB-6	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	2.76	2.76	ng/kg		0.3	0.828
WA-SB-6	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	0.34	0.34	ng/kg		1	0.34
WA-SB-6	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	8.16	8.16	ng/kg		0.1	0.816
WA-SB-6	9/29/1998	0.5	1	39001-02-0	OCDF	Y	5.43	5.43	ng/kg		0.0003	0.001629
											Sample Location TEQ =	**3.6**
WA-SB-7	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	366	366	ng/kg		0.01	3.66
WA-SB-7	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	1950	1950	ng/kg		0.01	19.5
WA-SB-7	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	730	730	ng/kg		0.01	7.3
WA-SB-7	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	20.8	20.8	ng/kg		0.1	2.08
WA-SB-7	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2670	2670	ng/kg		0.1	267
WA-SB-7	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	42.3	42.3	ng/kg		0.1	4.23
WA-SB-7	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	810	810	ng/kg		0.1	81
WA-SB-7	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	45.2	45.2	ng/kg		0.1	4.52
WA-SB-7	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	54.4	54.4	ng/kg		0.1	5.44
WA-SB-7	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	23.3	23.3	ng/kg		1	23.3
WA-SB-7	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	1900	1900	ng/kg		0.03	57
WA-SB-7	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	323	323	ng/kg		0.1	32.3
WA-SB-7	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	21.8	21.8	ng/kg		1	21.8
WA-SB-7	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	5370	5370	ng/kg		0.1	537
WA-SB-7	9/29/1998	0.5	1	3268-87-9	OCDD	Y	2030	2030	ng/kg		0.0003	0.609
WA-SB-7	9/29/1998	0.5	1	39001-02-0	OCDF	Y	4310	4310	ng/kg		0.0003	1.293
											Sample Location TEQ =	**1068.0**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-9	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	61.2	61.2	ng/kg		0.01	0.612
WA-SB-9	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	122	122	ng/kg		0.01	1.22
WA-SB-9	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	44.8	44.8	ng/kg		0.01	0.448
WA-SB-9	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	36.7	36.7	ng/kg		0.1	3.67
WA-SB-9	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	108	108	ng/kg		0.1	10.8
WA-SB-9	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	15.3	15.3	ng/kg		0.1	1.53
WA-SB-9	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	29	29	ng/kg		0.1	2.9
WA-SB-9	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	28.2	28.2	ng/kg		0.1	2.82
WA-SB-9	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.98	2.98	ng/kg		0.1	0.298
WA-SB-9	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	12.6	12.6	ng/kg		1	12.6
WA-SB-9	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	73.8	73.8	ng/kg		0.03	2.214
WA-SB-9	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7.15	7.15	ng/kg		0.1	0.715
WA-SB-9	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	116	116	ng/kg		0.3	34.8
WA-SB-9	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	43.7	43.7	ng/kg		1	43.7
WA-SB-9	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	261	261	ng/kg		0.1	26.1
WA-SB-9	9/28/1998	0.5	1	3268-87-9	OCDD	Y	252	252	ng/kg		0.0003	0.0756
WA-SB-9	9/28/1998	0.5	1	39001-02-0	OCDF	Y	545	545	ng/kg		0.0003	0.1635
											Sample Location TEQ =	**144.7**
WA-SB-9	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	26.7	26.7	ng/kg		0.01	0.267
WA-SB-9	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	112	112	ng/kg		0.01	1.12
WA-SB-9	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	45.3	45.3	ng/kg		0.01	0.453
WA-SB-9	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	5.62	5.62	ng/kg		0.1	0.562
WA-SB-9	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	126	126	ng/kg		0.1	12.6
WA-SB-9	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	9.35	9.35	ng/kg		0.1	0.935
WA-SB-9	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	30	30	ng/kg		0.1	3
WA-SB-9	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	8.14	8.14	ng/kg		0.1	0.814
WA-SB-9	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3.57	3.57	ng/kg		0.1	0.357
WA-SB-9	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	9.47	9.47	ng/kg		1	9.47
WA-SB-9	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	113	113	ng/kg		0.03	3.39
WA-SB-9	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	6.62	6.62	ng/kg		0.1	0.662
WA-SB-9	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	148	148	ng/kg		0.3	44.4
WA-SB-9	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	7.05	7.05	ng/kg		1	7.05
WA-SB-9	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	376	376	ng/kg		0.1	37.6
WA-SB-9	9/28/1998	1	2	3268-87-9	OCDD	Y	109	109	ng/kg		0.0003	0.0327
WA-SB-9	9/28/1998	1	2	39001-02-0	OCDF	Y	639	639	ng/kg		0.0003	0.1917
											Sample Location TEQ =	**122.9**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-9	9/28/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	0.68	0.68	ng/kg		0.01	0.0068
WA-SB-9	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2.3	2.3	ng/kg		0.01	0.023
WA-SB-9	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	N	0.15	0.075	ng/kg	U	0.1	0.0075
WA-SB-9	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2.44	2.44	ng/kg		0.1	0.244
WA-SB-9	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	N	0.15	0.075	ng/kg	U	0.1	0.0075
WA-SB-9	9/28/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	N	0.15	0.075	ng/kg	U	0.1	0.0075
WA-SB-9	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.18	0.09	ng/kg	U	0.1	0.009
WA-SB-9	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	2.19	2.19	ng/kg		0.03	0.0657
WA-SB-9	9/28/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	N	0.18	0.09	ng/kg	U	0.1	0.009
WA-SB-9	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	2.83	2.83	ng/kg		0.3	0.849
WA-SB-9	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	7.89	7.89	ng/kg	J	0.1	0.789
WA-SB-9	9/28/1998	2	3	3268-87-9	OCDD	Y	3.87	3.87	ng/kg		0.0003	0.001161
WA-SB-9	9/28/1998	2	3	39001-02-0	OCDF	Y	13.4	13.4	ng/kg		0.0003	0.00402
											Sample Location TEQ =	**2.0**
WA-SB-9	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	11.1	11.1	ng/kg		0.01	0.111
WA-SB-9	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	18.1	18.1	ng/kg		0.01	0.181
WA-SB-9	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	4.59	4.59	ng/kg		0.01	0.0459
WA-SB-9	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.83	1.83	ng/kg		0.1	0.183
WA-SB-9	9/28/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	15.7	15.7	ng/kg		0.1	1.57
WA-SB-9	9/28/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2.36	2.36	ng/kg		0.1	0.236
WA-SB-9	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	4.81	4.81	ng/kg		0.1	0.481
WA-SB-9	9/28/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.7	2.7	ng/kg		0.1	0.27
WA-SB-9	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.52	0.52	ng/kg		0.1	0.052
WA-SB-9	9/28/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	1.84	1.84	ng/kg		1	1.84
WA-SB-9	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	10.3	10.3	ng/kg		0.03	0.309
WA-SB-9	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2.18	2.18	ng/kg		0.1	0.218
WA-SB-9	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	13.2	13.2	ng/kg		0.3	3.96
WA-SB-9	9/28/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	5.31	5.31	ng/kg		1	5.31
WA-SB-9	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	27.8	27.8	ng/kg		0.1	2.78
WA-SB-9	9/28/1998	3	4	3268-87-9	OCDD	Y	52.3	52.3	ng/kg		0.0003	0.01569
WA-SB-9	9/28/1998	3	4	39001-02-0	OCDF	Y	46.5	46.5	ng/kg		0.0003	0.01395
											Sample Location TEQ =	**17.6**

TABLE 2.3b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-SB-9	9/28/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	6.54	6.54	ng/kg		0.01	0.0654
WA-SB-9	9/28/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	23.7	23.7	ng/kg		0.01	0.237
WA-SB-9	9/28/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	12.4	12.4	ng/kg		0.01	0.124
WA-SB-9	9/28/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	2.86	2.86	ng/kg		0.1	0.286
WA-SB-9	9/28/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	36.2	36.2	ng/kg		0.1	3.62
WA-SB-9	9/28/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2.95	2.95	ng/kg		0.1	0.295
WA-SB-9	9/28/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	8.75	8.75	ng/kg		0.1	0.875
WA-SB-9	9/28/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	4.01	4.01	ng/kg		0.1	0.401
WA-SB-9	9/28/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.5	1.5	ng/kg		0.1	0.15
WA-SB-9	9/28/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	2.7	2.7	ng/kg		1	2.7
WA-SB-9	9/28/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	20.8	20.8	ng/kg		0.03	0.624
WA-SB-9	9/28/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3.09	3.09	ng/kg		0.1	0.309
WA-SB-9	9/28/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	19.4	19.4	ng/kg		0.3	5.82
WA-SB-9	9/28/1998	4	5	1746-01-6	2,3,7,8-TCDD	Y	3.24	3.24	ng/kg		1	3.24
WA-SB-9	9/28/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	39.9	39.9	ng/kg		0.1	3.99
WA-SB-9	9/28/1998	4	5	3268-87-9	OCDD	Y	13.1	13.1	ng/kg		0.0003	0.00393
WA-SB-9	9/28/1998	4	5	39001-02-0	OCDF	Y	125	125	ng/kg		0.0003	0.0375
										Sample Location TEQ =		**22.8**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration
(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.3c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-MPS-SS	Highly chlorinated PCBs	0	0.5	10/26/1999	0.034	mg/kg
WA-SWMATP1	Highly chlorinated PCBs	2	6	9/22/1997	0.042	mg/kg
WA-SB-6	Highly chlorinated PCBs	0	2	9/29/1998	0.26	mg/kg
WA-SB-2	Highly chlorinated PCBs	0	2	9/29/1998	0.31	mg/kg
WA-SS#2	Highly chlorinated PCBs	9	9	9/15/1997	0.45	mg/kg
WA-NWMATP#2	Highly chlorinated PCBs	5	7	9/16/1997	0.6	mg/kg
WA-SB-10	Highly chlorinated PCBs	0	2	9/28/1998	0.65	mg/kg
WA-SB-9	Highly chlorinated PCBs	0	2	9/28/1998	0.77	mg/kg
WA-NWMATP#1	Highly chlorinated PCBs	3	5	9/16/1997	0.86	mg/kg
WA-SB-4	Highly chlorinated PCBs	0	2	9/29/1998	3	mg/kg
WA-SB-12	Highly chlorinated PCBs	0	2	9/28/1998	3.1	mg/kg

Notes:
* Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.3d
DERIVATION OF TOTAL CHLORDANES
PLANT AREA INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location Chlordane Concentration	Units
WA-SB-9	0	2	9/28/1998	0.014	mg/kg
WA-SB-1	0	2	9/29/1998	0.029	mg/kg

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PLANT AREA INTERMEDIATE GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Intermediate Groundwater (0 - 20 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Tap Water (5)		USEPA PRG for Tap Water (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Plant Area - Intermediate Groundwater	METALS																	
	7429-90-5	ALUMINUM	0.84	49.9	mg/L	WA-WA-07S	3/4	0.0213-0.0213	4.99E+01		2.00 E-01	3.65E+00	N	3.65E+00	nc	3.65E+00	Y	ASL
	7440-38-2	ARSENIC	0.0039	0.105 J	mg/L	WA-WA-07S	3/4	0.001-0.001	1.05E-01		1.00 E-02	4.46E-05	C	4.48E-05	ca	4.46E-05	Y	TOX
	7440-39-3	BARIUM	0.0135	1.82	mg/L	WA-WA-07S	4/4	-	1.82E+00		2.00 E+00	7.30E-01	N	2.55E-01	nc	2.55E-01	Y	ASL
	7440-41-7	BERYLLIUM	0.0012	0.0029	mg/L	WA-WA-05S	2/4	0.0029-0.0084	2.90E-03		4.00 E-03	7.30E-03	N	7.30E-03	nc	7.30E-03	N	BSL
	7440-70-2	CALCIUM	468	1060	mg/L	WA-WA-05S	3/4	4.84-4.84	1.06E+03			NV		NV		NV	N	NUT
	7440-48-4	COBALT	0.0293	0.0293	mg/L	WA-WA-07S	1/4	0.003-0.003	2.93E-02			NV		7.30E-02	nc	7.30E-02	N	BSL
	7440-50-8	COPPER	0.0045	0.384	mg/L	WA-WA-07S	3/4	0.0105-0.0105	3.84E-01			1.46E-01	N	1.46E-01	nc	1.46E-01	Y	ASL
	57-12-5	CYANIDE	0.01	0.01	mg/L	WA-WA-05S	1/2	0.01-0.01	1.00E-02		2.00 E-01	7.30E-02	N	7.30E-02	nc	7.30E-02	N	BSL
	7439-89-6	IRON	2.45	46.6	mg/L	WA-WA-07S	2/4	0.0282-0.099	4.66E+01		3.00 E-01	2.56E+00	N	1.09E+00	nc	1.09E+00	Y	ASL
	7439-92-1	LEAD	0.0023 J	0.488 J	mg/L	WA-WA-07S	4/5	0.001-0.001	4.88E-01		1.50 E-02	NV		NV		1.50E-02	Y	ASL
	7439-95-4	MAGNESIUM	20.6	42.9	mg/L	WA-WA-07S	2/4	0.016-0.0756	4.29E+01			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	0.125	0.423	mg/L	WA-WA-07S	2/4	0.001-0.0095	4.23E-01		5.00 E-02	7.30E-02	N	8.76E-02	nc	7.30E-02	Y	ASL
	7439-97-6	MERCURY[a]	0.00047	0.0066 J	mg/L	WA-WA-07S	4/4	-	6.60E-03			3.65E-04	N	3.65E-04	nc	3.65E-04	Y	ASL
	7440-02-0	NICKEL	0.146	0.146	mg/L	WA-WA-07S	1/4	0.01-0.0121	1.46E-01			7.30E-02	N	7.30E-02	nc	7.30E-02	Y	ASL
	7440-09-7	POTASSIUM	5.47 J	123	mg/L	WA-WA-07S	4/4	-	1.23E+02			NV		NV		NV	N	NUT
	7440-22-4	SILVER	0.007	0.007	mg/L	WA-WA-07S	1/4	0.003-0.003	7.00E-03		1.00 E-01	1.83E-02	N	NV		1.83E-02	N	BSL
	7440-23-5	SODIUM	86.8 J	1170	mg/L	WA-WA-07S	4/4	-	1.17E+03			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	0.0045	0.39	mg/L	WA-WA-07S	3/4	0.003-0.003	3.90E-01			3.65E-03	N	NV		3.65E-03	Y	ASL
	7440-66-6	ZINC	0.0099	0.613	mg/L	WA-WA-07S	4/5	0.003-0.003	6.13E-01		5.00 E+00	1.10E+00	N	NV		1.10E+00	N	BSL
	SVOC																	
	95-95-4	2,4,5-TRICHLOROPHENOL	19 J	19 J	ug/L	WA-WA-07S	1/2	50-50	1.90E+01			3.65E+02	N	NV		3.65E+02	N	BSL
	88-06-2	2,4,6-TRICHLOROPHENOL	3 J	3 J	ug/L	WA-WA-07S	1/2	10-10	3.00E+00			6.09E+00	C	NV		6.09E+00	N	BSL
	120-83-2	2,4-DICHLOROPHENOL	18	18	ug/L	WA-WA-07S	1/2	10-10	1.80E+01			1.10E+01	N	1.09E+01	nc	1.09E+01	Y	ASL
	95-57-8	2-CHLOROPHENOL	4 J	4 J	ug/L	WA-WA-07S	1/2	10-10	4.00E+00			3.04E+00	N	3.04E+00	nc	3.04E+00	Y	ASL
	106-44-5	4-METHYLPHENOL	7 J	7 J	ug/L	WA-WA-05S	1/2	11-11	7.00E+00			1.83E+01	N	1.82E+01	nc	1.82E+01	N	BSL
	191-24-2	BENZO(G,H,I)PERYLENE	1 J	1 J	ug/L	WA-WA-07S	1/2	10-10	1.00E+00			NV		NV		NV	Y	NTX
	65-85-0	BENZOIC ACID	3 J	69	ug/L	WA-WA-07S	2/2	-	6.90E+01			1.46E+04	N	1.46E+04	nc	1.46E+04	N	BSL
	218-01-9	CHRYSENE	4 J	4 J	ug/L	WA-WA-07S	1/2	10-10	4.00E+00			3.00E+00	C	9.21E+00	ca	3.00E+00	Y	ASL
	86-73-7	FLUORENE	1 J	1 J	ug/L	WA-WA-07S	1/2	10-10	1.00E+00			2.43E+01	N	2.43E+01	nc	2.43E+01	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	2 J	2 J	ug/L	WA-WA-07S	1/2	10-10	2.00E+00			3.00E-02	C	9.21E-02	ca	3.00E-02	Y	ASL
	91-20-3	NAPHTHALENE	33	33	ug/L	WA-WA-07S	1/2	10-10	3.30E+01			6.51E-01	N	6.20E-01	nc	6.20E-01	Y	ASL
	85-01-8	PHENANTHRENE	6 J	6 J	ug/L	WA-WA-07S	1/2	10-10	6.00E+00			NV		NV		NV	Y	NTX
	108-95-2	PHENOL	4 J	10	ug/L	WA-WA-05S	2/2	-	1.00E+01			1.10E+03	N	1.09E+03	nc	1.09E+03	N	BSL
	129-00-0	PYRENE	4 J	4 J	ug/L	WA-WA-07S	1/2	10-10	4.00E+00			1.83E+01	N	1.83E+01	nc	1.83E+01	N	BSL
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	19	19	ug/L	WA-WA-07S	1/2	10-10	1.90E+01		7.00 E-02	6.08E+00	N	NV		6.08E+00	Y	ASL
	95-50-1	1,2-DICHLOROBENZENE	260	260	ug/L	WA-WA-07S	1/3	5-10	2.60E+02		6.00 E-01	2.68E+01	N	3.70E+01	nc	2.68E+01	Y	ASL
	541-73-1	1,3-DICHLOROBENZENE	17	17	ug/L	WA-WA-07S	1/4	5-500	1.70E+01			1.83E+00	N	1.83E+01	nc	1.83E+00	Y	ASL
	106-46-7	1,4-DICHLOROBENZENE	580	650	ug/L	WA-WA-07S	2/4	5-10	6.50E+02		7.50 E-02	2.81E-01	C	5.02E-01	ca	2.81E-01	Y	ASL
	67-64-1	ACETONE	35	35	ug/L	WA-WA-05S	1/2	500-500	3.50E+01			5.48E+02	N	5.48E+02	nc	5.48E+02	N	BSL
	71-43-2	BENZENE	1 J	1700	ug/L	WA-WA-07S	3/4	1-1	1.70E+03		5.00 E-03	3.36E-01	C	3.54E-01	ca	3.36E-01	Y	TOX
	108-90-7	CHLOROBENZENE	11	5100	ug/L	WA-WA-07S	4/4	-	5.10E+03		1.00 E-01	8.96E+00	N	1.06E+01	nc	8.96E+00	Y	ASL
	67-66-3	CHLOROFORM	52 J	52 J	ug/L	WA-WA-07S	1/4	1-100	5.20E+01			1.55E-01	C	1.66E-01	ca	1.55E-01	Y	ASL
	75-09-2	METHYLENE CHLORIDE	150	150	ug/L	WA-WA-07S	1/4	1-250	1.50E+02		5.00 E-03	4.10E+00	C	4.28E+00	ca	4.10E+00	Y	ASL
	108-88-3	TOLUENE	59 J	59 J	ug/L	WA-WA-07S	1/4	1-100	5.90E+01		1.00 E+00	2.27E+02	N	NV		2.27E+02	N	BSL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) United States Environmental Protection Agency. 2008. National Primary and Secondary Drinking Water Regulations
(5) USEPA Region 3 RBCs (USEPA 2007) for tap water; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for tap water; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT - Compound is an essential nutrient and not screened in.
- = Compound detected in 100% of samples.
a = Where mercury is not speciated, RBC and PRG values for methyl mercury utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PLANT AREA INTERMEDIATE GROUNDWATER: VAPOR INTRUSION
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Intermediate Groundwater (0 - 20 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	Target Groundwater Concentration Corresponding to Target Indoor Air Concentration Where the Soil Gas to Indoor Air Attenuation Factor = 0.001 and Partitioning Across the Water Table Obeys Henry's Law (10^{-5}) (5)		Screening Toxicity Value	COPC Flag (Y/N)	Rationale for Selection or Deletion (6)
Plant Area - Intermediate Groundwater	SVOC															
	95-95-4	2,4,5-TRICHLOROPHENOL	19 J	19 J	ug/L	WA-WA-07S	1/2	50-50	1.90E+01			NV		NV	Y	NTX
	88-06-2	2,4,6-TRICHLOROPHENOL	3 J	3 J	ug/L	WA-WA-07S	1/2	10-10	3.00E+00			NV		NV	Y	NTX
	120-83-2	2,4-DICHLOROPHENOL	18	18	ug/L	WA-WA-07S	1/2	10-10	1.80E+01			NV		NV	Y	NTX
	95-57-8	2-CHLOROPHENOL	4 J	4 J	ug/L	WA-WA-07S	1/2	10-10	4.00E+00			1.10E+03	NC	1.10E+03	N	BSL
	106-44-5	4-METHYLPHENOL	7 J	7 J	ug/L	WA-WA-05S	1/2	11-11	7.00E+00			NV		NV	Y	NTX
	191-24-2	BENZO(G,H,I)PERYLENE	1 J	1 J	ug/L	WA-WA-07S	1/2	10-10	1.00E+00			NV		NV	Y	NTX
	65-85-0	BENZOIC ACID	3 J	69	ug/L	WA-WA-07S	2/2	-	6.90E+01			NV		NV	Y	NTX
	218-01-9	CHRYSENE	4 J	4 J	ug/L	WA-WA-07S	1/2	10-10	4.00E+00			**	C	**	N	BSL
	86-73-7	FLUORENE	1 J	1 J	ug/L	WA-WA-07S	1/2	10-10	1.00E+00			**	NC	**	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	2 J	2 J	ug/L	WA-WA-07S	1/2	10-10	2.00E+00			NV		NV	Y	NTX
	91-20-3	NAPHTHALENE	33	33	ug/L	WA-WA-07S	1/2	10-10	3.30E+01			1.50E+02	NC	1.50E+02	N	BSL
	85-01-8	PHENANTHRENE	6 J	6 J	ug/L	WA-WA-07S	1/2	10-10	6.00E+00			NV		NV	Y	NTX
	108-95-2	PHENOL	4 J	10	ug/L	WA-WA-05S	2/2	-	1.00E+01			NV		NV	Y	NTX
	129-00-0	PYRENE	4 J	4 J	ug/L	WA-WA-07S	1/2	10-10	4.00E+00			**	NC	**	N	BSL
	VOC															
	120-82-1	1,2,4-TRICHLOROBENZENE	19	19	ug/L	WA-WA-07S	1/2	10-10	1.90E+01		7.00 E-02	3.40E+03	NC	3.40E+03	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	260	260	ug/L	WA-WA-07S	1/3	5-10	2.60E+02		6.00 E-01	2.60E+03	NC	2.60E+03	N	BSL
	541-73-1	1,3-DICHLOROBENZENE	17	17	ug/L	WA-WA-07S	1/4	5-500	1.70E+01			8.30E+02	NC	8.30E+02	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	580	650	ug/L	WA-WA-07S	2/4	5-10	6.50E+02		7.50 E-02	8.20E+03	NC	8.20E+03	N	BSL
	67-64-1	ACETONE	35	35	ug/L	WA-WA-05S	1/2	500-500	3.50E+01			2.20E+05	NC	2.20E+05	N	BSL
	71-43-2	BENZENE	1 J	1700	ug/L	WA-WA-07S	3/4	1-1	1.70E+03		5.00 E-03	5†	C	5.00E+00	Y	ASL
	108-90-7	CHLOROBENZENE	11	5100	ug/L	WA-WA-07S	4/4	-	5.10E+03		1.00 E-01	3.90E+02	NC	3.90E+02	Y	ASL
	67-66-3	CHLOROFORM	52 J	52 J	ug/L	WA-WA-07S	1/4	1-100	5.20E+01			80†	C	8.00E+01	N	BSL
	75-09-2	METHYLENE CHLORIDE	150	150	ug/L	WA-WA-07S	1/4	1-250	1.50E+02		5.00 E-03	5.80E+01	C	5.80E+01	Y	ASL
	108-88-3	TOLUENE	59 J	59 J	ug/L	WA-WA-07S	1/4	1-100	5.90E+01		1.00 E+00	1.50E+03	NC	1.50E+03	N	BSL
	METALS															
	7439-97-6	MERCURY[a]	0.00047	0.0066 J	mg/L	WA-WA-07S	4/4	-	6.60E-03			6.80E-04	NC	6.80E-04	Y	ASL

Footnotes:
** Target soil gas concentration exceeds maximum possible vapor concentration at this soil gas to indoor air attenuation factor (pathway incomplete)
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) No background screening performed.
(4) United States Environmental Protection Agency. 2008. National Primary and Secondary Drinking Water Regulations
(5) USEPA - OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance) Tables. November 2002. ca = Cancer; nc = Noncancer
(6) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT - Compound is an essential nutrient and not screened in
[a] Where mercury is not speciated, RBC and PRG values for methyl mercury utilized.
†The target groundwater concentration is the MCL.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.6a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORMER CHLORINATION BUILDING SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Former Chlorination Building - Surface Soil	METALS																	
	7429-90-5	ALUMINUM	1170	2260	mg/kg	WA-SB-8	2/2	0.37-0.37	2.26E+03			7.82E+03	N	7.61E+03	nc	7.61E+03	N	BSL
	7440-38-2	ARSENIC	3.1	10.4	mg/kg	WA-SB-8	2/2	10-10	1.04E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	19.2 J	99	mg/kg	WA-SB-8	2/2	10-10	9.90E+01		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	N	BSL
	7440-41-7	BERYLLIUM	0.45 J	0.45 J	mg/kg	WA-SB-8	1/2	-	4.50E-01		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.74 J	0.74 J	mg/kg	WA-SB-8	1/2	0.06-0.06	7.40E-01		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	232000	307000	mg/kg	WA-FCB-SS	2/2	3.7-3.7	3.07E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	10.7	13.5 J	mg/kg	WA-SB-8	2/2	10-10	1.35E+01		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	2.8 J	4.7 J	mg/kg	WA-SB-8	2/2	-	4.70E+00			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	10	36.7	mg/kg	WA-SB-8	2/2	0.63-0.63	3.67E+01		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	7439-89-6	IRON	3850 J	8570	mg/kg	WA-SB-8	2/2	-	8.57E+03			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	20.7	78 J	mg/kg	WA-SB-8	2/2	-	7.80E+01		4.00E+02	NV		4.00E+02	nc	4.00E+02	N	BSL
	7439-95-4	MAGNESIUM	6710	9360	mg/kg	WA-FCB-SS	2/2	-	9.36E+03			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	177 J	338 J	mg/kg	WA-SB-8	2/2	-	3.38E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	1.2	8.2 J	mg/kg	WA-SB-8	2/2	-	8.20E+00			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.0033 J	.0033 J	mg/kg	WA-FCB-SS	1/1	-	3.30E-03			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	9.3	19.2	mg/kg	WA-SB-8	2/2	-	1.92E+01		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	N	BSL
	7440-09-7	POTASSIUM	360 J	452 J	mg/kg	WA-SB-8	2/2	-	4.52E+02			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	1.1	1.1	mg/kg	WA-SB-8	1/2	-	1.10E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	238 J	345 J	mg/kg	WA-SB-8	2/2	-	3.45E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	7.7 J	12.4	mg/kg	WA-SB-8	2/2	20-222	1.24E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	43.5	95.8	mg/kg	WA-SB-8	2/2	-	9.58E+01		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	1.24	5.5	mg/kg	WA-SB-8	2/2	-	5.50E+00			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	72-55-9	4,4'-DDE	0.015 J	0.098 J	mg/kg	WA-SB-8	2/2	0.37-0.37	9.80E-02		8.90E+00	1.88E+00	C	1.72E+00	ca	1.72E+00	N	BSL
	309-00-2	ALDRIN	0.025 J	0.025 J	mg/kg	WA-FCB-SS	1/2	10-10	2.50E-02		9.70E-02	3.76E-02	C	2.86E-02	ca	2.86E-02	N	BSL
	60-57-1	DIELDRIN	0.027 J	0.027 J	mg/kg	WA-FCB-SS	1/2	-	2.70E-02		2.00E-01	3.99E-02	C	3.04E-02	ca	3.04E-02	N	BSL
	72-20-8	ENDRIN	0.044 J	0.044 J	mg/kg	WA-FCB-SS	1/2	-	4.40E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	SVOC																	
	91-57-6	2-METHYLNAPHTHALENE	0.04 J	0.04 J	mg/kg	WA-FCB-SS	1/2	0.19-0.19	4.00E-02			3.13E+01	N	NV		3.13E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.062 J	0.062 J	mg/kg	WA-FCB-SS	1/2	10-10	6.20E-02		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.04 J	0.04 J	mg/kg	WA-FCB-SS	1/2	10-10	4.00E-02		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.15 J	0.15 J	mg/kg	WA-FCB-SS	1/2	10-10	1.50E-01		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.88 J	1.6 J	mg/kg	WA-SB-8	2/2	10-10	1.60E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.96 J	1.5 J	mg/kg	WA-SB-8	2/2	-	1.50E+00		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	1.6 J	2.8 J	mg/kg	WA-SB-8	2/2	3.7-3.7	2.80E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	1.1 J	1.1 J	mg/kg	WA-SB-8, WA-FCB-SS	2/2	0.26-0.26	1.10E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.53 J	0.53 J	mg/kg	WA-FCB-SS	1/2	10-10	5.30E-01		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	N	BSL
	86-74-8	CARBAZOLE	0.056 J	0.056 J	mg/kg	WA-FCB-SS	1/2	-	5.60E-02			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	1.1 J	2.2 J	mg/kg	WA-SB-8	2/2	-	2.20E+00		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.31 J	0.31 J	mg/kg	WA-FCB-SS	1/2	-	3.10E-01		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.05 J	0.05 J	mg/kg	WA-FCB-SS	1/2	-	5.00E-02		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	206-44-0	FLUORANTHENE	0.99	3.1 J	mg/kg	WA-SB-8	2/2	-	3.10E+00		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.037 J	0.037 J	mg/kg	WA-FCB-SS	1/2	-	3.70E-02		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.3 J	0.3 J	mg/kg	WA-FCB-SS	1/2	-	3.00E-01		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.88 J	0.88 J	mg/kg	WA-FCB-SS	1/2	-	8.80E-01		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.1 J	0.1 J	mg/kg	WA-FCB-SS	1/2	0.35-0.35	1.00E-01		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	0.71	1.9 J	mg/kg	WA-SB-8	2/2	-	1.90E+00		1.00E+02	NV		NV		NV	Y	NTX
	129-00-0	PYRENE	1.8 J	2.6 J	mg/kg	WA-SB-8	2/2	-	2.60E+00		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	0.83	20	mg/kg	WA-SB-8	2/2	10-10	2.00E+01			7.82E+01	N	6.22E+00	nc	6.22E+00	Y	ASL
	95-50-1	1,2-DICHLOROBENZENE	1.3	78	mg/kg	WA-SB-8	2/2	-	7.80E+01		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	Y	ASL
	541-73-1	1,3-DICHLOROBENZENE	2.1 J	2.1 J	mg/kg	WA-SB-8	1/2	10-30	2.10E+00		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.45	18	mg/kg	WA-SB-8	2/2	-	1.80E+01		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	Y	ASL
	108-90-7	CHLOROBENZENE	0.002 J	0.002 J	mg/kg	WA-SB-8	1/2	-	2.00E-03		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	N	BSL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.00002	0.22	mg/kg	WA-FCB5	16/16	-	2.23E-01			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT - Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
NA = Not applicable, minimum and maximum values are calculated.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007

TABLE 2.6b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB1	11/19/1997	0.7	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	N	70	35	ng/kg	U	0.01	0.35
WA-FCB1	11/19/1997	0.7	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	360	360	ng/kg	J*	0.01	3.6
WA-FCB1	11/19/1997	0.7	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	310	310	ng/kg	J	0.01	3.1
WA-FCB1	11/19/1997	0.7	1	39227-28-6	1,2,3,4,7,8-HXCDD	N	80	40	ng/kg	U	0.1	4
WA-FCB1	11/19/1997	0.7	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	510	510	ng/kg	J	0.1	51
WA-FCB1	11/19/1997	0.7	1	57653-85-7	1,2,3,6,7,8-HXCDD	N	50	25	ng/kg	U	0.1	2.5
WA-FCB1	11/19/1997	0.7	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	80	80	ng/kg	J	0.1	8
WA-FCB1	11/19/1997	0.7	1	19408-74-3	1,2,3,7,8,9-HXCDD	N	60	30	ng/kg	U	0.1	3
WA-FCB1	11/19/1997	0.7	1	72918-21-9	1,2,3,7,8,9-HXCDF	N	50	25	ng/kg	U	0.1	2.5
WA-FCB1	11/19/1997	0.7	1	40321-76-4	1,2,3,7,8-PECDD	N	50	25	ng/kg	U	1	25
WA-FCB1	11/19/1997	0.7	1	57117-41-6	1,2,3,7,8-PECDF	Y	190	190	ng/kg	J	0.03	5.7
WA-FCB1	11/19/1997	0.7	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	110	110	ng/kg	J	0.1	11
WA-FCB1	11/19/1997	0.7	1	57117-31-4	2,3,4,7,8-PECDF	Y	940	940	ng/kg	J	0.3	282
WA-FCB1	11/19/1997	0.7	1	1746-01-6	2,3,7,8-TCDD	N	30	15	ng/kg	U	1	15
WA-FCB1	11/19/1997	0.7	1	51207-31-9	2,3,7,8-TCDF	Y	850	850	ng/kg	J	0.1	85
WA-FCB1	11/19/1997	0.7	1	3268-87-9	OCDD	Y	80	80	ng/kg	J	0.0003	0.024
WA-FCB1	11/19/1997	0.7	1	39001-02-0	OCDF	Y	0.12	0.12	ng/kg		0.0003	0.000036
											Sample Location	**501.8**
WA-FCB2	11/19/1997	0.6	0.75	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	1100	1100	ng/kg	J	0.01	11
WA-FCB2	11/19/1997	0.6	0.75	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	5100	5100	ng/kg	J	0.01	51
WA-FCB2	11/19/1997	0.6	0.75	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	4500	4500	ng/kg	J	0.01	45
WA-FCB2	11/19/1997	0.6	0.75	39227-28-6	1,2,3,4,7,8-HXCDD	N	30	15	ng/kg	UJ	0.1	1.5
WA-FCB2	11/19/1997	0.6	0.75	70648-26-9	1,2,3,4,7,8-HXCDF	Y	8500	8500	ng/kg	J	0.1	850
WA-FCB2	11/19/1997	0.6	0.75	57653-85-7	1,2,3,6,7,8-HXCDD	Y	3300	3300	ng/kg	J	0.1	330
WA-FCB2	11/19/1997	0.6	0.75	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1200	1200	ng/kg	J	0.1	120
WA-FCB2	11/19/1997	0.6	0.75	19408-74-3	1,2,3,7,8,9-HXCDD	Y	630	630	ng/kg	J*	0.1	63
WA-FCB2	11/19/1997	0.6	0.75	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3800	3800	ng/kg		0.1	380
WA-FCB2	11/19/1997	0.6	0.75	40321-76-4	1,2,3,7,8-PECDD	Y	4000	4000	ng/kg	J*	1	4000
WA-FCB2	11/19/1997	0.6	0.75	57117-41-6	1,2,3,7,8-PECDF	Y	3800	3800	ng/kg	J	0.03	114
WA-FCB2	11/19/1997	0.6	0.75	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2000	2000	ng/kg	J	0.1	200
WA-FCB2	11/19/1997	0.6	0.75	57117-31-4	2,3,4,7,8-PECDF	Y	20000	20000	ng/kg	J	0.3	6000
WA-FCB2	11/19/1997	0.6	0.75	1746-01-6	2,3,7,8-TCDD	Y	420	420	ng/kg	J*	1	420
WA-FCB2	11/19/1997	0.6	0.75	51207-31-9	2,3,7,8-TCDF	Y	12400	12400	ng/kg	J	0.1	1240
WA-FCB2	11/19/1997	0.6	0.75	3268-87-9	OCDD	Y	1300	1300	ng/kg	J*	0.0003	0.39
WA-FCB2	11/19/1997	0.6	0.75	39001-02-0	OCDF	Y	25300	25300	ng/kg	J	0.0003	7.59
											Sample Location	**13833.5**

TABLE 2.6b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [(1)]	Calculated Dioxin Equivalency (ng/kg)
WA-FCB2	9/29/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	152	152	ng/kg		0.01	1.52
WA-FCB2	9/29/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	732	732	ng/kg		0.01	7.32
WA-FCB2	9/29/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	571	571	ng/kg	J	0.01	5.71
WA-FCB2	9/29/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	25.5	25.5	ng/kg		0.1	2.55
WA-FCB2	9/29/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	1540	1540	ng/kg		0.1	154
WA-FCB2	9/29/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	72.5	72.5	ng/kg		0.1	7.25
WA-FCB2	9/29/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	277	277	ng/kg		0.1	27.7
WA-FCB2	9/29/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	62.1	62.1	ng/kg		0.1	6.21
WA-FCB2	9/29/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	39.3	39.3	ng/kg		0.1	3.93
WA-FCB2	9/29/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	81.8	81.8	ng/kg	J	1	81.8
WA-FCB2	9/29/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	445	445	ng/kg	J	0.03	13.35
WA-FCB2	9/29/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	94.1	94.1	ng/kg		0.1	9.41
WA-FCB2	9/29/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	2160	2160	ng/kg	J	0.3	648
WA-FCB2	9/29/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	54	54	ng/kg		1	54
WA-FCB2	9/29/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	2570	2570	ng/kg		0.1	257
WA-FCB2	9/29/1998	1	2	3268-87-9	OCDD	Y	428	428	ng/kg	J	0.0003	0.1284
WA-FCB2	9/29/1998	1	2	39001-02-0	OCDF	Y	6500	6500	ng/kg	J	0.0003	1.95
											Sample Location	**1281.8**
WA-FCB3	11/19/1997	0.6	0.8	35822-46-9	1,2,3,4,6,7,8-HPCDD	N	50	25	ng/kg	U	0.01	0.25
WA-FCB3	11/19/1997	0.6	0.8	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	150	150	ng/kg	J*	0.01	1.5
WA-FCB3	11/19/1997	0.6	0.8	55673-89-7	1,2,3,4,7,8,9-HPCDF	N	40	20	ng/kg	U	0.01	0.2
WA-FCB3	11/19/1997	0.6	0.8	39227-28-6	1,2,3,4,7,8-HXCDD	N	40	20	ng/kg	U	0.1	2
WA-FCB3	11/19/1997	0.6	0.8	70648-26-9	1,2,3,4,7,8-HXCDF	Y	100	100	ng/kg	J*	0.1	10
WA-FCB3	11/19/1997	0.6	0.8	57653-85-7	1,2,3,6,7,8-HXCDD	N	30	15	ng/kg	U	0.1	1.5
WA-FCB3	11/19/1997	0.6	0.8	57117-44-9	1,2,3,6,7,8-HXCDF	N	20	10	ng/kg	U	0.1	1
WA-FCB3	11/19/1997	0.6	0.8	19408-74-3	1,2,3,7,8,9-HXCDD	N	30	15	ng/kg	U	0.1	1.5
WA-FCB3	11/19/1997	0.6	0.8	72918-21-9	1,2,3,7,8,9-HXCDF	N	30	15	ng/kg	U	0.1	1.5
WA-FCB3	11/19/1997	0.6	0.8	40321-76-4	1,2,3,7,8-PECDD	N	50	25	ng/kg	U	1	25
WA-FCB3	11/19/1997	0.6	0.8	57117-41-6	1,2,3,7,8-PECDF	N	30	15	ng/kg	U	0.03	0.45
WA-FCB3	11/19/1997	0.6	0.8	60851-34-5	2,3,4,6,7,8-HXCDF	Y	230	230	ng/kg	XJ*	0.1	23
WA-FCB3	11/19/1997	0.6	0.8	57117-31-4	2,3,4,7,8-PECDF	Y	220	220	ng/kg	J*	0.3	66
WA-FCB3	11/19/1997	0.6	0.8	1746-01-6	2,3,7,8-TCDD	N	20	10	ng/kg	U	1	10
WA-FCB3	11/19/1997	0.6	0.8	51207-31-9	2,3,7,8-TCDF	Y	310	310	ng/kg	J*	0.1	31
WA-FCB3	11/19/1997	0.6	0.8	3268-87-9	OCDD	N	50	25	ng/kg	U	0.0003	0.0075
WA-FCB3	11/19/1997	0.6	0.8	39001-02-0	OCDF	Y	120	120	ng/kg	J	0.0003	0.036
											Sample Location	**174.9**

TABLE 2.6b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [(1)]	Calculated Dioxin Equivalency (ng/kg)
WA-FCB4	11/19/1997	0.7	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	N	20	10	ng/kg	U	0.01	0.1
WA-FCB4	11/19/1997	0.7	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	100	100	ng/kg	J*	0.01	1
WA-FCB4	11/19/1997	0.7	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	N	20	10	ng/kg	U	0.01	0.1
WA-FCB4	11/19/1997	0.7	1	39227-28-6	1,2,3,4,7,8-HXCDD	N	20	10	ng/kg	U	0.1	1
WA-FCB4	11/19/1997	0.7	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	8	8	ng/kg		0.1	0.8
WA-FCB4	11/19/1997	0.7	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	80	80	ng/kg	J	0.1	8
WA-FCB4	11/19/1997	0.7	1	57653-85-7	1,2,3,6,7,8-HXCDD	N	20	10	ng/kg	U	0.1	1
WA-FCB4	11/19/1997	0.7	1	57117-44-9	1,2,3,6,7,8-HXCDF	N	10	5	ng/kg	U	0.1	0.5
WA-FCB4	11/19/1997	0.7	1	19408-74-3	1,2,3,7,8,9-HXCDD	N	20	10	ng/kg	U	0.1	1
WA-FCB4	11/19/1997	0.7	1	72918-21-9	1,2,3,7,8,9-HXCDF	N	10	5	ng/kg	U	0.1	0.5
WA-FCB4	11/19/1997	0.7	1	40321-76-4	1,2,3,7,8-PECDD	N	30	15	ng/kg	U	1	15
WA-FCB4	11/19/1997	0.7	1	57117-41-6	1,2,3,7,8-PECDF	Y	60	60	ng/kg	J*	0.03	1.8
WA-FCB4	11/19/1997	0.7	1	60851-34-5	2,3,4,6,7,8-HXCDF	N	10	5	ng/kg	U	0.1	0.5
WA-FCB4	11/19/1997	0.7	1	57117-31-4	2,3,4,7,8-PECDF	Y	80	80	ng/kg		0.3	24
WA-FCB4	11/19/1997	0.7	1	57117-31-4	2,3,4,7,8-PECDF	Y	160	160	ng/kg	J	0.3	48
WA-FCB4	11/19/1997	0.7	1	1746-01-6	2,3,7,8-TCDD	N	10	5	ng/kg	U	1	5
WA-FCB4	11/19/1997	0.7	1	51207-31-9	2,3,7,8-TCDF	Y	360	360	ng/kg	J	0.1	36
WA-FCB4	11/19/1997	0.7	1	3268-87-9	OCDD	Y	70	70	ng/kg	J*	0.0003	0.021
WA-FCB4	11/19/1997	0.7	1	39001-02-0	OCDF	Y	180	180	ng/kg	J*	0.0003	0.054
											Sample Location	**144.4**
WA-FCB5	11/19/1997	0.7	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2600	2600	ng/kg	J	0.01	26
WA-FCB5	11/19/1997	0.7	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	50	50	ng/kg	J	0.01	0.5
WA-FCB5	11/19/1997	0.7	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	30400	30400	ng/kg	J	0.01	304
WA-FCB5	11/19/1997	0.7	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1000	1000	ng/kg	J	0.1	100
WA-FCB5	11/19/1997	0.7	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	27100	27100	ng/kg	J	0.1	2710
WA-FCB5	11/19/1997	0.7	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	8700	8700	ng/kg	J	0.1	870
WA-FCB5	11/19/1997	0.7	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3300	3300	ng/kg	J	0.1	330
WA-FCB5	11/19/1997	0.7	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2100	2100	ng/kg	J*	0.1	210
WA-FCB5	11/19/1997	0.7	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	15900	15900	ng/kg		0.1	1590
WA-FCB5	11/19/1997	0.7	1	57117-41-6	1,2,3,7,8-PECDF	Y	5500	5500	ng/kg	J	0.03	165
WA-FCB5	11/19/1997	0.7	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7400	7400	ng/kg	J*	0.1	740
WA-FCB5	11/19/1997	0.7	1	57117-31-4	2,3,4,7,8-PECDF	Y	19900	19900	ng/kg	J	0.3	5970
WA-FCB5	11/19/1997	0.7	1	1746-01-6	2,3,7,8-TCDD	Y	510	510	ng/kg	J*	1	510
WA-FCB5	11/19/1997	0.7	1	51207-31-9	2,3,7,8-TCDF	Y	129000	129000	ng/kg	J	0.1	12900
WA-FCB5	11/19/1997	0.7	1	3268-87-9	OCDD	Y	3700	3700	ng/kg	J	0.0003	1.11
WA-FCB5	11/19/1997	0.7	1	39001-02-0	OCDF	Y	58100	58100	ng/kg	J	0.0003	17.43
											Sample Location	**26444.0**

TABLE 2.6b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB5	9/29/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2850	2850	ng/kg	J	0.01	28.5
WA-FCB5	9/29/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	22400	22400	ng/kg	J	0.01	224
WA-FCB5	9/29/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	20000	20000	ng/kg	J	0.01	200
WA-FCB5	9/29/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	560	560	ng/kg	J	0.1	56
WA-FCB5	9/29/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	61900	61900	ng/kg	J	0.1	6190
WA-FCB5	9/29/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1950	1950	ng/kg	J	0.1	195
WA-FCB5	9/29/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	11600	11600	ng/kg	J	0.1	1160
WA-FCB5	9/29/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	1840	1840	ng/kg	J	0.1	184
WA-FCB5	9/29/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2010	2010	ng/kg	J	0.1	201
WA-FCB5	9/29/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	2680	2680	ng/kg	J	1	2680
WA-FCB5	9/29/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	69400	69400	ng/kg	J	0.03	2082
WA-FCB5	9/29/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3810	3810	ng/kg	J	0.1	381
WA-FCB5	9/29/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	506000	506000	ng/kg	J	0.3	151800
WA-FCB5	9/29/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	527	527	ng/kg	J	1	527
WA-FCB5	9/29/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	570000	570000	ng/kg	J	0.1	57000
WA-FCB5	9/29/1998	1	2	3268-87-9	OCDD	Y	5370	5370	ng/kg	J	0.0003	1.611
WA-FCB5	9/29/1998	1	2	39001-02-0	OCDF	Y	189000	189000	ng/kg	J	0.0003	56.7
											Sample Location	**222966.8**
WA-FCB-5A	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	703	703	ng/kg	J	0.01	7.03
WA-FCB-5A	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2500	2500	ng/kg	J	0.01	25
WA-FCB-5A	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2500	2500	ng/kg	J	0.01	25
WA-FCB-5A	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	125	125	ng/kg	J	0.1	12.5
WA-FCB-5A	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	5930	5930	ng/kg	J	0.1	593
WA-FCB-5A	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	343	343	ng/kg	J	0.1	34.3
WA-FCB-5A	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	874	874	ng/kg	J	0.1	87.4
WA-FCB-5A	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	238	238	ng/kg	J	0.1	23.8
WA-FCB-5A	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	170	170	ng/kg	J	0.1	17
WA-FCB-5A	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	285	285	ng/kg	J	1	285
WA-FCB-5A	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	1140	1140	ng/kg	J	0.03	34.2
WA-FCB-5A	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	275	275	ng/kg	J	0.1	27.5
WA-FCB-5A	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	5160	5160	ng/kg	J	0.3	1548
WA-FCB-5A	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	78.7	78.7	ng/kg	J	1	78.7
WA-FCB-5A	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	7330	7330	ng/kg		0.1	733
WA-FCB-5A	9/28/1998	0.5	1	3268-87-9	OCDD	Y	1090	1090	ng/kg	J	0.0003	0.327
WA-FCB-5A	9/28/1998	0.5	1	39001-02-0	OCDF	Y	18300	18300	ng/kg	J	0.0003	5.49
											Sample Location	**3537.2**

TABLE 2.6b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5A	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	487	487	ng/kg	J	0.01	4.87
WA-FCB-5A	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2540	2540	ng/kg	J	0.01	25.4
WA-FCB-5A	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1680	1680	ng/kg	J	0.01	16.8
WA-FCB-5A	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	75.4	75.4	ng/kg	J	0.1	7.54
WA-FCB-5A	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3840	3840	ng/kg	J	0.1	384
WA-FCB-5A	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	223	223	ng/kg	J	0.1	22.3
WA-FCB-5A	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	752	752	ng/kg	J	0.1	75.2
WA-FCB-5A	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	132	132	ng/kg	J	0.1	13.2
WA-FCB-5A	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	103	103	ng/kg	J	0.1	10.3
WA-FCB-5A	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	157	157	ng/kg	J	1	157
WA-FCB-5A	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	1290	1290	ng/kg	J	0.03	38.7
WA-FCB-5A	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	260	260	ng/kg	J	0.1	26
WA-FCB-5A	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	7290	7290	ng/kg	J	0.3	2187
WA-FCB-5A	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	48.9	48.9	ng/kg	J	1	48.9
WA-FCB-5A	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	7270	7270	ng/kg		0.1	727
WA-FCB-5A	9/28/1998	1	2	3268-87-9	OCDD	Y	833	833	ng/kg	J	0.0003	0.2499
WA-FCB-5A	9/28/1998	1	2	39001-02-0	OCDF	Y	18200	18200	ng/kg	J	0.0003	5.46
											Sample Location	**3749.9**
WA-FCB-5B	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	9.24	9.24	ng/kg		0.01	0.0924
WA-FCB-5B	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	11.8	11.8	ng/kg		0.01	0.118
WA-FCB-5B	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	7.12	7.12	ng/kg		0.01	0.0712
WA-FCB-5B	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	18.7	18.7	ng/kg		0.1	1.87
WA-FCB-5B	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	4.25	4.25	ng/kg		0.1	0.425
WA-FCB-5B	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.96	0.96	ng/kg		0.1	0.096
WA-FCB-5B	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	1.28	1.28	ng/kg		1	1.28
WA-FCB-5B	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	7.68	7.68	ng/kg		0.03	0.2304
WA-FCB-5B	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2	2	ng/kg		0.1	0.2
WA-FCB-5B	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	34.8	34.8	ng/kg		0.3	10.44
WA-FCB-5B	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	2.29	2.29	ng/kg		1	2.29
WA-FCB-5B	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	32.3	32.3	ng/kg		0.1	3.23
WA-FCB-5B	9/28/1998	0.5	1	3268-87-9	OCDD	Y	49.3	49.3	ng/kg		0.0003	0.01479
WA-FCB-5B	9/28/1998	0.5	1	39001-02-0	OCDF	Y	65.1	65.1	ng/kg		0.0003	0.01953
											Sample Location	**20.4**

TABLE 2.6b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [(1)]	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5B	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	51.7	51.7	ng/kg		0.01	0.517
WA-FCB-5B	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	524	524	ng/kg		0.01	5.24
WA-FCB-5B	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	386	386	ng/kg		0.01	3.86
WA-FCB-5B	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	3.83	3.83	ng/kg		0.1	0.383
WA-FCB-5B	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	840	840	ng/kg		0.1	84
WA-FCB-5B	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	13.8	13.8	ng/kg		0.1	1.38
WA-FCB-5B	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	149	149	ng/kg		0.1	14.9
WA-FCB-5B	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	17.4	17.4	ng/kg		0.1	1.74
WA-FCB-5B	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	21.2	21.2	ng/kg		0.1	2.12
WA-FCB-5B	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	160	160	ng/kg		0.03	4.8
WA-FCB-5B	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	40.3	40.3	ng/kg		0.1	4.03
WA-FCB-5B	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	663	663	ng/kg		0.3	198.9
WA-FCB-5B	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	6.14	6.14	ng/kg		1	6.14
WA-FCB-5B	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	705	705	ng/kg		0.1	70.5
WA-FCB-5B	9/28/1998	1	2	3268-87-9	OCDD	Y	126	126	ng/kg		0.0003	0.0378
WA-FCB-5B	9/28/1998	1	2	39001-02-0	OCDF	Y	4670	4670	ng/kg		0.0003	1.401
											Sample Location	**399.9**
WA-FCB-5C	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	201	201	ng/kg		0.01	2.01
WA-FCB-5C	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2140	2140	ng/kg		0.01	21.4
WA-FCB-5C	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1900	1900	ng/kg		0.01	19
WA-FCB-5C	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	55.4	55.4	ng/kg		0.1	5.54
WA-FCB-5C	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	6000	6000	ng/kg		0.1	600
WA-FCB-5C	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	112	112	ng/kg		0.1	11.2
WA-FCB-5C	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1040	1040	ng/kg		0.1	104
WA-FCB-5C	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	93.8	93.8	ng/kg		0.1	9.38
WA-FCB-5C	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	210	210	ng/kg		0.1	21
WA-FCB-5C	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	262	262	ng/kg		1	262
WA-FCB-5C	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	6080	6080	ng/kg		0.03	182.4
WA-FCB-5C	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	345	345	ng/kg		0.1	34.5
WA-FCB-5C	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	47300	47300	ng/kg		0.3	14190
WA-FCB-5C	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	116	116	ng/kg		1	116
WA-FCB-5C	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	51200	51200	ng/kg		0.1	5120
WA-FCB-5C	9/29/1998	0.5	1	3268-87-9	OCDD	Y	671	671	ng/kg		0.0003	0.2013
WA-FCB-5C	9/29/1998	0.5	1	39001-02-0	OCDF	Y	23855	23855	ng/kg	J	0.0003	7.1565
											Sample Location	**20705.8**

TABLE 2.6b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [(1)]	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5C	9/29/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	18	18	ng/kg		0.01	0.18
WA-FCB-5C	9/29/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	82.9	82.9	ng/kg		0.01	0.829
WA-FCB-5C	9/29/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	54.1	54.1	ng/kg	J	0.01	0.541
WA-FCB-5C	9/29/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.09	4.09	ng/kg		0.1	0.409
WA-FCB-5C	9/29/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	157	157	ng/kg		0.1	15.7
WA-FCB-5C	9/29/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	8.51	8.51	ng/kg		0.1	0.851
WA-FCB-5C	9/29/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	30.8	30.8	ng/kg		0.1	3.08
WA-FCB-5C	9/29/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	8.28	8.28	ng/kg		0.1	0.828
WA-FCB-5C	9/29/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3.26	3.26	ng/kg		0.1	0.326
WA-FCB-5C	9/29/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	15.2	15.2	ng/kg	J	1	15.2
WA-FCB-5C	9/29/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	97	97	ng/kg		0.03	2.91
WA-FCB-5C	9/29/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	9.37	9.37	ng/kg		0.1	0.937
WA-FCB-5C	9/29/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	675	675	ng/kg		0.3	202.5
WA-FCB-5C	9/29/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	26.6	26.6	ng/kg		1	26.6
WA-FCB-5C	9/29/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	767	767	ng/kg		0.1	76.7
WA-FCB-5C	9/29/1998	1	2	3268-87-9	OCDD	Y	44.4	44.4	ng/kg	J	0.0003	0.01332
WA-FCB-5C	9/29/1998	1	2	39001-02-0	OCDF	Y	661	661	ng/kg	J	0.0003	0.1983
											Sample Location	**347.8**
WA-FCB-SS	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	134	134	ng/kg		0.01	1.34
WA-FCB-SS	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	348	348	ng/kg		0.01	3.48
WA-FCB-SS	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	320	320	ng/kg		0.01	3.2
WA-FCB-SS	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	11.6	11.6	ng/kg		0.1	1.16
WA-FCB-SS	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	679	679	ng/kg		0.1	67.9
WA-FCB-SS	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	32.8	32.8	ng/kg		0.1	3.28
WA-FCB-SS	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	103	103	ng/kg		0.1	10.3
WA-FCB-SS	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	21.8	21.8	ng/kg		0.1	2.18
WA-FCB-SS	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	8.44	8.44	ng/kg		0.1	0.844
WA-FCB-SS	10/26/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	28.5	28.5	ng/kg		1	28.5
WA-FCB-SS	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	311	311	ng/kg		0.03	9.33
WA-FCB-SS	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	1060	1060	ng/kg		0.3	318
WA-FCB-SS	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	10.3	10.3	ng/kg		1	10.3
WA-FCB-SS	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	1200	1200	ng/kg		0.1	120
WA-FCB-SS	10/26/1999	0	0.5	3268-87-9	OCDD	Y	605	605	ng/kg		0.0003	0.1815
WA-FCB-SS	10/26/1999	0	0.5	39001-02-0	OCDF	Y	1300	1300	ng/kg		0.0003	0.39
											Sample Location	**580.4**

TABLE 2.6b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [(1)]	Calculated Dioxin Equivalency (ng/kg)
WA-SB-8	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	128	128	ng/kg		0.01	1.28
WA-SB-8	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	85.6	85.6	ng/kg		0.01	0.856
WA-SB-8	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	39.1	39.1	ng/kg		0.01	0.391
WA-SB-8	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	9.15	9.15	ng/kg		0.1	0.915
WA-SB-8	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	102	102	ng/kg		0.1	10.2
WA-SB-8	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	18.9	18.9	ng/kg		0.1	1.89
WA-SB-8	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	21.3	21.3	ng/kg		0.1	2.13
WA-SB-8	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	13.7	13.7	ng/kg		0.1	1.37
WA-SB-8	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	4	4	ng/kg		0.1	0.4
WA-SB-8	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	9.76	9.76	ng/kg		1	9.76
WA-SB-8	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	67.1	67.1	ng/kg		0.03	2.013
WA-SB-8	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	9.35	9.35	ng/kg		0.1	0.935
WA-SB-8	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	128	128	ng/kg		0.3	38.4
WA-SB-8	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	18.7	18.7	ng/kg		1	18.7
WA-SB-8	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	341	341	ng/kg		0.1	34.1
WA-SB-8	9/28/1998	0.5	1	3268-87-9	OCDD	Y	820	820	ng/kg		0.0003	0.246
WA-SB-8	9/28/1998	0.5	1	39001-02-0	OCDF	Y	464	464	ng/kg		0.0003	0.1392
											Sample Location	**123.7**

TABLE 2.6b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-SB-8	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	12.6	12.6	ng/kg		0.01	0.126
WA-SB-8	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	44.9	44.9	ng/kg		0.01	0.449
WA-SB-8	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	22.7	22.7	ng/kg		0.01	0.227
WA-SB-8	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.35	0.35	ng/kg		0.1	0.035
WA-SB-8	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	105	105	ng/kg		0.1	10.5
WA-SB-8	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	25.3	25.3	ng/kg		0.1	2.53
WA-SB-8	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.78	0.78	ng/kg		0.1	0.078
WA-SB-8	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.93	1.93	ng/kg		0.1	0.193
WA-SB-8	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	0.48	0.48	ng/kg		1	0.48
WA-SB-8	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	66.2	66.2	ng/kg		0.03	1.986
WA-SB-8	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	6.95	6.95	ng/kg		0.1	0.695
WA-SB-8	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	40.9	40.9	ng/kg		0.3	12.27
WA-SB-8	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	85.4	85.4	ng/kg		0.1	8.54
WA-SB-8	9/28/1998	1	2	3268-87-9	OCDD	Y	85.9	85.9	ng/kg		0.0003	0.02577
WA-SB-8	9/28/1998	1	2	39001-02-0	OCDF	Y	277	277	ng/kg		0.0003	0.0831
											Sample Location	**38.2**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration
(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.6c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
FORMER CHLORINATION BUILDING SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-FCB-SS	Highly chlorinated PCBs	0	0.5	10/26/1999	1.24	mg/kg
WA-SB-8	Highly chlorinated PCBs	0	2	9/28/1998	5.5	mg/kg

Notes:
* Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.7a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Former Chlorination Building - Upper Soil	METALS																	
	7429-90-5	ALUMINUM	1170	2260	mg/kg	WA-SB-8	2/2	-	2.26E+03			7.82E+03	N	7.61E+03	nc	7.61E+03	N	BSL
	7440-38-2	ARSENIC	3.1	10.4	mg/kg	WA-SB-8	2/2	-	1.04E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	19.2 J	99	mg/kg	WA-SB-8	2/2	-	9.90E+01		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	N	BSL
	7440-41-7	BERYLLIUM	0.45 J	0.45 J	mg/kg	WA-SB-8	1/2	0.26-0.26	4.50E-01		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.74 J	0.74 J	mg/kg	WA-SB-8	1/2	0.06-0.06	7.40E-01		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	232000	307000	mg/kg	WA-FCB-SS	2/2	-	3.07E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	10.7	13.5 J	mg/kg	WA-SB-8	2/2	-	1.35E+01		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	2.8 J	4.7 J	mg/kg	WA-SB-8	2/2	-	4.70E+00			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	10	36.7	mg/kg	WA-SB-8	2/2	-	3.67E+01		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	7439-89-6	IRON	3850 J	8570	mg/kg	WA-SB-8	2/2	-	8.57E+03			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	20.7	78 J	mg/kg	WA-SB-8	2/2	-	7.80E+01		4.00E+02	NV		4.00E+02	nc	4.00E+02	N	BSL
	7439-95-4	MAGNESIUM	6710	9360	mg/kg	WA-FCB-SS	2/2	-	9.36E+03			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	177 J	338 J	mg/kg	WA-SB-8	2/2	-	3.38E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	1.2	150	mg/kg	WA-SS#1	3/3	-	1.50E+02			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.0033 J	.0033 J	mg/kg	WA-FCB-SS	1/1	-	3.30E-03			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	9.3	19.2	mg/kg	WA-SB-8	2/2	-	1.92E+01		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	N	BSL
	7440-09-7	POTASSIUM	360 J	452 J	mg/kg	WA-SB-8	2/2	-	4.52E+02			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	1.1	1.1	mg/kg	WA-SB-8	1/2	0.63-0.63	1.10E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	238 J	345 J	mg/kg	WA-SB-8	2/2	-	3.45E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	7.7 J	12.4	mg/kg	WA-SB-8	2/2	-	1.24E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	43.5	95.8	mg/kg	WA-SB-8	2/2	-	9.58E+01		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		LESS CHLORINATED PCBs[c]	1.1	1.1	mg/kg	WA-SS#1	1/3	-	1.10E+00			5.48E-01	N	3.93E-01	nc	3.93E-01	Y	ASL
		HIGHLY CHLORINATED PCBs[d]	1.24	5.5	mg/kg	WA-SB-8	3/3	-	5.50E+00			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	72-55-9	4,4'-DDE	0.015 J	0.098 J	mg/kg	WA-SB-8	2/3	0.23-0.23	9.80E-02		8.90E+00	1.88E+00	C	1.72E+00	ca	1.72E+00	N	BSL
	309-00-2	ALDRIN	0.025 J	0.025 J	mg/kg	WA-FCB-SS	1/3	0.11-0.19	2.50E-02		9.70E-02	3.76E-02	C	2.86E-02	ca	2.86E-02	N	BSL
	60-57-1	DIELDRIN	0.027 J	0.027 J	mg/kg	WA-FCB-SS	1/3	0.23-0.37	2.70E-02		2.00E-01	3.99E-02	C	3.04E-02	ca	3.04E-02	N	BSL
	72-20-8	ENDRIN	0.044 J	0.044 J	mg/kg	WA-FCB-SS	1/3	0.23-0.37	4.40E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	SVOC																	
	91-57-6	2-METHYLNAPHTHALENE	0.04 J	0.04 J	mg/kg	WA-FCB-SS	1/2	10-10	4.00E-02			3.13E+01	N	NV		3.13E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.062 J	0.062 J	mg/kg	WA-FCB-SS	1/2	10-10	6.20E-02		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.04 J	0.04 J	mg/kg	WA-FCB-SS	1/2	10-10	4.00E-02		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.15 J	0.15 J	mg/kg	WA-FCB-SS	1/2	10-10	1.50E-01		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.88 J	1.6 J	mg/kg	WA-SB-8	2/2	-	1.60E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.96 J	1.5 J	mg/kg	WA-SB-8	2/2	-	1.50E+00		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	1.6 J	2.8 J	mg/kg	WA-SB-8	2/2	-	2.80E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	1.1 J	1.1 J	mg/kg	WA-FCB-SS, WA-SB-8	2/2	-	1.10E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.53 J	0.53 J	mg/kg	WA-FCB-SS	1/2	10-10	5.30E-01		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	N	BSL
	86-74-8	CARBAZOLE	0.056 J	0.056 J	mg/kg	WA-FCB-SS	1/2	10-10	5.60E-02			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	1.1 J	2.2 J	mg/kg	WA-SB-8	2/2	-	2.20E+00		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.31 J	0.31 J	mg/kg	WA-FCB-SS	1/2	10-10	3.10E-01		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.05 J	0.05 J	mg/kg	WA-FCB-SS	1/2	10-10	5.00E-02		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	206-44-0	FLUORANTHENE	0.99	3.1 J	mg/kg	WA-SB-8	2/2	-	3.10E+00		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.037 J	0.037 J	mg/kg	WA-FCB-SS	1/2	10-10	3.70E-02		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.3 J	1.2	mg/kg	WA-SS#1	2/3	10-10	1.20E+00		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	Y	ASL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.88 J	0.88 J	mg/kg	WA-FCB-SS	1/2	10-10	8.80E-01		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.1 J	0.1 J	mg/kg	WA-FCB-SS	1/3	0.0034-10	1.00E-01		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	0.71	1.9 J	mg/kg	WA-SB-8	2/2	-	1.90E+00		1.00E+02	NV		NV		NV	Y	NTX
	129-00-0	PYRENE	1.8 J	2.6 J	mg/kg	WA-SB-8	2/2	-	2.60E+00		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	0.0015 J	20	mg/kg	WA-SB-8	3/3	-	2.00E+01			7.82E+01	N	6.22E+00	nc	6.22E+00	Y	ASL
	95-50-1	1,2-DICHLOROBENZENE	0.0043 J	78	mg/kg	WA-SB-8	3/3	-	7.80E+01		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	Y	ASL
	541-73-1	1,3-DICHLOROBENZENE	2.1 J	2.1 J	mg/kg	WA-SB-8	1/3	0.0034-0.35	2.10E+00		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.0039 J	18	mg/kg	WA-SB-8	3/3	-	1.80E+01		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	Y	ASL
	108-90-7	CHLOROBENZENE	0.002 J	0.002 J	mg/kg	WA-SB-8	1/3	0.0034-0.011	2.00E-03		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	N	BSL

TABLE 2.7a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	67-66-3	CHLOROFORM	0.0027 J	0.0027 J	mg/kg	WA-SS#1	1/3	0.011-0.011	2.70E-03		4.90E+01	7.82E+01	N	2.21E-01	ca	2.21E-01	N	BSL
	127-18-4	TETRACHLOROETHENE	0.0065	0.0065	mg/kg	WA-SS#1	1/3	0.011-0.011	6.50E-03		1.90E+01	1.18E+00	C	4.84E-01	ca	4.84E-01	N	BSL
	79-01-6	TRICHLOROETHENE	0.0053	0.0053	mg/kg	WA-SS#1	1/3	0.011-0.011	5.30E-03		2.10E+01	1.60E+00	C	5.30E-02	ca	5.30E-02	N	BSL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.0000018	0.25	mg/kg	WA-FCB5	34/34	-	2.52E-01			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT - Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
NA = Not applicable, minimum and maximum values are calculated.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utlized.
c = When detected, reflects summary statistics of Aroclor 1221, 1232, 1016, and 1242. RBC and PRG values for Aroclor-1016 (CAS# 12674112) utilized.
d = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB1	11/19/1997	0.7	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	N	70	35	ng/kg	U	0.01	0.35
WA-FCB1	11/19/1997	0.7	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	360	360	ng/kg	J*	0.01	3.6
WA-FCB1	11/19/1997	0.7	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	310	310	ng/kg	J	0.01	3.1
WA-FCB1	11/19/1997	0.7	1	39227-28-6	1,2,3,4,7,8-HXCDD	N	80	40	ng/kg	U	0.1	4
WA-FCB1	11/19/1997	0.7	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	510	510	ng/kg	J	0.1	51
WA-FCB1	11/19/1997	0.7	1	57653-85-7	1,2,3,6,7,8-HXCDD	N	50	25	ng/kg	U	0.1	2.5
WA-FCB1	11/19/1997	0.7	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	80	80	ng/kg	J	0.1	8
WA-FCB1	11/19/1997	0.7	1	19408-74-3	1,2,3,7,8,9-HXCDD	N	60	30	ng/kg	U	0.1	3
WA-FCB1	11/19/1997	0.7	1	72918-21-9	1,2,3,7,8,9-HXCDF	N	50	25	ng/kg	U	0.1	2.5
WA-FCB1	11/19/1997	0.7	1	40321-76-4	1,2,3,7,8-PECDD	N	50	25	ng/kg	U	1	25
WA-FCB1	11/19/1997	0.7	1	57117-41-6	1,2,3,7,8-PECDF	Y	190	190	ng/kg	J	0.03	5.7
WA-FCB1	11/19/1997	0.7	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	110	110	ng/kg	J	0.1	11
WA-FCB1	11/19/1997	0.7	1	57117-31-4	2,3,4,7,8-PECDF	Y	940	940	ng/kg	J	0.3	282
WA-FCB1	11/19/1997	0.7	1	1746-01-6	2,3,7,8-TCDD	N	30	15	ng/kg	U	1	15
WA-FCB1	11/19/1997	0.7	1	51207-31-9	2,3,7,8-TCDF	Y	850	850	ng/kg	J	0.1	85
WA-FCB1	11/19/1997	0.7	1	3268-87-9	OCDD	Y	80	80	ng/kg	J	0.0003	0.024
WA-FCB1	11/19/1997	0.7	1	39001-02-0	OCDF	Y	0.12	0.12	ng/kg		0.0003	0.000036
											Sample Location Total	**501.8**
WA-FCB2	11/19/1997	0.6	0.75	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	1100	1100	ng/kg	J	0.01	11
WA-FCB2	11/19/1997	0.6	0.75	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	5100	5100	ng/kg	J	0.01	51
WA-FCB2	11/19/1997	0.6	0.75	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	4500	4500	ng/kg	J	0.01	45
WA-FCB2	11/19/1997	0.6	0.75	39227-28-6	1,2,3,4,7,8-HXCDD	N	30	15	ng/kg	UJ	0.1	1.5
WA-FCB2	11/19/1997	0.6	0.75	70648-26-9	1,2,3,4,7,8-HXCDF	Y	8500	8500	ng/kg	J	0.1	850
WA-FCB2	11/19/1997	0.6	0.75	57653-85-7	1,2,3,6,7,8-HXCDD	Y	3300	3300	ng/kg	J	0.1	330
WA-FCB2	11/19/1997	0.6	0.75	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1200	1200	ng/kg	J	0.1	120
WA-FCB2	11/19/1997	0.6	0.75	19408-74-3	1,2,3,7,8,9-HXCDD	Y	630	630	ng/kg	J*	0.1	63
WA-FCB2	11/19/1997	0.6	0.75	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3800	3800	ng/kg		0.1	380
WA-FCB2	11/19/1997	0.6	0.75	40321-76-4	1,2,3,7,8-PECDD	Y	4000	4000	ng/kg	J*	1	4000
WA-FCB2	11/19/1997	0.6	0.75	57117-41-6	1,2,3,7,8-PECDF	Y	3800	3800	ng/kg	J	0.03	114
WA-FCB2	11/19/1997	0.6	0.75	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2000	2000	ng/kg	J	0.1	200
WA-FCB2	11/19/1997	0.6	0.75	57117-31-4	2,3,4,7,8-PECDF	Y	20000	20000	ng/kg	J	0.3	6000
WA-FCB2	11/19/1997	0.6	0.75	1746-01-6	2,3,7,8-TCDD	Y	420	420	ng/kg	J*	1	420
WA-FCB2	11/19/1997	0.6	0.75	51207-31-9	2,3,7,8-TCDF	Y	12400	12400	ng/kg	J	0.1	1240
WA-FCB2	11/19/1997	0.6	0.75	3268-87-9	OCDD	Y	1300	1300	ng/kg	J*	0.0003	0.39
WA-FCB2	11/19/1997	0.6	0.75	39001-02-0	OCDF	Y	25300	25300	ng/kg	J	0.0003	7.59
											Sample Location Total	**13833.5**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB2	9/29/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	152	152	ng/kg		0.01	1.52
WA-FCB2	9/29/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	732	732	ng/kg		0.01	7.32
WA-FCB2	9/29/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	571	571	ng/kg	J	0.01	5.71
WA-FCB2	9/29/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	25.5	25.5	ng/kg		0.1	2.55
WA-FCB2	9/29/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	1540	1540	ng/kg		0.1	154
WA-FCB2	9/29/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	72.5	72.5	ng/kg		0.1	7.25
WA-FCB2	9/29/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	277	277	ng/kg		0.1	27.7
WA-FCB2	9/29/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	62.1	62.1	ng/kg		0.1	6.21
WA-FCB2	9/29/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	39.3	39.3	ng/kg		0.1	3.93
WA-FCB2	9/29/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	81.8	81.8	ng/kg	J	1	81.8
WA-FCB2	9/29/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	445	445	ng/kg	J	0.03	13.35
WA-FCB2	9/29/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	94.1	94.1	ng/kg		0.1	9.41
WA-FCB2	9/29/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	2160	2160	ng/kg	J	0.3	648
WA-FCB2	9/29/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	54	54	ng/kg		1	54
WA-FCB2	9/29/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	2570	2570	ng/kg		0.1	257
WA-FCB2	9/29/1998	1	2	3268-87-9	OCDD	Y	428	428	ng/kg	J	0.0003	0.1284
WA-FCB2	9/29/1998	1	2	39001-02-0	OCDF	Y	6500	6500	ng/kg	J	0.0003	1.95
											Sample Location Total	**1281.8**
WA-FCB2	9/29/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	8.44	8.44	ng/kg		0.01	0.0844
WA-FCB2	9/29/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	18.6	18.6	ng/kg		0.01	0.186
WA-FCB2	9/29/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	8.43	8.43	ng/kg	J*	0.01	0.0843
WA-FCB2	9/29/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.06	1.06	ng/kg		0.1	0.106
WA-FCB2	9/29/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	26.2	26.2	ng/kg		0.1	2.62
WA-FCB2	9/29/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2.85	2.85	ng/kg		0.1	0.285
WA-FCB2	9/29/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	5.2	5.2	ng/kg		0.1	0.52
WA-FCB2	9/29/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.27	2.27	ng/kg		0.1	0.227
WA-FCB2	9/29/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	N	1.18	0.59	ng/kg	U	0.1	0.059
WA-FCB2	9/29/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	1.79	1.79	ng/kg	J	1	1.79
WA-FCB2	9/29/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	11.8	11.8	ng/kg		0.03	0.354
WA-FCB2	9/29/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1.92	1.92	ng/kg		0.1	0.192
WA-FCB2	9/29/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	55.1	55.1	ng/kg		0.3	16.53
WA-FCB2	9/29/1998	2	3	1746-01-6	2,3,7,8-TCDD	Y	1.06	1.06	ng/kg		1	1.06
WA-FCB2	9/29/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	50.4	50.4	ng/kg		0.1	5.04
WA-FCB2	9/29/1998	2	3	3268-87-9	OCDD	Y	19.9	19.9	ng/kg	J	0.0003	0.00597
WA-FCB2	9/29/1998	2	3	39001-02-0	OCDF	Y	135	135	ng/kg	J	0.0003	0.0405
											Sample Location Total	**29.2**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB2	9/29/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	7.24	7.24	ng/kg		0.01	0.0724
WA-FCB2	9/29/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	18.7	18.7	ng/kg		0.01	0.187
WA-FCB2	9/29/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	11.5	11.5	ng/kg	J	0.01	0.115
WA-FCB2	9/29/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	34.8	34.8	ng/kg		0.1	3.48
WA-FCB2	9/29/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2.34	2.34	ng/kg		0.1	0.234
WA-FCB2	9/29/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	7.27	7.27	ng/kg		0.1	0.727
WA-FCB2	9/29/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.08	2.08	ng/kg		0.1	0.208
WA-FCB2	9/29/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.69	0.69	ng/kg		0.1	0.069
WA-FCB2	9/29/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	2.02	2.02	ng/kg	J	1	2.02
WA-FCB2	9/29/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	15.7	15.7	ng/kg		0.03	0.471
WA-FCB2	9/29/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3.15	3.15	ng/kg		0.1	0.315
WA-FCB2	9/29/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	65.3	65.3	ng/kg		0.3	19.59
WA-FCB2	9/29/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	1.03	1.03	ng/kg		1	1.03
WA-FCB2	9/29/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	80.7	80.7	ng/kg		0.1	8.07
WA-FCB2	9/29/1998	3	4	3268-87-9	OCDD	Y	28.7	28.7	ng/kg	J	0.0003	0.00861
WA-FCB2	9/29/1998	3	4	39001-02-0	OCDF	Y	132	132	ng/kg	J	0.0003	0.0396
											Sample Location Total	**36.6**
WA-FCB2	9/29/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	5.34	5.34	ng/kg		0.01	0.0534
WA-FCB2	9/29/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2.85	2.85	ng/kg	J	0.01	0.0285
WA-FCB2	9/29/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.12	1.12	ng/kg		0.1	0.112
WA-FCB2	9/29/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	5.26	5.26	ng/kg		0.1	0.526
WA-FCB2	9/29/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	2.45	2.45	ng/kg		0.1	0.245
WA-FCB2	9/29/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.15	2.15	ng/kg		0.1	0.215
WA-FCB2	9/29/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.78	0.78	ng/kg		0.1	0.078
WA-FCB2	9/29/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	0.74	0.74	ng/kg	J*	1	0.74
WA-FCB2	9/29/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	4.27	4.27	ng/kg		0.03	0.1281
WA-FCB2	9/29/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1.51	1.51	ng/kg		0.1	0.151
WA-FCB2	9/29/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	16.6	16.6	ng/kg		0.3	4.98
WA-FCB2	9/29/1998	4	5	1746-01-6	2,3,7,8-TCDD	N	0.42	0.21	ng/kg	U	1	0.21
WA-FCB2	9/29/1998	4	5	3268-87-9	OCDD	Y	13.7	13.7	ng/kg	J*	0.0003	0.00411
WA-FCB2	9/29/1998	4	5	39001-02-0	OCDF	Y	20.1	20.1	ng/kg	J	0.0003	0.00603
											Sample Location Total	**7.5**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB3	11/19/1997	0.6	0.8	35822-46-9	1,2,3,4,6,7,8-HPCDD	N	50	25	ng/kg	U	0.01	0.25
WA-FCB3	11/19/1997	0.6	0.8	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	150	150	ng/kg	J*	0.01	1.5
WA-FCB3	11/19/1997	0.6	0.8	55673-89-7	1,2,3,4,7,8,9-HPCDF	N	40	20	ng/kg	U	0.01	0.2
WA-FCB3	11/19/1997	0.6	0.8	39227-28-6	1,2,3,4,7,8-HXCDD	N	40	20	ng/kg	U	0.1	2
WA-FCB3	11/19/1997	0.6	0.8	70648-26-9	1,2,3,4,7,8-HXCDF	Y	100	100	ng/kg	J*	0.1	10
WA-FCB3	11/19/1997	0.6	0.8	57653-85-7	1,2,3,6,7,8-HXCDD	N	30	15	ng/kg	U	0.1	1.5
WA-FCB3	11/19/1997	0.6	0.8	57117-44-9	1,2,3,6,7,8-HXCDF	N	20	10	ng/kg	U	0.1	1
WA-FCB3	11/19/1997	0.6	0.8	19408-74-3	1,2,3,7,8,9-HXCDD	N	30	15	ng/kg	U	0.1	1.5
WA-FCB3	11/19/1997	0.6	0.8	72918-21-9	1,2,3,7,8,9-HXCDF	N	30	15	ng/kg	U	0.1	1.5
WA-FCB3	11/19/1997	0.6	0.8	40321-76-4	1,2,3,7,8-PECDD	N	50	25	ng/kg	U	1	25
WA-FCB3	11/19/1997	0.6	0.8	57117-41-6	1,2,3,7,8-PECDF	N	30	15	ng/kg	U	0.03	0.45
WA-FCB3	11/19/1997	0.6	0.8	60851-34-5	2,3,4,6,7,8-HXCDF	Y	230	230	ng/kg	XJ*	0.1	23
WA-FCB3	11/19/1997	0.6	0.8	57117-31-4	2,3,4,7,8-PECDF	Y	220	220	ng/kg	J*	0.3	66
WA-FCB3	11/19/1997	0.6	0.8	1746-01-6	2,3,7,8-TCDD	N	20	10	ng/kg	U	1	10
WA-FCB3	11/19/1997	0.6	0.8	51207-31-9	2,3,7,8-TCDF	Y	310	310	ng/kg	J*	0.1	31
WA-FCB3	11/19/1997	0.6	0.8	3268-87-9	OCDD	N	50	25	ng/kg	U	0.0003	0.0075
WA-FCB3	11/19/1997	0.6	0.8	39001-02-0	OCDF	Y	120	120	ng/kg	J	0.0003	0.036
											Sample Location Total	**174.9**
WA-FCB4	11/19/1997	0.7	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	N	20	10	ng/kg	U	0.01	0.1
WA-FCB4	11/19/1997	0.7	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	100	100	ng/kg	J*	0.01	1
WA-FCB4	11/19/1997	0.7	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	N	20	10	ng/kg	U	0.01	0.1
WA-FCB4	11/19/1997	0.7	1	39227-28-6	1,2,3,4,7,8-HXCDD	N	20	10	ng/kg	U	0.1	1
WA-FCB4	11/19/1997	0.7	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	8	8	ng/kg		0.1	0.8
WA-FCB4	11/19/1997	0.7	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	80	80	ng/kg	J	0.1	8
WA-FCB4	11/19/1997	0.7	1	57653-85-7	1,2,3,6,7,8-HXCDD	N	20	10	ng/kg	U	0.1	1
WA-FCB4	11/19/1997	0.7	1	57117-44-9	1,2,3,6,7,8-HXCDF	N	10	5	ng/kg	U	0.1	0.5
WA-FCB4	11/19/1997	0.7	1	19408-74-3	1,2,3,7,8,9-HXCDD	N	20	10	ng/kg	U	0.1	1
WA-FCB4	11/19/1997	0.7	1	72918-21-9	1,2,3,7,8,9-HXCDF	N	10	5	ng/kg	U	0.1	0.5
WA-FCB4	11/19/1997	0.7	1	40321-76-4	1,2,3,7,8-PECDD	N	30	15	ng/kg	U	1	15
WA-FCB4	11/19/1997	0.7	1	57117-41-6	1,2,3,7,8-PECDF	Y	60	60	ng/kg	J*	0.03	1.8
WA-FCB4	11/19/1997	0.7	1	60851-34-5	2,3,4,6,7,8-HXCDF	N	10	5	ng/kg	U	0.1	0.5
WA-FCB4	11/19/1997	0.7	1	57117-31-4	2,3,4,7,8-PECDF	Y	80	80	ng/kg		0.3	24
WA-FCB4	11/19/1997	0.7	1	57117-31-4	2,3,4,7,8-PECDF	Y	160	160	ng/kg	J	0.3	48
WA-FCB4	11/19/1997	0.7	1	1746-01-6	2,3,7,8-TCDD	N	10	5	ng/kg	U	1	5
WA-FCB4	11/19/1997	0.7	1	51207-31-9	2,3,7,8-TCDF	Y	360	360	ng/kg	J	0.1	36
WA-FCB4	11/19/1997	0.7	1	3268-87-9	OCDD	Y	70	70	ng/kg	J*	0.0003	0.021
WA-FCB4	11/19/1997	0.7	1	39001-02-0	OCDF	Y	180	180	ng/kg	J*	0.0003	0.054
											Sample Location Total	**144.4**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB5	11/19/1997	0.7	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2600	2600	ng/kg	J	0.01	26
WA-FCB5	11/19/1997	0.7	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	50	50	ng/kg	J	0.01	0.5
WA-FCB5	11/19/1997	0.7	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	30400	30400	ng/kg	J	0.01	304
WA-FCB5	11/19/1997	0.7	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1000	1000	ng/kg	J	0.1	100
WA-FCB5	11/19/1997	0.7	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	27100	27100	ng/kg	J	0.1	2710
WA-FCB5	11/19/1997	0.7	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	8700	8700	ng/kg	J	0.1	870
WA-FCB5	11/19/1997	0.7	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3300	3300	ng/kg	J	0.1	330
WA-FCB5	11/19/1997	0.7	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2100	2100	ng/kg	J*	0.1	210
WA-FCB5	11/19/1997	0.7	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	15900	15900	ng/kg		0.1	1590
WA-FCB5	11/19/1997	0.7	1	57117-41-6	1,2,3,7,8-PECDF	Y	5500	5500	ng/kg	J	0.03	165
WA-FCB5	11/19/1997	0.7	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7400	7400	ng/kg	J*	0.1	740
WA-FCB5	11/19/1997	0.7	1	57117-31-4	2,3,4,7,8-PECDF	Y	19900	19900	ng/kg	J	0.3	5970
WA-FCB5	11/19/1997	0.7	1	1746-01-6	2,3,7,8-TCDD	Y	510	510	ng/kg	J*	1	510
WA-FCB5	11/19/1997	0.7	1	51207-31-9	2,3,7,8-TCDF	Y	129000	129000	ng/kg	J	0.1	12900
WA-FCB5	11/19/1997	0.7	1	3268-87-9	OCDD	Y	3700	3700	ng/kg	J	0.0003	1.11
WA-FCB5	11/19/1997	0.7	1	39001-02-0	OCDF	Y	58100	58100	ng/kg	J	0.0003	17.43
											Sample Location Total	**26444.0**
WA-FCB5	9/29/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2850	2850	ng/kg	J	0.01	28.5
WA-FCB5	9/29/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	22400	22400	ng/kg	J	0.01	224
WA-FCB5	9/29/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	20000	20000	ng/kg	J	0.01	200
WA-FCB5	9/29/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	560	560	ng/kg	J	0.1	56
WA-FCB5	9/29/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	61900	61900	ng/kg	J	0.1	6190
WA-FCB5	9/29/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1950	1950	ng/kg	J	0.1	195
WA-FCB5	9/29/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	11600	11600	ng/kg	J	0.1	1160
WA-FCB5	9/29/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	1840	1840	ng/kg	J	0.1	184
WA-FCB5	9/29/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2010	2010	ng/kg	J	0.1	201
WA-FCB5	9/29/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	2680	2680	ng/kg	J	1	2680
WA-FCB5	9/29/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	69400	69400	ng/kg	J	0.03	2082
WA-FCB5	9/29/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3810	3810	ng/kg	J	0.1	381
WA-FCB5	9/29/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	506000	506000	ng/kg	J	0.3	151800
WA-FCB5	9/29/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	527	527	ng/kg	J	1	527
WA-FCB5	9/29/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	570000	570000	ng/kg	J	0.1	57000
WA-FCB5	9/29/1998	1	2	3268-87-9	OCDD	Y	5370	5370	ng/kg	J	0.0003	1.611
WA-FCB5	9/29/1998	1	2	39001-02-0	OCDF	Y	189000	189000	ng/kg	J	0.0003	56.7
											Sample Location Total	**222966.8**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB5	9/29/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	1150	1150	ng/kg	J	0.01	11.5
WA-FCB5	9/29/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	7300	7300	ng/kg	J	0.01	73
WA-FCB5	9/29/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	6310	6310	ng/kg	J	0.01	63.1
WA-FCB5	9/29/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	221	221	ng/kg	J	0.1	22.1
WA-FCB5	9/29/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	22100	22100	ng/kg	J	0.1	2210
WA-FCB5	9/29/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	597	597	ng/kg	J	0.1	59.7
WA-FCB5	9/29/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	4060	4060	ng/kg	J	0.1	406
WA-FCB5	9/29/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	521	521	ng/kg	J	0.1	52.1
WA-FCB5	9/29/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	Y	719	719	ng/kg	J	0.1	71.9
WA-FCB5	9/29/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	1000	1000	ng/kg	J	1	1000
WA-FCB5	9/29/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	25900	25900	ng/kg	J	0.03	777
WA-FCB5	9/29/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1500	1500	ng/kg	J	0.1	150
WA-FCB5	9/29/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	187000	187000	ng/kg	J	0.3	56100
WA-FCB5	9/29/1998	2	3	1746-01-6	2,3,7,8-TCDD	Y	313	313	ng/kg	J	1	313
WA-FCB5	9/29/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	195000	195000	ng/kg	J	0.1	19500
WA-FCB5	9/29/1998	2	3	3268-87-9	OCDD	Y	4270	4270	ng/kg	J	0.0003	1.281
WA-FCB5	9/29/1998	2	3	39001-02-0	OCDF	Y	55800	55800	ng/kg	J	0.0003	16.74
											Sample Location Total	**80827.4**
WA-FCB5	9/29/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	946	946	ng/kg	J	0.01	9.46
WA-FCB5	9/29/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	6050	6050	ng/kg	J	0.01	60.5
WA-FCB5	9/29/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	5020	5020	ng/kg	J	0.01	50.2
WA-FCB5	9/29/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	153	153	ng/kg	J	0.1	15.3
WA-FCB5	9/29/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	14500	14500	ng/kg	J	0.1	1450
WA-FCB5	9/29/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	387	387	ng/kg	J	0.1	38.7
WA-FCB5	9/29/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	2760	2760	ng/kg	J	0.1	276
WA-FCB5	9/29/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	322	322	ng/kg	J	0.1	32.2
WA-FCB5	9/29/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	504	504	ng/kg	J	0.1	50.4
WA-FCB5	9/29/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	605	605	ng/kg	J	1	605
WA-FCB5	9/29/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	17800	17800	ng/kg	J	0.03	534
WA-FCB5	9/29/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1060	1060	ng/kg	J	0.1	106
WA-FCB5	9/29/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	132000	132000	ng/kg	J	0.3	39600
WA-FCB5	9/29/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	130	130	ng/kg	J	1	130
WA-FCB5	9/29/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	151000	151000	ng/kg	J	0.1	15100
WA-FCB5	9/29/1998	3	4	3268-87-9	OCDD	Y	4800	4800	ng/kg	J	0.0003	1.44
WA-FCB5	9/29/1998	3	4	39001-02-0	OCDF	Y	52100	52100	ng/kg	J	0.0003	15.63
											Sample Location Total	**58074.8**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB5	9/29/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	4170	4170	ng/kg	J	0.01	41.7
WA-FCB5	9/29/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	30400	30400	ng/kg	J	0.01	304
WA-FCB5	9/29/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	29300	29300	ng/kg	J	0.01	293
WA-FCB5	9/29/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	878	878	ng/kg	J	0.1	87.8
WA-FCB5	9/29/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	77000	77000	ng/kg	J	0.1	7700
WA-FCB5	9/29/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2550	2550	ng/kg	J	0.1	255
WA-FCB5	9/29/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	13800	13800	ng/kg	J	0.1	1380
WA-FCB5	9/29/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2160	2160	ng/kg	J	0.1	216
WA-FCB5	9/29/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2370	2370	ng/kg	J	0.1	237
WA-FCB5	9/29/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	3450	3450	ng/kg	J	1	3450
WA-FCB5	9/29/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	78400	78400	ng/kg	J	0.03	2352
WA-FCB5	9/29/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	4740	4740	ng/kg	J	0.1	474
WA-FCB5	9/29/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	572000	572000	ng/kg	J	0.3	171600
WA-FCB5	9/29/1998	4	5	1746-01-6	2,3,7,8-TCDD	Y	833	833	ng/kg	J	1	833
WA-FCB5	9/29/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	630000	630000	ng/kg	J	0.1	63000
WA-FCB5	9/29/1998	4	5	3268-87-9	OCDD	Y	7480	7480	ng/kg	J	0.0003	2.244
WA-FCB5	9/29/1998	4	5	39001-02-0	OCDF	Y	267000	267000	ng/kg	J	0.0003	80.1
											Sample Location Total	**252305.8**
WA-FCB-5A	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	703	703	ng/kg	J	0.01	7.03
WA-FCB-5A	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2500	2500	ng/kg	J	0.01	25
WA-FCB-5A	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2500	2500	ng/kg	J	0.01	25
WA-FCB-5A	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	125	125	ng/kg	J	0.1	12.5
WA-FCB-5A	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	5930	5930	ng/kg	J	0.1	593
WA-FCB-5A	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	343	343	ng/kg	J	0.1	34.3
WA-FCB-5A	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	874	874	ng/kg	J	0.1	87.4
WA-FCB-5A	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	238	238	ng/kg	J	0.1	23.8
WA-FCB-5A	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	170	170	ng/kg	J	0.1	17
WA-FCB-5A	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	285	285	ng/kg	J	1	285
WA-FCB-5A	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	1140	1140	ng/kg	J	0.03	34.2
WA-FCB-5A	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	275	275	ng/kg	J	0.1	27.5
WA-FCB-5A	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	5160	5160	ng/kg	J	0.3	1548
WA-FCB-5A	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	78.7	78.7	ng/kg	J	1	78.7
WA-FCB-5A	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	7330	7330	ng/kg		0.1	733
WA-FCB-5A	9/28/1998	0.5	1	3268-87-9	OCDD	Y	1090	1090	ng/kg	J	0.0003	0.327
WA-FCB-5A	9/28/1998	0.5	1	39001-02-0	OCDF	Y	18300	18300	ng/kg	J	0.0003	5.49
											Sample Location Total	**3537.2**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5A	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	487	487	ng/kg	J	0.01	4.87
WA-FCB-5A	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2540	2540	ng/kg	J	0.01	25.4
WA-FCB-5A	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1680	1680	ng/kg	J	0.01	16.8
WA-FCB-5A	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	75.4	75.4	ng/kg	J	0.1	7.54
WA-FCB-5A	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3840	3840	ng/kg	J	0.1	384
WA-FCB-5A	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	223	223	ng/kg	J	0.1	22.3
WA-FCB-5A	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	752	752	ng/kg	J	0.1	75.2
WA-FCB-5A	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	132	132	ng/kg	J	0.1	13.2
WA-FCB-5A	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	103	103	ng/kg	J	0.1	10.3
WA-FCB-5A	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	157	157	ng/kg	J	1	157
WA-FCB-5A	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	1290	1290	ng/kg	J	0.03	38.7
WA-FCB-5A	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	260	260	ng/kg	J	0.1	26
WA-FCB-5A	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	7290	7290	ng/kg	J	0.3	2187
WA-FCB-5A	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	48.9	48.9	ng/kg	J	1	48.9
WA-FCB-5A	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	7270	7270	ng/kg		0.1	727
WA-FCB-5A	9/28/1998	1	2	3268-87-9	OCDD	Y	833	833	ng/kg	J	0.0003	0.2499
WA-FCB-5A	9/28/1998	1	2	39001-02-0	OCDF	Y	18200	18200	ng/kg	J	0.0003	5.46
											Sample Location Total	**3749.9**
WA-FCB-5A	9/28/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	511	511	ng/kg	J	0.01	5.11
WA-FCB-5A	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	3550	3550	ng/kg	J	0.01	35.5
WA-FCB-5A	9/28/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2660	2660	ng/kg	J	0.01	26.6
WA-FCB-5A	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	78	78	ng/kg	J	0.1	7.8
WA-FCB-5A	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	5800	5800	ng/kg	J	0.1	580
WA-FCB-5A	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	178	178	ng/kg	J	0.1	17.8
WA-FCB-5A	9/28/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1010	1010	ng/kg	J	0.1	101
WA-FCB-5A	9/28/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	215	215	ng/kg	J	0.1	21.5
WA-FCB-5A	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	Y	163	163	ng/kg	J	0.1	16.3
WA-FCB-5A	9/28/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	214	214	ng/kg	J	1	214
WA-FCB-5A	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	2000	2000	ng/kg	J	0.03	60
WA-FCB-5A	9/28/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	358	358	ng/kg	J	0.1	35.8
WA-FCB-5A	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	11300	11300	ng/kg	J	0.3	3390
WA-FCB-5A	9/28/1998	2	3	1746-01-6	2,3,7,8-TCDD	Y	79	79	ng/kg	J	1	79
WA-FCB-5A	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	12500	12500	ng/kg		0.1	1250
WA-FCB-5A	9/28/1998	2	3	3268-87-9	OCDD	Y	874	874	ng/kg	J	0.0003	0.2622
WA-FCB-5A	9/28/1998	2	3	39001-02-0	OCDF	Y	27300	27300	ng/kg	J	0.0003	8.19
											Sample Location Total	**5848.9**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5A	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	617	617	ng/kg	J	0.01	6.17
WA-FCB-5A	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	3300	3300	ng/kg	J	0.01	33
WA-FCB-5A	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2880	2880	ng/kg	J	0.01	28.8
WA-FCB-5A	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	106	106	ng/kg	J	0.1	10.6
WA-FCB-5A	9/28/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	6170	6170	ng/kg	J	0.1	617
WA-FCB-5A	9/28/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	299	299	ng/kg	J	0.1	29.9
WA-FCB-5A	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1050	1050	ng/kg	J	0.1	105
WA-FCB-5A	9/28/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	187	187	ng/kg	J	0.1	18.7
WA-FCB-5A	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	205	205	ng/kg	J	0.1	20.5
WA-FCB-5A	9/28/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	248	248	ng/kg	J	1	248
WA-FCB-5A	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	2000	2000	ng/kg	J	0.03	60
WA-FCB-5A	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	364	364	ng/kg	J	0.1	36.4
WA-FCB-5A	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	11600	11600	ng/kg	J	0.3	3480
WA-FCB-5A	9/28/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	90.5	90.5	ng/kg	J	1	90.5
WA-FCB-5A	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	12200	12200	ng/kg		0.1	1220
WA-FCB-5A	9/28/1998	3	4	3268-87-9	OCDD	Y	1020	1020	ng/kg	J	0.0003	0.306
WA-FCB-5A	9/28/1998	3	4	39001-02-0	OCDF	Y	23800	23800	ng/kg	J	0.0003	7.14
											Sample Location Total	**6012.0**
WA-FCB-5A	9/28/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	709	709	ng/kg	J	0.01	7.09
WA-FCB-5A	9/28/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	5270	5270	ng/kg	J	0.01	52.7
WA-FCB-5A	9/28/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	4830	4830	ng/kg	J	0.01	48.3
WA-FCB-5A	9/28/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	158	158	ng/kg	J	0.1	15.8
WA-FCB-5A	9/28/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	10100	10100	ng/kg	J	0.1	1010
WA-FCB-5A	9/28/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	429	429	ng/kg	J	0.1	42.9
WA-FCB-5A	9/28/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1720	1720	ng/kg	J	0.1	172
WA-FCB-5A	9/28/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	306	306	ng/kg	J	0.1	30.6
WA-FCB-5A	9/28/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	354	354	ng/kg	J	0.1	35.4
WA-FCB-5A	9/28/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	451	451	ng/kg	J	1	451
WA-FCB-5A	9/28/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	3300	3300	ng/kg	J	0.03	99
WA-FCB-5A	9/28/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	563	563	ng/kg	J	0.1	56.3
WA-FCB-5A	9/28/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	23200	23200	ng/kg	J	0.3	6960
WA-FCB-5A	9/28/1998	4	5	1746-01-6	2,3,7,8-TCDD	Y	336	336	ng/kg	J	1	336
WA-FCB-5A	9/28/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	25600	25600	ng/kg		0.1	2560
WA-FCB-5A	9/28/1998	4	5	3268-87-9	OCDD	Y	996	996	ng/kg	J	0.0003	0.2988
WA-FCB-5A	9/28/1998	4	5	39001-02-0	OCDF	Y	33970	33970	ng/kg	J	0.0003	10.191
											Sample Location Total	**11887.6**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5B	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	9.24	9.24	ng/kg		0.01	0.0924
WA-FCB-5B	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	11.8	11.8	ng/kg		0.01	0.118
WA-FCB-5B	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	7.12	7.12	ng/kg		0.01	0.0712
WA-FCB-5B	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	18.7	18.7	ng/kg		0.1	1.87
WA-FCB-5B	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	4.25	4.25	ng/kg		0.1	0.425
WA-FCB-5B	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.96	0.96	ng/kg		0.1	0.096
WA-FCB-5B	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	1.28	1.28	ng/kg		1	1.28
WA-FCB-5B	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	7.68	7.68	ng/kg		0.03	0.2304
WA-FCB-5B	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2	2	ng/kg		0.1	0.2
WA-FCB-5B	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	34.8	34.8	ng/kg		0.3	10.44
WA-FCB-5B	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	2.29	2.29	ng/kg		1	2.29
WA-FCB-5B	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	32.3	32.3	ng/kg		0.1	3.23
WA-FCB-5B	9/28/1998	0.5	1	3268-87-9	OCDD	Y	49.3	49.3	ng/kg		0.0003	0.01479
WA-FCB-5B	9/28/1998	0.5	1	39001-02-0	OCDF	Y	65.1	65.1	ng/kg		0.0003	0.01953
											Sample Location	**20.4**
WA-FCB-5B	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	51.7	51.7	ng/kg		0.01	0.517
WA-FCB-5B	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	524	524	ng/kg		0.01	5.24
WA-FCB-5B	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	386	386	ng/kg		0.01	3.86
WA-FCB-5B	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	3.83	3.83	ng/kg		0.1	0.383
WA-FCB-5B	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	840	840	ng/kg		0.1	84
WA-FCB-5B	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	13.8	13.8	ng/kg		0.1	1.38
WA-FCB-5B	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	149	149	ng/kg		0.1	14.9
WA-FCB-5B	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	17.4	17.4	ng/kg		0.1	1.74
WA-FCB-5B	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	21.2	21.2	ng/kg		0.1	2.12
WA-FCB-5B	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	160	160	ng/kg		0.03	4.8
WA-FCB-5B	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	40.3	40.3	ng/kg		0.1	4.03
WA-FCB-5B	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	663	663	ng/kg		0.3	198.9
WA-FCB-5B	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	6.14	6.14	ng/kg		1	6.14
WA-FCB-5B	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	705	705	ng/kg		0.1	70.5
WA-FCB-5B	9/28/1998	1	2	3268-87-9	OCDD	Y	126	126	ng/kg		0.0003	0.0378
WA-FCB-5B	9/28/1998	1	2	39001-02-0	OCDF	Y	4670	4670	ng/kg		0.0003	1.401
											Sample Location	**399.9**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5B	9/28/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	9.22	9.22	ng/kg		0.01	0.0922
WA-FCB-5B	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	16	16	ng/kg		0.01	0.16
WA-FCB-5B	9/28/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	9.35	9.35	ng/kg		0.01	0.0935
WA-FCB-5B	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.41	0.41	ng/kg		0.1	0.041
WA-FCB-5B	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	23.3	23.3	ng/kg		0.1	2.33
WA-FCB-5B	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1.79	1.79	ng/kg		0.1	0.179
WA-FCB-5B	9/28/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	5.4	5.4	ng/kg		0.1	0.54
WA-FCB-5B	9/28/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.61	0.61	ng/kg		0.1	0.061
WA-FCB-5B	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.82	0.41	ng/kg	U	0.1	0.041
WA-FCB-5B	9/28/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	0.76	0.76	ng/kg		1	0.76
WA-FCB-5B	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	6.99	6.99	ng/kg		0.03	0.2097
WA-FCB-5B	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	12.9	12.9	ng/kg		0.3	3.87
WA-FCB-5B	9/28/1998	2	3	1746-01-6	2,3,7,8-TCDD	N	0.51	0.255	ng/kg	U	1	0.255
WA-FCB-5B	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	19	19	ng/kg		0.1	1.9
WA-FCB-5B	9/28/1998	2	3	3268-87-9	OCDD	Y	75.8	75.8	ng/kg		0.0003	0.02274
WA-FCB-5B	9/28/1998	2	3	39001-02-0	OCDF	Y	105	105	ng/kg		0.0003	0.0315
											Sample Location Total	**10.6**
WA-FCB-5B	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	10.3	10.3	ng/kg		0.01	0.103
WA-FCB-5B	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	28	28	ng/kg		0.01	0.28
WA-FCB-5B	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	22.5	22.5	ng/kg		0.01	0.225
WA-FCB-5B	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.71	1.71	ng/kg		0.1	0.171
WA-FCB-5B	9/28/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	52.3	52.3	ng/kg		0.1	5.23
WA-FCB-5B	9/28/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	4.62	4.62	ng/kg		0.1	0.462
WA-FCB-5B	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	8.98	8.98	ng/kg		0.1	0.898
WA-FCB-5B	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.88	0.88	ng/kg		0.1	0.088
WA-FCB-5B	9/28/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	4.21	4.21	ng/kg		1	4.21
WA-FCB-5B	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	12.4	12.4	ng/kg		0.03	0.372
WA-FCB-5B	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2.9	2.9	ng/kg		0.1	0.29
WA-FCB-5B	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	47.1	47.1	ng/kg		0.3	14.13
WA-FCB-5B	9/28/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	5	5	ng/kg		1	5
WA-FCB-5B	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	38	38	ng/kg		0.1	3.8
WA-FCB-5B	9/28/1998	3	4	3268-87-9	OCDD	Y	32.1	32.1	ng/kg		0.0003	0.00963
WA-FCB-5B	9/28/1998	3	4	39001-02-0	OCDF	Y	287	287	ng/kg		0.0003	0.0861
											Sample Location Total	**35.4**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5B	9/28/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	12	12	ng/kg		0.01	0.12
WA-FCB-5B	9/28/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	46.2	46.2	ng/kg		0.01	0.462
WA-FCB-5B	9/28/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	40.6	40.6	ng/kg		0.01	0.406
WA-FCB-5B	9/28/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	75.4	75.4	ng/kg		0.1	7.54
WA-FCB-5B	9/28/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	7.33	7.33	ng/kg		0.1	0.733
WA-FCB-5B	9/28/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	14	14	ng/kg		0.1	1.4
WA-FCB-5B	9/28/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	5.81	5.81	ng/kg		0.1	0.581
WA-FCB-5B	9/28/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.38	1.38	ng/kg		0.1	0.138
WA-FCB-5B	9/28/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	5.51	5.51	ng/kg		1	5.51
WA-FCB-5B	9/28/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	16.7	16.7	ng/kg		0.03	0.501
WA-FCB-5B	9/28/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3.93	3.93	ng/kg		0.1	0.393
WA-FCB-5B	9/28/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	53.6	53.6	ng/kg		0.3	16.08
WA-FCB-5B	9/28/1998	4	5	1746-01-6	2,3,7,8-TCDD	Y	1.84	1.84	ng/kg		1	1.84
WA-FCB-5B	9/28/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	51.9	51.9	ng/kg		0.1	5.19
WA-FCB-5B	9/28/1998	4	5	3268-87-9	OCDD	Y	36.9	36.9	ng/kg		0.0003	0.01107
WA-FCB-5B	9/28/1998	4	5	39001-02-0	OCDF	Y	505	505	ng/kg		0.0003	0.1515
											Sample Location	**41.1**
WA-FCB-5C	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	201	201	ng/kg		0.01	2.01
WA-FCB-5C	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2140	2140	ng/kg		0.01	21.4
WA-FCB-5C	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1900	1900	ng/kg		0.01	19
WA-FCB-5C	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	55.4	55.4	ng/kg		0.1	5.54
WA-FCB-5C	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	6000	6000	ng/kg		0.1	600
WA-FCB-5C	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	112	112	ng/kg		0.1	11.2
WA-FCB-5C	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1040	1040	ng/kg		0.1	104
WA-FCB-5C	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	93.8	93.8	ng/kg		0.1	9.38
WA-FCB-5C	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	210	210	ng/kg		0.1	21
WA-FCB-5C	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	262	262	ng/kg		1	262
WA-FCB-5C	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	6080	6080	ng/kg		0.03	182.4
WA-FCB-5C	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	345	345	ng/kg		0.1	34.5
WA-FCB-5C	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	47300	47300	ng/kg		0.3	14190
WA-FCB-5C	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	116	116	ng/kg		1	116
WA-FCB-5C	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	51200	51200	ng/kg		0.1	5120
WA-FCB-5C	9/29/1998	0.5	1	3268-87-9	OCDD	Y	671	671	ng/kg		0.0003	0.2013
WA-FCB-5C	9/29/1998	0.5	1	39001-02-0	OCDF	Y	23855	23855	ng/kg	J	0.0003	7.1565
											Sample Location	**20705.8**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5C	9/29/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	18	18	ng/kg		0.01	0.18
WA-FCB-5C	9/29/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	82.9	82.9	ng/kg		0.01	0.829
WA-FCB-5C	9/29/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	54.1	54.1	ng/kg	J	0.01	0.541
WA-FCB-5C	9/29/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.09	4.09	ng/kg		0.1	0.409
WA-FCB-5C	9/29/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	157	157	ng/kg		0.1	15.7
WA-FCB-5C	9/29/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	8.51	8.51	ng/kg		0.1	0.851
WA-FCB-5C	9/29/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	30.8	30.8	ng/kg		0.1	3.08
WA-FCB-5C	9/29/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	8.28	8.28	ng/kg		0.1	0.828
WA-FCB-5C	9/29/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3.26	3.26	ng/kg		0.1	0.326
WA-FCB-5C	9/29/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	15.2	15.2	ng/kg	J	1	15.2
WA-FCB-5C	9/29/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	97	97	ng/kg		0.03	2.91
WA-FCB-5C	9/29/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	9.37	9.37	ng/kg		0.1	0.937
WA-FCB-5C	9/29/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	675	675	ng/kg		0.3	202.5
WA-FCB-5C	9/29/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	26.6	26.6	ng/kg		1	26.6
WA-FCB-5C	9/29/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	767	767	ng/kg		0.1	76.7
WA-FCB-5C	9/29/1998	1	2	3268-87-9	OCDD	Y	44.4	44.4	ng/kg	J	0.0003	0.01332
WA-FCB-5C	9/29/1998	1	2	39001-02-0	OCDF	Y	661	661	ng/kg	J	0.0003	0.1983
											Sample Location Total	**347.8**
WA-FCB-5C	9/29/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	1780	1780	ng/kg	J	0.01	17.8
WA-FCB-5C	9/29/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	11100	11100	ng/kg	J	0.01	111
WA-FCB-5C	9/29/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	10200	10200	ng/kg	J	0.01	102
WA-FCB-5C	9/29/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	239	239	ng/kg	J	0.1	23.9
WA-FCB-5C	9/29/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	23400	23400	ng/kg	J	0.1	2340
WA-FCB-5C	9/29/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1030	1030	ng/kg	J	0.1	103
WA-FCB-5C	9/29/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	4390	4390	ng/kg	J	0.1	439
WA-FCB-5C	9/29/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	841	841	ng/kg	J	0.1	84.1
WA-FCB-5C	9/29/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	Y	691	691	ng/kg	J	0.1	69.1
WA-FCB-5C	9/29/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	1410	1410	ng/kg	J	1	1410
WA-FCB-5C	9/29/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	22400	22400	ng/kg	J	0.03	672
WA-FCB-5C	9/29/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1580	1580	ng/kg	J	0.1	158
WA-FCB-5C	9/29/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	184000	184000	ng/kg	J	0.3	55200
WA-FCB-5C	9/29/1998	2	3	1746-01-6	2,3,7,8-TCDD	Y	651	651	ng/kg	J	1	651
WA-FCB-5C	9/29/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	221000	221000	ng/kg	J	0.1	22100
WA-FCB-5C	9/29/1998	2	3	3268-87-9	OCDD	Y	3120	3120	ng/kg	J	0.0003	0.936
WA-FCB-5C	9/29/1998	2	3	39001-02-0	OCDF	Y	92000	92000	ng/kg	J	0.0003	27.6
											Sample Location Total	**83509.4**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5C	9/29/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	470	470	ng/kg		0.01	4.7
WA-FCB-5C	9/29/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	1860	1860	ng/kg		0.01	18.6
WA-FCB-5C	9/29/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1390	1390	ng/kg	J	0.01	13.9
WA-FCB-5C	9/29/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	42.9	42.9	ng/kg		0.1	4.29
WA-FCB-5C	9/29/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3820	3820	ng/kg		0.1	382
WA-FCB-5C	9/29/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	197	197	ng/kg		0.1	19.7
WA-FCB-5C	9/29/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	584	584	ng/kg		0.1	58.4
WA-FCB-5C	9/29/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	154	154	ng/kg		0.1	15.4
WA-FCB-5C	9/29/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	64.5	64.5	ng/kg		0.1	6.45
WA-FCB-5C	9/29/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	176	176	ng/kg	J	1	176
WA-FCB-5C	9/29/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	1400	1400	ng/kg		0.03	42
WA-FCB-5C	9/29/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	205	205	ng/kg		0.1	20.5
WA-FCB-5C	9/29/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	9100	9100	ng/kg		0.3	2730
WA-FCB-5C	9/29/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	61.8	61.8	ng/kg		1	61.8
WA-FCB-5C	9/29/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	11100	11100	ng/kg		0.1	1110
WA-FCB-5C	9/29/1998	3	4	3268-87-9	OCDD	Y	1640	1640	ng/kg	J	0.0003	0.492
WA-FCB-5C	9/29/1998	3	4	39001-02-0	OCDF	Y	15900	15900	ng/kg	J	0.0003	4.77
											Sample Location Total	**4669.0**
WA-FCB-5C	9/29/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	7.93	7.93	ng/kg		0.01	0.0793
WA-FCB-5C	9/29/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	18.9	18.9	ng/kg		0.01	0.189
WA-FCB-5C	9/29/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	8.86	8.86	ng/kg	J	0.01	0.0886
WA-FCB-5C	9/29/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	2.33	2.33	ng/kg		0.1	0.233
WA-FCB-5C	9/29/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	35.5	35.5	ng/kg		0.1	3.55
WA-FCB-5C	9/29/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	5.66	5.66	ng/kg		0.1	0.566
WA-FCB-5C	9/29/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	8.24	8.24	ng/kg		0.1	0.824
WA-FCB-5C	9/29/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	5.19	5.19	ng/kg		0.1	0.519
WA-FCB-5C	9/29/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.92	0.92	ng/kg		0.1	0.092
WA-FCB-5C	9/29/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	23	23	ng/kg	J	1	23
WA-FCB-5C	9/29/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	31.7	31.7	ng/kg		0.03	0.951
WA-FCB-5C	9/29/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3.45	3.45	ng/kg		0.1	0.345
WA-FCB-5C	9/29/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	237	237	ng/kg		0.3	71.1
WA-FCB-5C	9/29/1998	4	5	1746-01-6	2,3,7,8-TCDD	Y	56.3	56.3	ng/kg		1	56.3
WA-FCB-5C	9/29/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	288	288	ng/kg		0.1	28.8
WA-FCB-5C	9/29/1998	4	5	3268-87-9	OCDD	Y	44.5	44.5	ng/kg	J	0.0003	0.01335
WA-FCB-5C	9/29/1998	4	5	39001-02-0	OCDF	Y	133	133	ng/kg	J	0.0003	0.0399
											Sample Location Total	**186.7**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-SS	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	134	134	ng/kg		0.01	1.34
WA-FCB-SS	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	348	348	ng/kg		0.01	3.48
WA-FCB-SS	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	320	320	ng/kg		0.01	3.2
WA-FCB-SS	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	11.6	11.6	ng/kg		0.1	1.16
WA-FCB-SS	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	679	679	ng/kg		0.1	67.9
WA-FCB-SS	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	32.8	32.8	ng/kg		0.1	3.28
WA-FCB-SS	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	103	103	ng/kg		0.1	10.3
WA-FCB-SS	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	21.8	21.8	ng/kg		0.1	2.18
WA-FCB-SS	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	8.44	8.44	ng/kg		0.1	0.844
WA-FCB-SS	10/26/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	28.5	28.5	ng/kg		1	28.5
WA-FCB-SS	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	311	311	ng/kg		0.03	9.33
WA-FCB-SS	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	1060	1060	ng/kg		0.3	318
WA-FCB-SS	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	10.3	10.3	ng/kg		1	10.3
WA-FCB-SS	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	1200	1200	ng/kg		0.1	120
WA-FCB-SS	10/26/1999	0	0.5	3268-87-9	OCDD	Y	605	605	ng/kg		0.0003	0.1815
WA-FCB-SS	10/26/1999	0	0.5	39001-02-0	OCDF	Y	1300	1300	ng/kg		0.0003	0.39
											Sample Location	**580.4**
WA-SB-8	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	128	128	ng/kg		0.01	1.28
WA-SB-8	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	85.6	85.6	ng/kg		0.01	0.856
WA-SB-8	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	39.1	39.1	ng/kg		0.01	0.391
WA-SB-8	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	9.15	9.15	ng/kg		0.1	0.915
WA-SB-8	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	102	102	ng/kg		0.1	10.2
WA-SB-8	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	18.9	18.9	ng/kg		0.1	1.89
WA-SB-8	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	21.3	21.3	ng/kg		0.1	2.13
WA-SB-8	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	13.7	13.7	ng/kg		0.1	1.37
WA-SB-8	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	4	4	ng/kg		0.1	0.4
WA-SB-8	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	9.76	9.76	ng/kg		1	9.76
WA-SB-8	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	67.1	67.1	ng/kg		0.03	2.013
WA-SB-8	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	9.35	9.35	ng/kg		0.1	0.935
WA-SB-8	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	128	128	ng/kg		0.3	38.4
WA-SB-8	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	18.7	18.7	ng/kg		1	18.7
WA-SB-8	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	341	341	ng/kg		0.1	34.1
WA-SB-8	9/28/1998	0.5	1	3268-87-9	OCDD	Y	820	820	ng/kg		0.0003	0.246
WA-SB-8	9/28/1998	0.5	1	39001-02-0	OCDF	Y	464	464	ng/kg		0.0003	0.1392
											Sample Location	**123.7**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-SB-8	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	12.6	12.6	ng/kg		0.01	0.126
WA-SB-8	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	44.9	44.9	ng/kg		0.01	0.449
WA-SB-8	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	22.7	22.7	ng/kg		0.01	0.227
WA-SB-8	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.35	0.35	ng/kg		0.1	0.035
WA-SB-8	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	105	105	ng/kg		0.1	10.5
WA-SB-8	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	25.3	25.3	ng/kg		0.1	2.53
WA-SB-8	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.78	0.78	ng/kg		0.1	0.078
WA-SB-8	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.93	1.93	ng/kg		0.1	0.193
WA-SB-8	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	0.48	0.48	ng/kg		1	0.48
WA-SB-8	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	66.2	66.2	ng/kg		0.03	1.986
WA-SB-8	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	6.95	6.95	ng/kg		0.1	0.695
WA-SB-8	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	40.9	40.9	ng/kg		0.3	12.27
WA-SB-8	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	85.4	85.4	ng/kg		0.1	8.54
WA-SB-8	9/28/1998	1	2	3268-87-9	OCDD	Y	85.9	85.9	ng/kg		0.0003	0.02577
WA-SB-8	9/28/1998	1	2	39001-02-0	OCDF	Y	277	277	ng/kg		0.0003	0.0831
											Sample Location Total	**38.2**
WA-SB-8	9/28/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	10	10	ng/kg		0.01	0.1
WA-SB-8	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	45.2	45.2	ng/kg		0.01	0.452
WA-SB-8	9/28/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	21.2	21.2	ng/kg		0.01	0.212
WA-SB-8	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.62	0.62	ng/kg		0.1	0.062
WA-SB-8	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	85.2	85.2	ng/kg		0.1	8.52
WA-SB-8	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1.11	1.11	ng/kg		0.1	0.111
WA-SB-8	9/28/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	19.3	19.3	ng/kg		0.1	1.93
WA-SB-8	9/28/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	1.16	1.16	ng/kg		0.1	0.116
WA-SB-8	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.63	2.63	ng/kg		0.1	0.263
WA-SB-8	9/28/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	0.52	0.52	ng/kg		1	0.52
WA-SB-8	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	45.2	45.2	ng/kg	J	0.03	1.356
WA-SB-8	9/28/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	5.45	5.45	ng/kg		0.1	0.545
WA-SB-8	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	21.1	21.1	ng/kg	J	0.3	6.33
WA-SB-8	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	43.4	43.4	ng/kg		0.1	4.34
WA-SB-8	9/28/1998	2	3	3268-87-9	OCDD	Y	50.6	50.6	ng/kg		0.0003	0.01518
WA-SB-8	9/28/1998	2	3	39001-02-0	OCDF	Y	113	113	ng/kg		0.0003	0.0339
											Sample Location Total	**24.9**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-SB-8	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	7.5	7.5	ng/kg		0.01	0.075
WA-SB-8	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	14.4	14.4	ng/kg		0.01	0.144
WA-SB-8	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	7.72	7.72	ng/kg		0.01	0.0772
WA-SB-8	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.89	0.89	ng/kg		0.1	0.089
WA-SB-8	9/28/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	18.5	18.5	ng/kg		0.1	1.85
WA-SB-8	9/28/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1.57	1.57	ng/kg		0.1	0.157
WA-SB-8	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3.74	3.74	ng/kg		0.1	0.374
WA-SB-8	9/28/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	1.32	1.32	ng/kg		0.1	0.132
WA-SB-8	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.02	1.02	ng/kg		0.1	0.102
WA-SB-8	9/28/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	1.26	1.26	ng/kg		1	1.26
WA-SB-8	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	15.3	15.3	ng/kg		0.03	0.459
WA-SB-8	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2.06	2.06	ng/kg		0.1	0.206
WA-SB-8	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	16.7	16.7	ng/kg		0.3	5.01
WA-SB-8	9/28/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	7.74	7.74	ng/kg		1	7.74
WA-SB-8	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	102	102	ng/kg		0.1	10.2
WA-SB-8	9/28/1998	3	4	3268-87-9	OCDD	Y	35.2	35.2	ng/kg		0.0003	0.01056
WA-SB-8	9/28/1998	3	4	39001-02-0	OCDF	Y	64.4	64.4	ng/kg		0.0003	0.01932
											Sample Location Total	**27.9**

TABLE 2.7b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-SB-8	9/28/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	3.51	3.51	ng/kg		0.01	0.0351
WA-SB-8	9/28/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	3.72	3.72	ng/kg		0.01	0.0372
WA-SB-8	9/28/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	0.88	0.88	ng/kg		0.01	0.0088
WA-SB-8	9/28/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3.45	3.45	ng/kg		0.1	0.345
WA-SB-8	9/28/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	N	0.2	0.1	ng/kg	U	0.1	0.01
WA-SB-8	9/28/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1.25	1.25	ng/kg		0.1	0.125
WA-SB-8	9/28/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.42	0.21	ng/kg		0.1	0.021
WA-SB-8	9/28/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	2.8	2.8	ng/kg		0.03	0.084
WA-SB-8	9/28/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	N	0.42	0.21	ng/kg	U	0.1	0.021
WA-SB-8	9/28/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	1.59	1.59	ng/kg		0.3	0.477
WA-SB-8	9/28/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	6.55	6.55	ng/kg		0.1	0.655
WA-SB-8	9/28/1998	4	5	3268-87-9	OCDD	Y	8.95	8.95	ng/kg		0.0003	0.002685
WA-SB-8	9/28/1998	4	5	39001-02-0	OCDF	Y	7.06	7.06	ng/kg		0.0003	0.002118
											Sample Location	**1.8**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration
(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.7c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
FORMER CHLORINATION BUILDING UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-FCB-SS	Highly chlorinated PCBs	0	0.5	10/26/1999	1.24	mg/kg
WA-SS#1	Highly chlorinated PCBs	6	6	9/15/1997	1.4	mg/kg
WA-SB-8	Highly chlorinated PCBs	0	2	9/28/1998	5.5	mg/kg
WA-SS#1	Less chlorinated PCBs	6	6	9/15/1997	1.1	mg/kg

Notes:
* Less chlorinated PCBs were defined as Aroclors 1221, 1232, 1016, and 1242. Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.8a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Intermediate Soil (0-20 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Former Chlorination Building - Intermediate Soil	METALS																	
	7429-90-5	ALUMINUM	1170	2260	mg/kg	WA-SB-8	2/2	-	2.26E+03			7.82E+03	N	7.61E+03	nc	7.61E+03	N	BSL
	7440-38-2	ARSENIC	3.1	10.4	mg/kg	WA-SB-8	2/2	-	1.04E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	19.2 J	99	mg/kg	WA-SB-8	2/2	-	9.90E+01		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	N	BSL
	7440-41-7	BERYLLIUM	0.45 J	0.45 J	mg/kg	WA-SB-8	1/2	0.26-0.26	4.50E-01		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.74 J	0.74 J	mg/kg	WA-SB-8	1/2	0.06-0.06	7.40E-01		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	232000	307000	mg/kg	WA-FCB-SS	2/2	-	3.07E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	10.7	13.5 J	mg/kg	WA-SB-8	2/2	-	1.35E+01		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	2.8 J	4.7 J	mg/kg	WA-SB-8	2/2	-	4.70E+00			NV		9.03E+02	ca	9.03E+02	N	BSL
	7440-50-8	COPPER	10	36.7	mg/kg	WA-SB-8	2/2	-	3.67E+01		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	7439-89-6	IRON	3850 J	8570	mg/kg	WA-SB-8	2/2	-	8.57E+03			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	20.7	78 J	mg/kg	WA-SB-8	2/2	-	7.80E+01		4.00E+02	NV		4.00E+02	nc	4.00E+02	N	BSL
	7439-95-4	MAGNESIUM	6710	9360	mg/kg	WA-FCB-SS	2/2	-	9.36E+03			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	177 J	338 J	mg/kg	WA-SB-8	2/2	-	3.38E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	1.2	150	mg/kg	WA-SS#1	3/3	-	1.50E+02			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.0033 J	.0033 J	mg/kg	WA-FCB-SS	1/1	-	3.30E-03			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	9.3	19.2	mg/kg	WA-SB-8	2/2	-	1.92E+01		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	N	BSL
	7440-09-7	POTASSIUM	360 J	452 J	mg/kg	WA-SB-8	2/2	-	4.52E+02			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	1.1	1.1	mg/kg	WA-SB-8	1/2	0.63-0.63	1.10E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	238 J	345 J	mg/kg	WA-SB-8	2/2	-	3.45E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	7.7 J	12.4	mg/kg	WA-SB-8	2/2	-	1.24E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	43.5	95.8	mg/kg	WA-SB-8	2/2	-	9.58E+01		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		LESS CHLORINATED PCBs[c]	1.1	1.1	mg/kg	WA-SS#1	1/3	-	1.10E+00			5.48E-01	N	3.93E-01	nc	3.93E-01	Y	ASL
		HIGHLY CHLORINATED PCBs[d]	1.24	5.5	mg/kg	WA-SB-8	3/3	-	5.50E+00			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	72-55-9	4,4'-DDE	0.015 J	0.098 J	mg/kg	WA-SB-8	2/3	0.23-0.23	9.80E-02		8.90E+00	1.88E+00	C	1.72E-01	nc	1.72E-01	N	BSL
	309-00-2	ALDRIN	0.025 J	0.025 J	mg/kg	WA-FCB-SS	1/3	0.11-0.19	2.50E-02		9.70E-02	3.76E-02	C	2.86E-03	nc	2.86E-03	Y	ASL
	60-57-1	DIELDRIN	0.027 J	0.027 J	mg/kg	WA-FCB-SS	1/3	0.23-0.37	2.70E-02		2.00E-01	3.99E-02	C	3.04E-02	ca	3.04E-02	N	BSL
	72-20-8	ENDRIN	0.044 J	0.044 J	mg/kg	WA-FCB-SS	1/3	0.23-0.37	4.40E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	SVOC																	
	91-57-6	2-METHYLNAPHTHALENE	0.04 J	0.04 J	mg/kg	WA-FCB-SS	1/2	10-10	4.00E-02			3.13E+01	N	NV		3.13E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.062 J	0.062 J	mg/kg	WA-FCB-SS	1/2	10-10	6.20E-02		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.04 J	0.04 J	mg/kg	WA-FCB-SS	1/2	10-10	4.00E-02		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.15 J	0.15 J	mg/kg	WA-FCB-SS	1/2	10-10	1.50E-01		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.88 J	1.6 J	mg/kg	WA-SB-8	2/2	-	1.60E+00		1.00E+00	2.20E-01	C	6.21E-02	nc	6.21E-02	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.96 J	1.5 J	mg/kg	WA-SB-8	2/2	-	1.50E+00		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	1.6 J	2.8 J	mg/kg	WA-SB-8	2/2	-	2.80E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	1.1 J	1.1 J	mg/kg	WA-FCB-SS, WA-SB-8	2/2	-	1.10E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.53 J	0.53 J	mg/kg	WA-FCB-SS	1/2	10-10	5.30E-01		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	N	BSL
	86-74-8	CARBAZOLE	0.056 J	0.056 J	mg/kg	WA-FCB-SS	1/2	10-10	5.60E-02			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	1.1 J	2.2 J	mg/kg	WA-SB-8	2/2	-	2.20E+00		3.90E+00	2.20E+01	C	6.21E+00	nc	6.21E+00	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.31 J	0.31 J	mg/kg	WA-FCB-SS	1/2	10-10	3.10E-01		3.30E-01	2.20E-02	C	6.21E-03	nc	6.21E-03	Y	ASL
	132-64-9	DIBENZOFURAN	0.05 J	0.05 J	mg/kg	WA-FCB-SS	1/2	10-10	5.00E-02		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	206-44-0	FLUORANTHENE	0.99	3.1 J	mg/kg	WA-SB-8	2/2	-	3.10E+00		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.037 J	0.037 J	mg/kg	WA-FCB-SS	1/2	10-10	3.70E-02		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.3 J	1.2	mg/kg	WA-SS#1	2/3	10-10	1.20E+00		1.20E+00	3.99E-01	C	3.04E-02	nc	3.04E-02	Y	ASL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.88 J	0.88 J	mg/kg	WA-FCB-SS	1/2	10-10	8.80E-01		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.1 J	0.1 J	mg/kg	WA-FCB-SS	1/3	0.0034-10	1.00E-01		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	0.71	1.9 J	mg/kg	WA-SB-8	2/2	-	1.90E+00		1.00E+02	NV		NV		NV	Y	NTX
	129-00-0	PYRENE	1.8 J	2.6 J	mg/kg	WA-SB-8	2/2	-	2.60E+00		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	0.0015 J	20	mg/kg	WA-SB-8	3/3	-	2.00E+01			7.82E+01	N	6.22E+00	nc	6.22E+00	Y	ASL
	95-50-1	1,2-DICHLOROBENZENE	0.0043 J	78	mg/kg	WA-SB-8	3/3	-	7.80E+01		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	Y	ASL
	541-73-1	1,3-DICHLOROBENZENE	2.1 J	2.1 J	mg/kg	WA-SB-8	1/3	0.0034-0.35	2.10E+00		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.0039 J	18	mg/kg	WA-SB-8	3/3	-	1.80E+01		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	Y	ASL
	108-90-7	CHLOROBENZENE	0.002 J	0.002 J	mg/kg	WA-SB-8	1/3	0.0034-0.011	2.00E-03		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	N	BSL
	67-66-3	CHLOROFORM	0.0027 J	0.0027 J	mg/kg	WA-SS#1	1/3	0.011-0.011	2.70E-03		4.90E+01	7.82E+01	N	2.21E-01	ca	2.21E-01	N	BSL
	127-18-4	TETRACHLOROETHENE	0.0065	0.0065	mg/kg	WA-SS#1	1/3	0.011-0.011	6.50E-03		1.90E+01	1.18E+00	C	4.84E-02	nc	4.84E-02	N	BSL
	79-01-6	TRICHLOROETHENE	0.0053	0.0053	mg/kg	WA-SS#1	1/3	0.011-0.011	5.30E-03		2.10E+01	1.60E+00	C	5.30E-02	ca	5.30E-02	N	BSL

TABLE 2.8a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Intermediate Soil (0-20 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.0000018	0.25	mg/kg	WA-FCB5	34/34	-	2.52E-01			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT - Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
NA = Not applicable, minimum and maximum values are calculated.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utllized.
c = When detected, reflects summary statistics of Aroclor 1221, 1232, 1016, and 1242. RBC and PRG values for Aroclor-1016 (CAS# 12674112) utilized.
d = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB1	11/19/1997	0.7	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	N	70	35	ng/kg	U	0.01	0.35
WA-FCB1	11/19/1997	0.7	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	360	360	ng/kg	J*	0.01	3.6
WA-FCB1	11/19/1997	0.7	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	310	310	ng/kg	J	0.01	3.1
WA-FCB1	11/19/1997	0.7	1	39227-28-6	1,2,3,4,7,8-HXCDD	N	80	40	ng/kg	U	0.1	4
WA-FCB1	11/19/1997	0.7	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	510	510	ng/kg	J	0.1	51
WA-FCB1	11/19/1997	0.7	1	57653-85-7	1,2,3,6,7,8-HXCDD	N	50	25	ng/kg	U	0.1	2.5
WA-FCB1	11/19/1997	0.7	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	80	80	ng/kg	J	0.1	8
WA-FCB1	11/19/1997	0.7	1	19408-74-3	1,2,3,7,8,9-HXCDD	N	60	30	ng/kg	U	0.1	3
WA-FCB1	11/19/1997	0.7	1	72918-21-9	1,2,3,7,8,9-HXCDF	N	50	25	ng/kg	U	0.1	2.5
WA-FCB1	11/19/1997	0.7	1	40321-76-4	1,2,3,7,8-PECDD	N	50	25	ng/kg	U	1	25
WA-FCB1	11/19/1997	0.7	1	57117-41-6	1,2,3,7,8-PECDF	Y	190	190	ng/kg	J	0.03	5.7
WA-FCB1	11/19/1997	0.7	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	110	110	ng/kg	J	0.1	11
WA-FCB1	11/19/1997	0.7	1	57117-31-4	2,3,4,7,8-PECDF	Y	940	940	ng/kg	J	0.3	282
WA-FCB1	11/19/1997	0.7	1	1746-01-6	2,3,7,8-TCDD	N	30	15	ng/kg	U	1	15
WA-FCB1	11/19/1997	0.7	1	51207-31-9	2,3,7,8-TCDF	Y	850	850	ng/kg	J	0.1	85
WA-FCB1	11/19/1997	0.7	1	3268-87-9	OCDD	Y	80	80	ng/kg	J	0.0003	0.024
WA-FCB1	11/19/1997	0.7	1	39001-02-0	OCDF	Y	0.12	0.12	ng/kg		0.0003	0.000036
											Sample Location Total	**501.8**
WA-FCB2	11/19/1997	0.6	0.75	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	1100	1100	ng/kg	J	0.01	11
WA-FCB2	11/19/1997	0.6	0.75	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	5100	5100	ng/kg	J	0.01	51
WA-FCB2	11/19/1997	0.6	0.75	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	4500	4500	ng/kg	J	0.01	45
WA-FCB2	11/19/1997	0.6	0.75	39227-28-6	1,2,3,4,7,8-HXCDD	N	30	15	ng/kg	UJ	0.1	1.5
WA-FCB2	11/19/1997	0.6	0.75	70648-26-9	1,2,3,4,7,8-HXCDF	Y	8500	8500	ng/kg	J	0.1	850
WA-FCB2	11/19/1997	0.6	0.75	57653-85-7	1,2,3,6,7,8-HXCDD	Y	3300	3300	ng/kg	J	0.1	330
WA-FCB2	11/19/1997	0.6	0.75	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1200	1200	ng/kg	J	0.1	120
WA-FCB2	11/19/1997	0.6	0.75	19408-74-3	1,2,3,7,8,9-HXCDD	Y	630	630	ng/kg	J*	0.1	63
WA-FCB2	11/19/1997	0.6	0.75	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3800	3800	ng/kg		0.1	380
WA-FCB2	11/19/1997	0.6	0.75	40321-76-4	1,2,3,7,8-PECDD	Y	4000	4000	ng/kg	J*	1	4000
WA-FCB2	11/19/1997	0.6	0.75	57117-41-6	1,2,3,7,8-PECDF	Y	3800	3800	ng/kg	J	0.03	114
WA-FCB2	11/19/1997	0.6	0.75	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2000	2000	ng/kg	J	0.1	200
WA-FCB2	11/19/1997	0.6	0.75	57117-31-4	2,3,4,7,8-PECDF	Y	20000	20000	ng/kg	J	0.3	6000
WA-FCB2	11/19/1997	0.6	0.75	1746-01-6	2,3,7,8-TCDD	Y	420	420	ng/kg	J*	1	420
WA-FCB2	11/19/1997	0.6	0.75	51207-31-9	2,3,7,8-TCDF	Y	12400	12400	ng/kg	J	0.1	1240
WA-FCB2	11/19/1997	0.6	0.75	3268-87-9	OCDD	Y	1300	1300	ng/kg	J*	0.0003	0.39
WA-FCB2	11/19/1997	0.6	0.75	39001-02-0	OCDF	Y	25300	25300	ng/kg	J	0.0003	7.59
											Sample Location Total	**13833.5**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB2	9/29/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	152	152	ng/kg		0.01	1.52
WA-FCB2	9/29/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	732	732	ng/kg		0.01	7.32
WA-FCB2	9/29/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	571	571	ng/kg	J	0.01	5.71
WA-FCB2	9/29/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	25.5	25.5	ng/kg		0.1	2.55
WA-FCB2	9/29/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	1540	1540	ng/kg		0.1	154
WA-FCB2	9/29/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	72.5	72.5	ng/kg		0.1	7.25
WA-FCB2	9/29/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	277	277	ng/kg		0.1	27.7
WA-FCB2	9/29/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	62.1	62.1	ng/kg		0.1	6.21
WA-FCB2	9/29/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	39.3	39.3	ng/kg		0.1	3.93
WA-FCB2	9/29/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	81.8	81.8	ng/kg	J	1	81.8
WA-FCB2	9/29/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	445	445	ng/kg	J	0.03	13.35
WA-FCB2	9/29/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	94.1	94.1	ng/kg		0.1	9.41
WA-FCB2	9/29/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	2160	2160	ng/kg	J	0.3	648
WA-FCB2	9/29/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	54	54	ng/kg		1	54
WA-FCB2	9/29/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	2570	2570	ng/kg		0.1	257
WA-FCB2	9/29/1998	1	2	3268-87-9	OCDD	Y	428	428	ng/kg	J	0.0003	0.1284
WA-FCB2	9/29/1998	1	2	39001-02-0	OCDF	Y	6500	6500	ng/kg	J	0.0003	1.95
											Sample Location Total	**1281.8**
WA-FCB2	9/29/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	8.44	8.44	ng/kg		0.01	0.0844
WA-FCB2	9/29/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	18.6	18.6	ng/kg		0.01	0.186
WA-FCB2	9/29/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	8.43	8.43	ng/kg	J*	0.01	0.0843
WA-FCB2	9/29/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.06	1.06	ng/kg		0.1	0.106
WA-FCB2	9/29/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	26.2	26.2	ng/kg		0.1	2.62
WA-FCB2	9/29/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2.85	2.85	ng/kg		0.1	0.285
WA-FCB2	9/29/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	5.2	5.2	ng/kg		0.1	0.52
WA-FCB2	9/29/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.27	2.27	ng/kg		0.1	0.227
WA-FCB2	9/29/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	N	1.18	0.59	ng/kg	U	0.1	0.059
WA-FCB2	9/29/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	1.79	1.79	ng/kg	J	1	1.79
WA-FCB2	9/29/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	11.8	11.8	ng/kg		0.03	0.354
WA-FCB2	9/29/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1.92	1.92	ng/kg		0.1	0.192
WA-FCB2	9/29/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	55.1	55.1	ng/kg		0.3	16.53
WA-FCB2	9/29/1998	2	3	1746-01-6	2,3,7,8-TCDD	Y	1.06	1.06	ng/kg		1	1.06
WA-FCB2	9/29/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	50.4	50.4	ng/kg		0.1	5.04
WA-FCB2	9/29/1998	2	3	3268-87-9	OCDD	Y	19.9	19.9	ng/kg	J	0.0003	0.00597
WA-FCB2	9/29/1998	2	3	39001-02-0	OCDF	Y	135	135	ng/kg	J	0.0003	0.0405
											Sample Location Total	**29.2**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB2	9/29/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	7.24	7.24	ng/kg		0.01	0.0724
WA-FCB2	9/29/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	18.7	18.7	ng/kg		0.01	0.187
WA-FCB2	9/29/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	11.5	11.5	ng/kg	J	0.01	0.115
WA-FCB2	9/29/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	34.8	34.8	ng/kg		0.1	3.48
WA-FCB2	9/29/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2.34	2.34	ng/kg		0.1	0.234
WA-FCB2	9/29/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	7.27	7.27	ng/kg		0.1	0.727
WA-FCB2	9/29/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.08	2.08	ng/kg		0.1	0.208
WA-FCB2	9/29/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.69	0.69	ng/kg		0.1	0.069
WA-FCB2	9/29/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	2.02	2.02	ng/kg	J	1	2.02
WA-FCB2	9/29/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	15.7	15.7	ng/kg		0.03	0.471
WA-FCB2	9/29/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3.15	3.15	ng/kg		0.1	0.315
WA-FCB2	9/29/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	65.3	65.3	ng/kg		0.3	19.59
WA-FCB2	9/29/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	1.03	1.03	ng/kg		1	1.03
WA-FCB2	9/29/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	80.7	80.7	ng/kg		0.1	8.07
WA-FCB2	9/29/1998	3	4	3268-87-9	OCDD	Y	28.7	28.7	ng/kg	J	0.0003	0.00861
WA-FCB2	9/29/1998	3	4	39001-02-0	OCDF	Y	132	132	ng/kg	J	0.0003	0.0396
											Sample Location Total	**36.6**
WA-FCB2	9/29/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	5.34	5.34	ng/kg		0.01	0.0534
WA-FCB2	9/29/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2.85	2.85	ng/kg	J	0.01	0.0285
WA-FCB2	9/29/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.12	1.12	ng/kg		0.1	0.112
WA-FCB2	9/29/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	5.26	5.26	ng/kg		0.1	0.526
WA-FCB2	9/29/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	2.45	2.45	ng/kg		0.1	0.245
WA-FCB2	9/29/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.15	2.15	ng/kg		0.1	0.215
WA-FCB2	9/29/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.78	0.78	ng/kg		0.1	0.078
WA-FCB2	9/29/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	0.74	0.74	ng/kg	J*	1	0.74
WA-FCB2	9/29/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	4.27	4.27	ng/kg		0.03	0.1281
WA-FCB2	9/29/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1.51	1.51	ng/kg		0.1	0.151
WA-FCB2	9/29/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	16.6	16.6	ng/kg		0.3	4.98
WA-FCB2	9/29/1998	4	5	1746-01-6	2,3,7,8-TCDD	N	0.42	0.21	ng/kg	U	1	0.21
WA-FCB2	9/29/1998	4	5	3268-87-9	OCDD	Y	13.7	13.7	ng/kg	J*	0.0003	0.00411
WA-FCB2	9/29/1998	4	5	39001-02-0	OCDF	Y	20.1	20.1	ng/kg	J	0.0003	0.00603
											Sample Location Total	**7.5**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB3	11/19/1997	0.6	0.8	35822-46-9	1,2,3,4,6,7,8-HPCDD	N	50	25	ng/kg	U	0.01	0.25
WA-FCB3	11/19/1997	0.6	0.8	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	150	150	ng/kg	J*	0.01	1.5
WA-FCB3	11/19/1997	0.6	0.8	55673-89-7	1,2,3,4,7,8,9-HPCDF	N	40	20	ng/kg	U	0.01	0.2
WA-FCB3	11/19/1997	0.6	0.8	39227-28-6	1,2,3,4,7,8-HXCDD	N	40	20	ng/kg	U	0.1	2
WA-FCB3	11/19/1997	0.6	0.8	70648-26-9	1,2,3,4,7,8-HXCDF	Y	100	100	ng/kg	J*	0.1	10
WA-FCB3	11/19/1997	0.6	0.8	57653-85-7	1,2,3,6,7,8-HXCDD	N	30	15	ng/kg	U	0.1	1.5
WA-FCB3	11/19/1997	0.6	0.8	57117-44-9	1,2,3,6,7,8-HXCDF	N	20	10	ng/kg	U	0.1	1
WA-FCB3	11/19/1997	0.6	0.8	19408-74-3	1,2,3,7,8,9-HXCDD	N	30	15	ng/kg	U	0.1	1.5
WA-FCB3	11/19/1997	0.6	0.8	72918-21-9	1,2,3,7,8,9-HXCDF	N	30	15	ng/kg	U	0.1	1.5
WA-FCB3	11/19/1997	0.6	0.8	40321-76-4	1,2,3,7,8-PECDD	N	50	25	ng/kg	U	1	25
WA-FCB3	11/19/1997	0.6	0.8	57117-41-6	1,2,3,7,8-PECDF	N	30	15	ng/kg	U	0.03	0.45
WA-FCB3	11/19/1997	0.6	0.8	60851-34-5	2,3,4,6,7,8-HXCDF	Y	230	230	ng/kg	XJ*	0.1	23
WA-FCB3	11/19/1997	0.6	0.8	57117-31-4	2,3,4,7,8-PECDF	Y	220	220	ng/kg	J*	0.3	66
WA-FCB3	11/19/1997	0.6	0.8	1746-01-6	2,3,7,8-TCDD	N	20	10	ng/kg	U	1	10
WA-FCB3	11/19/1997	0.6	0.8	51207-31-9	2,3,7,8-TCDF	Y	310	310	ng/kg	J*	0.1	31
WA-FCB3	11/19/1997	0.6	0.8	3268-87-9	OCDD	N	50	25	ng/kg	U	0.0003	0.0075
WA-FCB3	11/19/1997	0.6	0.8	39001-02-0	OCDF	Y	120	120	ng/kg	J	0.0003	0.036
											Sample Location Total	**174.9**
WA-FCB4	11/19/1997	0.7	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	N	20	10	ng/kg	U	0.01	0.1
WA-FCB4	11/19/1997	0.7	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	100	100	ng/kg	J*	0.01	1
WA-FCB4	11/19/1997	0.7	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	N	20	10	ng/kg	U	0.01	0.1
WA-FCB4	11/19/1997	0.7	1	39227-28-6	1,2,3,4,7,8-HXCDD	N	20	10	ng/kg	U	0.1	1
WA-FCB4	11/19/1997	0.7	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	8	8	ng/kg		0.1	0.8
WA-FCB4	11/19/1997	0.7	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	80	80	ng/kg	J	0.1	8
WA-FCB4	11/19/1997	0.7	1	57653-85-7	1,2,3,6,7,8-HXCDD	N	20	10	ng/kg	U	0.1	1
WA-FCB4	11/19/1997	0.7	1	57117-44-9	1,2,3,6,7,8-HXCDF	N	10	5	ng/kg	U	0.1	0.5
WA-FCB4	11/19/1997	0.7	1	19408-74-3	1,2,3,7,8,9-HXCDD	N	20	10	ng/kg	U	0.1	1
WA-FCB4	11/19/1997	0.7	1	72918-21-9	1,2,3,7,8,9-HXCDF	N	10	5	ng/kg	U	0.1	0.5
WA-FCB4	11/19/1997	0.7	1	40321-76-4	1,2,3,7,8-PECDD	N	30	15	ng/kg	U	1	15
WA-FCB4	11/19/1997	0.7	1	57117-41-6	1,2,3,7,8-PECDF	Y	60	60	ng/kg	J*	0.03	1.8
WA-FCB4	11/19/1997	0.7	1	60851-34-5	2,3,4,6,7,8-HXCDF	N	10	5	ng/kg	U	0.1	0.5
WA-FCB4	11/19/1997	0.7	1	57117-31-4	2,3,4,7,8-PECDF	Y	80	80	ng/kg		0.3	24
WA-FCB4	11/19/1997	0.7	1	57117-31-4	2,3,4,7,8-PECDF	Y	160	160	ng/kg	J	0.3	48
WA-FCB4	11/19/1997	0.7	1	1746-01-6	2,3,7,8-TCDD	N	10	5	ng/kg	U	1	5
WA-FCB4	11/19/1997	0.7	1	51207-31-9	2,3,7,8-TCDF	Y	360	360	ng/kg	J	0.1	36
WA-FCB4	11/19/1997	0.7	1	3268-87-9	OCDD	Y	70	70	ng/kg	J*	0.0003	0.021
WA-FCB4	11/19/1997	0.7	1	39001-02-0	OCDF	Y	180	180	ng/kg	J*	0.0003	0.054
											Sample Location Total	**144.4**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB5	11/19/1997	0.7	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2600	2600	ng/kg	J	0.01	26
WA-FCB5	11/19/1997	0.7	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	50	50	ng/kg	J	0.01	0.5
WA-FCB5	11/19/1997	0.7	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	30400	30400	ng/kg	J	0.01	304
WA-FCB5	11/19/1997	0.7	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1000	1000	ng/kg	J	0.1	100
WA-FCB5	11/19/1997	0.7	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	27100	27100	ng/kg	J	0.1	2710
WA-FCB5	11/19/1997	0.7	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	8700	8700	ng/kg	J	0.1	870
WA-FCB5	11/19/1997	0.7	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3300	3300	ng/kg	J	0.1	330
WA-FCB5	11/19/1997	0.7	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2100	2100	ng/kg	J*	0.1	210
WA-FCB5	11/19/1997	0.7	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	15900	15900	ng/kg		0.1	1590
WA-FCB5	11/19/1997	0.7	1	57117-41-6	1,2,3,7,8-PECDF	Y	5500	5500	ng/kg	J	0.03	165
WA-FCB5	11/19/1997	0.7	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	7400	7400	ng/kg	J*	0.1	740
WA-FCB5	11/19/1997	0.7	1	57117-31-4	2,3,4,7,8-PECDF	Y	19900	19900	ng/kg	J	0.3	5970
WA-FCB5	11/19/1997	0.7	1	1746-01-6	2,3,7,8-TCDD	Y	510	510	ng/kg	J*	1	510
WA-FCB5	11/19/1997	0.7	1	51207-31-9	2,3,7,8-TCDF	Y	129000	129000	ng/kg	J	0.1	12900
WA-FCB5	11/19/1997	0.7	1	3268-87-9	OCDD	Y	3700	3700	ng/kg	J	0.0003	1.11
WA-FCB5	11/19/1997	0.7	1	39001-02-0	OCDF	Y	58100	58100	ng/kg	J	0.0003	17.43
											Sample Location Total	**26444.0**
WA-FCB5	9/29/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2850	2850	ng/kg	J	0.01	28.5
WA-FCB5	9/29/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	22400	22400	ng/kg	J	0.01	224
WA-FCB5	9/29/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	20000	20000	ng/kg	J	0.01	200
WA-FCB5	9/29/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	560	560	ng/kg	J	0.1	56
WA-FCB5	9/29/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	61900	61900	ng/kg	J	0.1	6190
WA-FCB5	9/29/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1950	1950	ng/kg	J	0.1	195
WA-FCB5	9/29/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	11600	11600	ng/kg	J	0.1	1160
WA-FCB5	9/29/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	1840	1840	ng/kg	J	0.1	184
WA-FCB5	9/29/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2010	2010	ng/kg	J	0.1	201
WA-FCB5	9/29/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	2680	2680	ng/kg	J	1	2680
WA-FCB5	9/29/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	69400	69400	ng/kg	J	0.03	2082
WA-FCB5	9/29/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3810	3810	ng/kg	J	0.1	381
WA-FCB5	9/29/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	506000	506000	ng/kg	J	0.3	151800
WA-FCB5	9/29/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	527	527	ng/kg	J	1	527
WA-FCB5	9/29/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	570000	570000	ng/kg	J	0.1	57000
WA-FCB5	9/29/1998	1	2	3268-87-9	OCDD	Y	5370	5370	ng/kg	J	0.0003	1.611
WA-FCB5	9/29/1998	1	2	39001-02-0	OCDF	Y	189000	189000	ng/kg	J	0.0003	56.7
											Sample Location Total	**222966.8**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB5	9/29/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	1150	1150	ng/kg	J	0.01	11.5
WA-FCB5	9/29/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	7300	7300	ng/kg	J	0.01	73
WA-FCB5	9/29/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	6310	6310	ng/kg	J	0.01	63.1
WA-FCB5	9/29/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	221	221	ng/kg	J	0.1	22.1
WA-FCB5	9/29/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	22100	22100	ng/kg	J	0.1	2210
WA-FCB5	9/29/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	597	597	ng/kg	J	0.1	59.7
WA-FCB5	9/29/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	4060	4060	ng/kg	J	0.1	406
WA-FCB5	9/29/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	521	521	ng/kg	J	0.1	52.1
WA-FCB5	9/29/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	Y	719	719	ng/kg	J	0.1	71.9
WA-FCB5	9/29/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	1000	1000	ng/kg	J	1	1000
WA-FCB5	9/29/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	25900	25900	ng/kg	J	0.03	777
WA-FCB5	9/29/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1500	1500	ng/kg	J	0.1	150
WA-FCB5	9/29/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	187000	187000	ng/kg	J	0.3	56100
WA-FCB5	9/29/1998	2	3	1746-01-6	2,3,7,8-TCDD	Y	313	313	ng/kg	J	1	313
WA-FCB5	9/29/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	195000	195000	ng/kg	J	0.1	19500
WA-FCB5	9/29/1998	2	3	3268-87-9	OCDD	Y	4270	4270	ng/kg	J	0.0003	1.281
WA-FCB5	9/29/1998	2	3	39001-02-0	OCDF	Y	55800	55800	ng/kg	J	0.0003	16.74
											Sample Location Total	**80827.4**
WA-FCB5	9/29/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	946	946	ng/kg	J	0.01	9.46
WA-FCB5	9/29/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	6050	6050	ng/kg	J	0.01	60.5
WA-FCB5	9/29/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	5020	5020	ng/kg	J	0.01	50.2
WA-FCB5	9/29/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	153	153	ng/kg	J	0.1	15.3
WA-FCB5	9/29/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	14500	14500	ng/kg	J	0.1	1450
WA-FCB5	9/29/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	387	387	ng/kg	J	0.1	38.7
WA-FCB5	9/29/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	2760	2760	ng/kg	J	0.1	276
WA-FCB5	9/29/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	322	322	ng/kg	J	0.1	32.2
WA-FCB5	9/29/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	504	504	ng/kg	J	0.1	50.4
WA-FCB5	9/29/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	605	605	ng/kg	J	1	605
WA-FCB5	9/29/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	17800	17800	ng/kg	J	0.03	534
WA-FCB5	9/29/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1060	1060	ng/kg	J	0.1	106
WA-FCB5	9/29/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	132000	132000	ng/kg	J	0.3	39600
WA-FCB5	9/29/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	130	130	ng/kg	J	1	130
WA-FCB5	9/29/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	151000	151000	ng/kg	J	0.1	15100
WA-FCB5	9/29/1998	3	4	3268-87-9	OCDD	Y	4800	4800	ng/kg	J	0.0003	1.44
WA-FCB5	9/29/1998	3	4	39001-02-0	OCDF	Y	52100	52100	ng/kg	J	0.0003	15.63
											Sample Location Total	**58074.8**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB5	9/29/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	4170	4170	ng/kg	J	0.01	41.7
WA-FCB5	9/29/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	30400	30400	ng/kg	J	0.01	304
WA-FCB5	9/29/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	29300	29300	ng/kg	J	0.01	293
WA-FCB5	9/29/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	878	878	ng/kg	J	0.1	87.8
WA-FCB5	9/29/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	77000	77000	ng/kg	J	0.1	7700
WA-FCB5	9/29/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2550	2550	ng/kg	J	0.1	255
WA-FCB5	9/29/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	13800	13800	ng/kg	J	0.1	1380
WA-FCB5	9/29/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2160	2160	ng/kg	J	0.1	216
WA-FCB5	9/29/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2370	2370	ng/kg	J	0.1	237
WA-FCB5	9/29/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	3450	3450	ng/kg	J	1	3450
WA-FCB5	9/29/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	78400	78400	ng/kg	J	0.03	2352
WA-FCB5	9/29/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	4740	4740	ng/kg	J	0.1	474
WA-FCB5	9/29/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	572000	572000	ng/kg	J	0.3	171600
WA-FCB5	9/29/1998	4	5	1746-01-6	2,3,7,8-TCDD	Y	833	833	ng/kg	J	1	833
WA-FCB5	9/29/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	630000	630000	ng/kg	J	0.1	63000
WA-FCB5	9/29/1998	4	5	3268-87-9	OCDD	Y	7480	7480	ng/kg	J	0.0003	2.244
WA-FCB5	9/29/1998	4	5	39001-02-0	OCDF	Y	267000	267000	ng/kg	J	0.0003	80.1
											Sample Location Total	**252305.8**
WA-FCB-5A	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	703	703	ng/kg	J	0.01	7.03
WA-FCB-5A	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2500	2500	ng/kg	J	0.01	25
WA-FCB-5A	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2500	2500	ng/kg	J	0.01	25
WA-FCB-5A	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	125	125	ng/kg	J	0.1	12.5
WA-FCB-5A	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	5930	5930	ng/kg	J	0.1	593
WA-FCB-5A	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	343	343	ng/kg	J	0.1	34.3
WA-FCB-5A	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	874	874	ng/kg	J	0.1	87.4
WA-FCB-5A	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	238	238	ng/kg	J	0.1	23.8
WA-FCB-5A	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	170	170	ng/kg	J	0.1	17
WA-FCB-5A	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	285	285	ng/kg	J	1	285
WA-FCB-5A	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	1140	1140	ng/kg	J	0.03	34.2
WA-FCB-5A	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	275	275	ng/kg	J	0.1	27.5
WA-FCB-5A	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	5160	5160	ng/kg	J	0.3	1548
WA-FCB-5A	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	78.7	78.7	ng/kg	J	1	78.7
WA-FCB-5A	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	7330	7330	ng/kg		0.1	733
WA-FCB-5A	9/28/1998	0.5	1	3268-87-9	OCDD	Y	1090	1090	ng/kg	J	0.0003	0.327
WA-FCB-5A	9/28/1998	0.5	1	39001-02-0	OCDF	Y	18300	18300	ng/kg	J	0.0003	5.49
											Sample Location Total	**3537.2**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5A	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	487	487	ng/kg	J	0.01	4.87
WA-FCB-5A	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2540	2540	ng/kg	J	0.01	25.4
WA-FCB-5A	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1680	1680	ng/kg	J	0.01	16.8
WA-FCB-5A	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	75.4	75.4	ng/kg	J	0.1	7.54
WA-FCB-5A	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3840	3840	ng/kg	J	0.1	384
WA-FCB-5A	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	223	223	ng/kg	J	0.1	22.3
WA-FCB-5A	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	752	752	ng/kg	J	0.1	75.2
WA-FCB-5A	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	132	132	ng/kg	J	0.1	13.2
WA-FCB-5A	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	103	103	ng/kg	J	0.1	10.3
WA-FCB-5A	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	157	157	ng/kg	J	1	157
WA-FCB-5A	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	1290	1290	ng/kg	J	0.03	38.7
WA-FCB-5A	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	260	260	ng/kg	J	0.1	26
WA-FCB-5A	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	7290	7290	ng/kg	J	0.3	2187
WA-FCB-5A	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	48.9	48.9	ng/kg	J	1	48.9
WA-FCB-5A	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	7270	7270	ng/kg		0.1	727
WA-FCB-5A	9/28/1998	1	2	3268-87-9	OCDD	Y	833	833	ng/kg	J	0.0003	0.2499
WA-FCB-5A	9/28/1998	1	2	39001-02-0	OCDF	Y	18200	18200	ng/kg	J	0.0003	5.46
											Sample Location Total	**3749.9**
WA-FCB-5A	9/28/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	511	511	ng/kg	J	0.01	5.11
WA-FCB-5A	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	3550	3550	ng/kg	J	0.01	35.5
WA-FCB-5A	9/28/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2660	2660	ng/kg	J	0.01	26.6
WA-FCB-5A	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	78	78	ng/kg	J	0.1	7.8
WA-FCB-5A	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	5800	5800	ng/kg	J	0.1	580
WA-FCB-5A	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	178	178	ng/kg	J	0.1	17.8
WA-FCB-5A	9/28/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1010	1010	ng/kg	J	0.1	101
WA-FCB-5A	9/28/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	215	215	ng/kg	J	0.1	21.5
WA-FCB-5A	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	Y	163	163	ng/kg	J	0.1	16.3
WA-FCB-5A	9/28/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	214	214	ng/kg	J	1	214
WA-FCB-5A	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	2000	2000	ng/kg	J	0.03	60
WA-FCB-5A	9/28/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	358	358	ng/kg	J	0.1	35.8
WA-FCB-5A	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	11300	11300	ng/kg	J	0.3	3390
WA-FCB-5A	9/28/1998	2	3	1746-01-6	2,3,7,8-TCDD	Y	79	79	ng/kg	J	1	79
WA-FCB-5A	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	12500	12500	ng/kg		0.1	1250
WA-FCB-5A	9/28/1998	2	3	3268-87-9	OCDD	Y	874	874	ng/kg	J	0.0003	0.2622
WA-FCB-5A	9/28/1998	2	3	39001-02-0	OCDF	Y	27300	27300	ng/kg	J	0.0003	8.19
											Sample Location Total	**5848.9**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5A	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	617	617	ng/kg	J	0.01	6.17
WA-FCB-5A	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	3300	3300	ng/kg	J	0.01	33
WA-FCB-5A	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2880	2880	ng/kg	J	0.01	28.8
WA-FCB-5A	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	106	106	ng/kg	J	0.1	10.6
WA-FCB-5A	9/28/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	6170	6170	ng/kg	J	0.1	617
WA-FCB-5A	9/28/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	299	299	ng/kg	J	0.1	29.9
WA-FCB-5A	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1050	1050	ng/kg	J	0.1	105
WA-FCB-5A	9/28/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	187	187	ng/kg	J	0.1	18.7
WA-FCB-5A	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	205	205	ng/kg	J	0.1	20.5
WA-FCB-5A	9/28/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	248	248	ng/kg	J	1	248
WA-FCB-5A	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	2000	2000	ng/kg	J	0.03	60
WA-FCB-5A	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	364	364	ng/kg	J	0.1	36.4
WA-FCB-5A	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	11600	11600	ng/kg	J	0.3	3480
WA-FCB-5A	9/28/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	90.5	90.5	ng/kg	J	1	90.5
WA-FCB-5A	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	12200	12200	ng/kg		0.1	1220
WA-FCB-5A	9/28/1998	3	4	3268-87-9	OCDD	Y	1020	1020	ng/kg	J	0.0003	0.306
WA-FCB-5A	9/28/1998	3	4	39001-02-0	OCDF	Y	23800	23800	ng/kg	J	0.0003	7.14
											Sample Location Total	**6012.0**
WA-FCB-5A	9/28/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	709	709	ng/kg	J	0.01	7.09
WA-FCB-5A	9/28/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	5270	5270	ng/kg	J	0.01	52.7
WA-FCB-5A	9/28/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	4830	4830	ng/kg	J	0.01	48.3
WA-FCB-5A	9/28/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	158	158	ng/kg	J	0.1	15.8
WA-FCB-5A	9/28/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	10100	10100	ng/kg	J	0.1	1010
WA-FCB-5A	9/28/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	429	429	ng/kg	J	0.1	42.9
WA-FCB-5A	9/28/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1720	1720	ng/kg	J	0.1	172
WA-FCB-5A	9/28/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	306	306	ng/kg	J	0.1	30.6
WA-FCB-5A	9/28/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	354	354	ng/kg	J	0.1	35.4
WA-FCB-5A	9/28/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	451	451	ng/kg	J	1	451
WA-FCB-5A	9/28/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	3300	3300	ng/kg	J	0.03	99
WA-FCB-5A	9/28/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	563	563	ng/kg	J	0.1	56.3
WA-FCB-5A	9/28/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	23200	23200	ng/kg	J	0.3	6960
WA-FCB-5A	9/28/1998	4	5	1746-01-6	2,3,7,8-TCDD	Y	336	336	ng/kg	J	1	336
WA-FCB-5A	9/28/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	25600	25600	ng/kg		0.1	2560
WA-FCB-5A	9/28/1998	4	5	3268-87-9	OCDD	Y	996	996	ng/kg	J	0.0003	0.2988
WA-FCB-5A	9/28/1998	4	5	39001-02-0	OCDF	Y	33970	33970	ng/kg	J	0.0003	10.191
											Sample Location Total	**11887.6**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5B	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	9.24	9.24	ng/kg		0.01	0.0924
WA-FCB-5B	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	11.8	11.8	ng/kg		0.01	0.118
WA-FCB-5B	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	7.12	7.12	ng/kg		0.01	0.0712
WA-FCB-5B	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	18.7	18.7	ng/kg		0.1	1.87
WA-FCB-5B	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	4.25	4.25	ng/kg		0.1	0.425
WA-FCB-5B	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.96	0.96	ng/kg		0.1	0.096
WA-FCB-5B	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	1.28	1.28	ng/kg		1	1.28
WA-FCB-5B	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	7.68	7.68	ng/kg		0.03	0.2304
WA-FCB-5B	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2	2	ng/kg		0.1	0.2
WA-FCB-5B	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	34.8	34.8	ng/kg		0.3	10.44
WA-FCB-5B	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	2.29	2.29	ng/kg		1	2.29
WA-FCB-5B	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	32.3	32.3	ng/kg		0.1	3.23
WA-FCB-5B	9/28/1998	0.5	1	3268-87-9	OCDD	Y	49.3	49.3	ng/kg		0.0003	0.01479
WA-FCB-5B	9/28/1998	0.5	1	39001-02-0	OCDF	Y	65.1	65.1	ng/kg		0.0003	0.01953
											Sample Location	**20.4**
WA-FCB-5B	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	51.7	51.7	ng/kg		0.01	0.517
WA-FCB-5B	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	524	524	ng/kg		0.01	5.24
WA-FCB-5B	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	386	386	ng/kg		0.01	3.86
WA-FCB-5B	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	3.83	3.83	ng/kg		0.1	0.383
WA-FCB-5B	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	840	840	ng/kg		0.1	84
WA-FCB-5B	9/28/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	13.8	13.8	ng/kg		0.1	1.38
WA-FCB-5B	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	149	149	ng/kg		0.1	14.9
WA-FCB-5B	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	17.4	17.4	ng/kg		0.1	1.74
WA-FCB-5B	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	21.2	21.2	ng/kg		0.1	2.12
WA-FCB-5B	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	160	160	ng/kg		0.03	4.8
WA-FCB-5B	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	40.3	40.3	ng/kg		0.1	4.03
WA-FCB-5B	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	663	663	ng/kg		0.3	198.9
WA-FCB-5B	9/28/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	6.14	6.14	ng/kg		1	6.14
WA-FCB-5B	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	705	705	ng/kg		0.1	70.5
WA-FCB-5B	9/28/1998	1	2	3268-87-9	OCDD	Y	126	126	ng/kg		0.0003	0.0378
WA-FCB-5B	9/28/1998	1	2	39001-02-0	OCDF	Y	4670	4670	ng/kg		0.0003	1.401
											Sample Location	**399.9**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5B	9/28/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	9.22	9.22	ng/kg		0.01	0.0922
WA-FCB-5B	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	16	16	ng/kg		0.01	0.16
WA-FCB-5B	9/28/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	9.35	9.35	ng/kg		0.01	0.0935
WA-FCB-5B	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.41	0.41	ng/kg		0.1	0.041
WA-FCB-5B	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	23.3	23.3	ng/kg		0.1	2.33
WA-FCB-5B	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1.79	1.79	ng/kg		0.1	0.179
WA-FCB-5B	9/28/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	5.4	5.4	ng/kg		0.1	0.54
WA-FCB-5B	9/28/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.61	0.61	ng/kg		0.1	0.061
WA-FCB-5B	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.82	0.41	ng/kg	U	0.1	0.041
WA-FCB-5B	9/28/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	0.76	0.76	ng/kg		1	0.76
WA-FCB-5B	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	6.99	6.99	ng/kg		0.03	0.2097
WA-FCB-5B	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	12.9	12.9	ng/kg		0.3	3.87
WA-FCB-5B	9/28/1998	2	3	1746-01-6	2,3,7,8-TCDD	N	0.51	0.255	ng/kg	U	1	0.255
WA-FCB-5B	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	19	19	ng/kg		0.1	1.9
WA-FCB-5B	9/28/1998	2	3	3268-87-9	OCDD	Y	75.8	75.8	ng/kg		0.0003	0.02274
WA-FCB-5B	9/28/1998	2	3	39001-02-0	OCDF	Y	105	105	ng/kg		0.0003	0.0315
											Sample Location Total	**10.6**
WA-FCB-5B	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	10.3	10.3	ng/kg		0.01	0.103
WA-FCB-5B	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	28	28	ng/kg		0.01	0.28
WA-FCB-5B	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	22.5	22.5	ng/kg		0.01	0.225
WA-FCB-5B	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.71	1.71	ng/kg		0.1	0.171
WA-FCB-5B	9/28/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	52.3	52.3	ng/kg		0.1	5.23
WA-FCB-5B	9/28/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	4.62	4.62	ng/kg		0.1	0.462
WA-FCB-5B	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	8.98	8.98	ng/kg		0.1	0.898
WA-FCB-5B	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.88	0.88	ng/kg		0.1	0.088
WA-FCB-5B	9/28/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	4.21	4.21	ng/kg		1	4.21
WA-FCB-5B	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	12.4	12.4	ng/kg		0.03	0.372
WA-FCB-5B	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2.9	2.9	ng/kg		0.1	0.29
WA-FCB-5B	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	47.1	47.1	ng/kg		0.3	14.13
WA-FCB-5B	9/28/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	5	5	ng/kg		1	5
WA-FCB-5B	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	38	38	ng/kg		0.1	3.8
WA-FCB-5B	9/28/1998	3	4	3268-87-9	OCDD	Y	32.1	32.1	ng/kg		0.0003	0.00963
WA-FCB-5B	9/28/1998	3	4	39001-02-0	OCDF	Y	287	287	ng/kg		0.0003	0.0861
											Sample Location Total	**35.4**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5B	9/28/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	12	12	ng/kg		0.01	0.12
WA-FCB-5B	9/28/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	46.2	46.2	ng/kg		0.01	0.462
WA-FCB-5B	9/28/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	40.6	40.6	ng/kg		0.01	0.406
WA-FCB-5B	9/28/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	75.4	75.4	ng/kg		0.1	7.54
WA-FCB-5B	9/28/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	7.33	7.33	ng/kg		0.1	0.733
WA-FCB-5B	9/28/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	14	14	ng/kg		0.1	1.4
WA-FCB-5B	9/28/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	5.81	5.81	ng/kg		0.1	0.581
WA-FCB-5B	9/28/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.38	1.38	ng/kg		0.1	0.138
WA-FCB-5B	9/28/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	5.51	5.51	ng/kg		1	5.51
WA-FCB-5B	9/28/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	16.7	16.7	ng/kg		0.03	0.501
WA-FCB-5B	9/28/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3.93	3.93	ng/kg		0.1	0.393
WA-FCB-5B	9/28/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	53.6	53.6	ng/kg		0.3	16.08
WA-FCB-5B	9/28/1998	4	5	1746-01-6	2,3,7,8-TCDD	Y	1.84	1.84	ng/kg		1	1.84
WA-FCB-5B	9/28/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	51.9	51.9	ng/kg		0.1	5.19
WA-FCB-5B	9/28/1998	4	5	3268-87-9	OCDD	Y	36.9	36.9	ng/kg		0.0003	0.01107
WA-FCB-5B	9/28/1998	4	5	39001-02-0	OCDF	Y	505	505	ng/kg		0.0003	0.1515
											Sample Location Total	**41.1**
WA-FCB-5C	9/29/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	201	201	ng/kg		0.01	2.01
WA-FCB-5C	9/29/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2140	2140	ng/kg		0.01	21.4
WA-FCB-5C	9/29/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1900	1900	ng/kg		0.01	19
WA-FCB-5C	9/29/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	55.4	55.4	ng/kg		0.1	5.54
WA-FCB-5C	9/29/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	6000	6000	ng/kg		0.1	600
WA-FCB-5C	9/29/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	112	112	ng/kg		0.1	11.2
WA-FCB-5C	9/29/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1040	1040	ng/kg		0.1	104
WA-FCB-5C	9/29/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	93.8	93.8	ng/kg		0.1	9.38
WA-FCB-5C	9/29/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	210	210	ng/kg		0.1	21
WA-FCB-5C	9/29/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	262	262	ng/kg		1	262
WA-FCB-5C	9/29/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	6080	6080	ng/kg		0.03	182.4
WA-FCB-5C	9/29/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	345	345	ng/kg		0.1	34.5
WA-FCB-5C	9/29/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	47300	47300	ng/kg		0.3	14190
WA-FCB-5C	9/29/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	116	116	ng/kg		1	116
WA-FCB-5C	9/29/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	51200	51200	ng/kg		0.1	5120
WA-FCB-5C	9/29/1998	0.5	1	3268-87-9	OCDD	Y	671	671	ng/kg		0.0003	0.2013
WA-FCB-5C	9/29/1998	0.5	1	39001-02-0	OCDF	Y	23855	23855	ng/kg	J	0.0003	7.1565
											Sample Location Total	**20705.8**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5C	9/29/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	18	18	ng/kg		0.01	0.18
WA-FCB-5C	9/29/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	82.9	82.9	ng/kg		0.01	0.829
WA-FCB-5C	9/29/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	54.1	54.1	ng/kg	J	0.01	0.541
WA-FCB-5C	9/29/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.09	4.09	ng/kg		0.1	0.409
WA-FCB-5C	9/29/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	157	157	ng/kg		0.1	15.7
WA-FCB-5C	9/29/1998	1	2	57653-85-7	1,2,3,6,7,8-HXCDD	Y	8.51	8.51	ng/kg		0.1	0.851
WA-FCB-5C	9/29/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	30.8	30.8	ng/kg		0.1	3.08
WA-FCB-5C	9/29/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	8.28	8.28	ng/kg		0.1	0.828
WA-FCB-5C	9/29/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	3.26	3.26	ng/kg		0.1	0.326
WA-FCB-5C	9/29/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	15.2	15.2	ng/kg	J	1	15.2
WA-FCB-5C	9/29/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	97	97	ng/kg		0.03	2.91
WA-FCB-5C	9/29/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	9.37	9.37	ng/kg		0.1	0.937
WA-FCB-5C	9/29/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	675	675	ng/kg		0.3	202.5
WA-FCB-5C	9/29/1998	1	2	1746-01-6	2,3,7,8-TCDD	Y	26.6	26.6	ng/kg		1	26.6
WA-FCB-5C	9/29/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	767	767	ng/kg		0.1	76.7
WA-FCB-5C	9/29/1998	1	2	3268-87-9	OCDD	Y	44.4	44.4	ng/kg	J	0.0003	0.01332
WA-FCB-5C	9/29/1998	1	2	39001-02-0	OCDF	Y	661	661	ng/kg	J	0.0003	0.1983
											Sample Location Total	**347.8**
WA-FCB-5C	9/29/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	1780	1780	ng/kg	J	0.01	17.8
WA-FCB-5C	9/29/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	11100	11100	ng/kg	J	0.01	111
WA-FCB-5C	9/29/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	10200	10200	ng/kg	J	0.01	102
WA-FCB-5C	9/29/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	239	239	ng/kg	J	0.1	23.9
WA-FCB-5C	9/29/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	23400	23400	ng/kg	J	0.1	2340
WA-FCB-5C	9/29/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1030	1030	ng/kg	J	0.1	103
WA-FCB-5C	9/29/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	4390	4390	ng/kg	J	0.1	439
WA-FCB-5C	9/29/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	841	841	ng/kg	J	0.1	84.1
WA-FCB-5C	9/29/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	Y	691	691	ng/kg	J	0.1	69.1
WA-FCB-5C	9/29/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	1410	1410	ng/kg	J	1	1410
WA-FCB-5C	9/29/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	22400	22400	ng/kg	J	0.03	672
WA-FCB-5C	9/29/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	1580	1580	ng/kg	J	0.1	158
WA-FCB-5C	9/29/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	184000	184000	ng/kg	J	0.3	55200
WA-FCB-5C	9/29/1998	2	3	1746-01-6	2,3,7,8-TCDD	Y	651	651	ng/kg	J	1	651
WA-FCB-5C	9/29/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	221000	221000	ng/kg	J	0.1	22100
WA-FCB-5C	9/29/1998	2	3	3268-87-9	OCDD	Y	3120	3120	ng/kg	J	0.0003	0.936
WA-FCB-5C	9/29/1998	2	3	39001-02-0	OCDF	Y	92000	92000	ng/kg	J	0.0003	27.6
											Sample Location Total	**83509.4**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-5C	9/29/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	470	470	ng/kg		0.01	4.7
WA-FCB-5C	9/29/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	1860	1860	ng/kg		0.01	18.6
WA-FCB-5C	9/29/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1390	1390	ng/kg	J	0.01	13.9
WA-FCB-5C	9/29/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	42.9	42.9	ng/kg		0.1	4.29
WA-FCB-5C	9/29/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3820	3820	ng/kg		0.1	382
WA-FCB-5C	9/29/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	197	197	ng/kg		0.1	19.7
WA-FCB-5C	9/29/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	584	584	ng/kg		0.1	58.4
WA-FCB-5C	9/29/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	154	154	ng/kg		0.1	15.4
WA-FCB-5C	9/29/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	64.5	64.5	ng/kg		0.1	6.45
WA-FCB-5C	9/29/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	176	176	ng/kg	J	1	176
WA-FCB-5C	9/29/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	1400	1400	ng/kg		0.03	42
WA-FCB-5C	9/29/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	205	205	ng/kg		0.1	20.5
WA-FCB-5C	9/29/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	9100	9100	ng/kg		0.3	2730
WA-FCB-5C	9/29/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	61.8	61.8	ng/kg		1	61.8
WA-FCB-5C	9/29/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	11100	11100	ng/kg		0.1	1110
WA-FCB-5C	9/29/1998	3	4	3268-87-9	OCDD	Y	1640	1640	ng/kg	J	0.0003	0.492
WA-FCB-5C	9/29/1998	3	4	39001-02-0	OCDF	Y	15900	15900	ng/kg	J	0.0003	4.77
											Sample Location Total	**4669.0**
WA-FCB-5C	9/29/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	7.93	7.93	ng/kg		0.01	0.0793
WA-FCB-5C	9/29/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	18.9	18.9	ng/kg		0.01	0.189
WA-FCB-5C	9/29/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	8.86	8.86	ng/kg	J	0.01	0.0886
WA-FCB-5C	9/29/1998	4	5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	2.33	2.33	ng/kg		0.1	0.233
WA-FCB-5C	9/29/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	35.5	35.5	ng/kg		0.1	3.55
WA-FCB-5C	9/29/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	5.66	5.66	ng/kg		0.1	0.566
WA-FCB-5C	9/29/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	8.24	8.24	ng/kg		0.1	0.824
WA-FCB-5C	9/29/1998	4	5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	5.19	5.19	ng/kg		0.1	0.519
WA-FCB-5C	9/29/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.92	0.92	ng/kg		0.1	0.092
WA-FCB-5C	9/29/1998	4	5	40321-76-4	1,2,3,7,8-PECDD	Y	23	23	ng/kg	J	1	23
WA-FCB-5C	9/29/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	31.7	31.7	ng/kg		0.03	0.951
WA-FCB-5C	9/29/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3.45	3.45	ng/kg		0.1	0.345
WA-FCB-5C	9/29/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	237	237	ng/kg		0.3	71.1
WA-FCB-5C	9/29/1998	4	5	1746-01-6	2,3,7,8-TCDD	Y	56.3	56.3	ng/kg		1	56.3
WA-FCB-5C	9/29/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	288	288	ng/kg		0.1	28.8
WA-FCB-5C	9/29/1998	4	5	3268-87-9	OCDD	Y	44.5	44.5	ng/kg	J	0.0003	0.01335
WA-FCB-5C	9/29/1998	4	5	39001-02-0	OCDF	Y	133	133	ng/kg	J	0.0003	0.0399
											Sample Location Total	**186.7**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-FCB-SS	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	134	134	ng/kg		0.01	1.34
WA-FCB-SS	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	348	348	ng/kg		0.01	3.48
WA-FCB-SS	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	320	320	ng/kg		0.01	3.2
WA-FCB-SS	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	11.6	11.6	ng/kg		0.1	1.16
WA-FCB-SS	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	679	679	ng/kg		0.1	67.9
WA-FCB-SS	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	32.8	32.8	ng/kg		0.1	3.28
WA-FCB-SS	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	103	103	ng/kg		0.1	10.3
WA-FCB-SS	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	21.8	21.8	ng/kg		0.1	2.18
WA-FCB-SS	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	8.44	8.44	ng/kg		0.1	0.844
WA-FCB-SS	10/26/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	28.5	28.5	ng/kg		1	28.5
WA-FCB-SS	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	311	311	ng/kg		0.03	9.33
WA-FCB-SS	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	1060	1060	ng/kg		0.3	318
WA-FCB-SS	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	10.3	10.3	ng/kg		1	10.3
WA-FCB-SS	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	1200	1200	ng/kg		0.1	120
WA-FCB-SS	10/26/1999	0	0.5	3268-87-9	OCDD	Y	605	605	ng/kg		0.0003	0.1815
WA-FCB-SS	10/26/1999	0	0.5	39001-02-0	OCDF	Y	1300	1300	ng/kg		0.0003	0.39
											Sample Location Total	**580.4**
WA-SB-8	9/28/1998	0.5	1	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	128	128	ng/kg		0.01	1.28
WA-SB-8	9/28/1998	0.5	1	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	85.6	85.6	ng/kg		0.01	0.856
WA-SB-8	9/28/1998	0.5	1	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	39.1	39.1	ng/kg		0.01	0.391
WA-SB-8	9/28/1998	0.5	1	39227-28-6	1,2,3,4,7,8-HXCDD	Y	9.15	9.15	ng/kg		0.1	0.915
WA-SB-8	9/28/1998	0.5	1	70648-26-9	1,2,3,4,7,8-HXCDF	Y	102	102	ng/kg		0.1	10.2
WA-SB-8	9/28/1998	0.5	1	57653-85-7	1,2,3,6,7,8-HXCDD	Y	18.9	18.9	ng/kg		0.1	1.89
WA-SB-8	9/28/1998	0.5	1	57117-44-9	1,2,3,6,7,8-HXCDF	Y	21.3	21.3	ng/kg		0.1	2.13
WA-SB-8	9/28/1998	0.5	1	19408-74-3	1,2,3,7,8,9-HXCDD	Y	13.7	13.7	ng/kg		0.1	1.37
WA-SB-8	9/28/1998	0.5	1	72918-21-9	1,2,3,7,8,9-HXCDF	Y	4	4	ng/kg		0.1	0.4
WA-SB-8	9/28/1998	0.5	1	40321-76-4	1,2,3,7,8-PECDD	Y	9.76	9.76	ng/kg		1	9.76
WA-SB-8	9/28/1998	0.5	1	57117-41-6	1,2,3,7,8-PECDF	Y	67.1	67.1	ng/kg		0.03	2.013
WA-SB-8	9/28/1998	0.5	1	60851-34-5	2,3,4,6,7,8-HXCDF	Y	9.35	9.35	ng/kg		0.1	0.935
WA-SB-8	9/28/1998	0.5	1	57117-31-4	2,3,4,7,8-PECDF	Y	128	128	ng/kg		0.3	38.4
WA-SB-8	9/28/1998	0.5	1	1746-01-6	2,3,7,8-TCDD	Y	18.7	18.7	ng/kg		1	18.7
WA-SB-8	9/28/1998	0.5	1	51207-31-9	2,3,7,8-TCDF	Y	341	341	ng/kg		0.1	34.1
WA-SB-8	9/28/1998	0.5	1	3268-87-9	OCDD	Y	820	820	ng/kg		0.0003	0.246
WA-SB-8	9/28/1998	0.5	1	39001-02-0	OCDF	Y	464	464	ng/kg		0.0003	0.1392
											Sample Location Total	**123.7**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-SB-8	9/28/1998	1	2	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	12.6	12.6	ng/kg		0.01	0.126
WA-SB-8	9/28/1998	1	2	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	44.9	44.9	ng/kg		0.01	0.449
WA-SB-8	9/28/1998	1	2	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	22.7	22.7	ng/kg		0.01	0.227
WA-SB-8	9/28/1998	1	2	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.35	0.35	ng/kg		0.1	0.035
WA-SB-8	9/28/1998	1	2	70648-26-9	1,2,3,4,7,8-HXCDF	Y	105	105	ng/kg		0.1	10.5
WA-SB-8	9/28/1998	1	2	57117-44-9	1,2,3,6,7,8-HXCDF	Y	25.3	25.3	ng/kg		0.1	2.53
WA-SB-8	9/28/1998	1	2	19408-74-3	1,2,3,7,8,9-HXCDD	Y	0.78	0.78	ng/kg		0.1	0.078
WA-SB-8	9/28/1998	1	2	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.93	1.93	ng/kg		0.1	0.193
WA-SB-8	9/28/1998	1	2	40321-76-4	1,2,3,7,8-PECDD	Y	0.48	0.48	ng/kg		1	0.48
WA-SB-8	9/28/1998	1	2	57117-41-6	1,2,3,7,8-PECDF	Y	66.2	66.2	ng/kg		0.03	1.986
WA-SB-8	9/28/1998	1	2	60851-34-5	2,3,4,6,7,8-HXCDF	Y	6.95	6.95	ng/kg		0.1	0.695
WA-SB-8	9/28/1998	1	2	57117-31-4	2,3,4,7,8-PECDF	Y	40.9	40.9	ng/kg		0.3	12.27
WA-SB-8	9/28/1998	1	2	51207-31-9	2,3,7,8-TCDF	Y	85.4	85.4	ng/kg		0.1	8.54
WA-SB-8	9/28/1998	1	2	3268-87-9	OCDD	Y	85.9	85.9	ng/kg		0.0003	0.02577
WA-SB-8	9/28/1998	1	2	39001-02-0	OCDF	Y	277	277	ng/kg		0.0003	0.0831
											Sample Location	**38.2**
WA-SB-8	9/28/1998	2	3	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	10	10	ng/kg		0.01	0.1
WA-SB-8	9/28/1998	2	3	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	45.2	45.2	ng/kg		0.01	0.452
WA-SB-8	9/28/1998	2	3	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	21.2	21.2	ng/kg		0.01	0.212
WA-SB-8	9/28/1998	2	3	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.62	0.62	ng/kg		0.1	0.062
WA-SB-8	9/28/1998	2	3	70648-26-9	1,2,3,4,7,8-HXCDF	Y	85.2	85.2	ng/kg		0.1	8.52
WA-SB-8	9/28/1998	2	3	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1.11	1.11	ng/kg		0.1	0.111
WA-SB-8	9/28/1998	2	3	57117-44-9	1,2,3,6,7,8-HXCDF	Y	19.3	19.3	ng/kg		0.1	1.93
WA-SB-8	9/28/1998	2	3	19408-74-3	1,2,3,7,8,9-HXCDD	Y	1.16	1.16	ng/kg		0.1	0.116
WA-SB-8	9/28/1998	2	3	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.63	2.63	ng/kg		0.1	0.263
WA-SB-8	9/28/1998	2	3	40321-76-4	1,2,3,7,8-PECDD	Y	0.52	0.52	ng/kg		1	0.52
WA-SB-8	9/28/1998	2	3	57117-41-6	1,2,3,7,8-PECDF	Y	45.2	45.2	ng/kg	J	0.03	1.356
WA-SB-8	9/28/1998	2	3	60851-34-5	2,3,4,6,7,8-HXCDF	Y	5.45	5.45	ng/kg		0.1	0.545
WA-SB-8	9/28/1998	2	3	57117-31-4	2,3,4,7,8-PECDF	Y	21.1	21.1	ng/kg	J	0.3	6.33
WA-SB-8	9/28/1998	2	3	51207-31-9	2,3,7,8-TCDF	Y	43.4	43.4	ng/kg		0.1	4.34
WA-SB-8	9/28/1998	2	3	3268-87-9	OCDD	Y	50.6	50.6	ng/kg		0.0003	0.01518
WA-SB-8	9/28/1998	2	3	39001-02-0	OCDF	Y	113	113	ng/kg		0.0003	0.0339
											Sample Location	**24.9**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-SB-8	9/28/1998	3	4	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	7.5	7.5	ng/kg		0.01	0.075
WA-SB-8	9/28/1998	3	4	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	14.4	14.4	ng/kg		0.01	0.144
WA-SB-8	9/28/1998	3	4	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	7.72	7.72	ng/kg		0.01	0.0772
WA-SB-8	9/28/1998	3	4	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.89	0.89	ng/kg		0.1	0.089
WA-SB-8	9/28/1998	3	4	70648-26-9	1,2,3,4,7,8-HXCDF	Y	18.5	18.5	ng/kg		0.1	1.85
WA-SB-8	9/28/1998	3	4	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1.57	1.57	ng/kg		0.1	0.157
WA-SB-8	9/28/1998	3	4	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3.74	3.74	ng/kg		0.1	0.374
WA-SB-8	9/28/1998	3	4	19408-74-3	1,2,3,7,8,9-HXCDD	Y	1.32	1.32	ng/kg		0.1	0.132
WA-SB-8	9/28/1998	3	4	72918-21-9	1,2,3,7,8,9-HXCDF	Y	1.02	1.02	ng/kg		0.1	0.102
WA-SB-8	9/28/1998	3	4	40321-76-4	1,2,3,7,8-PECDD	Y	1.26	1.26	ng/kg		1	1.26
WA-SB-8	9/28/1998	3	4	57117-41-6	1,2,3,7,8-PECDF	Y	15.3	15.3	ng/kg		0.03	0.459
WA-SB-8	9/28/1998	3	4	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2.06	2.06	ng/kg		0.1	0.206
WA-SB-8	9/28/1998	3	4	57117-31-4	2,3,4,7,8-PECDF	Y	16.7	16.7	ng/kg		0.3	5.01
WA-SB-8	9/28/1998	3	4	1746-01-6	2,3,7,8-TCDD	Y	7.74	7.74	ng/kg		1	7.74
WA-SB-8	9/28/1998	3	4	51207-31-9	2,3,7,8-TCDF	Y	102	102	ng/kg		0.1	10.2
WA-SB-8	9/28/1998	3	4	3268-87-9	OCDD	Y	35.2	35.2	ng/kg		0.0003	0.01056
WA-SB-8	9/28/1998	3	4	39001-02-0	OCDF	Y	64.4	64.4	ng/kg		0.0003	0.01932
											Sample Location	**27.9**

TABLE 2.8b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-SB-8	9/28/1998	4	5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	3.51	3.51	ng/kg		0.01	0.0351
WA-SB-8	9/28/1998	4	5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	3.72	3.72	ng/kg		0.01	0.0372
WA-SB-8	9/28/1998	4	5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	0.88	0.88	ng/kg		0.01	0.0088
WA-SB-8	9/28/1998	4	5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3.45	3.45	ng/kg		0.1	0.345
WA-SB-8	9/28/1998	4	5	57653-85-7	1,2,3,6,7,8-HXCDD	N	0.2	0.1	ng/kg	U	0.1	0.01
WA-SB-8	9/28/1998	4	5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1.25	1.25	ng/kg		0.1	0.125
WA-SB-8	9/28/1998	4	5	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.42	0.21	ng/kg	U	0.1	0.021
WA-SB-8	9/28/1998	4	5	57117-41-6	1,2,3,7,8-PECDF	Y	2.8	2.8	ng/kg		0.03	0.084
WA-SB-8	9/28/1998	4	5	60851-34-5	2,3,4,6,7,8-HXCDF	N	0.42	0.21	ng/kg	U	0.1	0.021
WA-SB-8	9/28/1998	4	5	57117-31-4	2,3,4,7,8-PECDF	Y	1.59	1.59	ng/kg		0.3	0.477
WA-SB-8	9/28/1998	4	5	51207-31-9	2,3,7,8-TCDF	Y	6.55	6.55	ng/kg		0.1	0.655
WA-SB-8	9/28/1998	4	5	3268-87-9	OCDD	Y	8.95	8.95	ng/kg		0.0003	0.002685
WA-SB-8	9/28/1998	4	5	39001-02-0	OCDF	Y	7.06	7.06	ng/kg		0.0003	0.002118
											Sample Location Total	**1.8**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration
(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.8c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
FORMER CHLORINATION BUILDING INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-FCB-SS	Highly chlorinated PCBs	0	0.5	10/26/1999	1.24	mg/kg
WA-SS#1	Highly chlorinated PCBs	6	6	9/15/1997	1.4	mg/kg
WA-SB-8	Highly chlorinated PCBs	0	2	9/28/1998	5.5	mg/kg
WA-SS#1	Less chlorinated PCBs	6	6	9/15/1997	1.1	mg/kg

Notes:
* Less chlorinated PCBs were defined as Aroclors 1221, 1232, 1016, and 1242. Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.9a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
ON-SITE DITCHES SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
On-site Ditches - Surface Soil	METALS																	
	7429-90-5	ALUMINUM	6390	6390	mg/kg	WA-NW DITCH-S	1/1	-	6.39E+03			7.82E+03	N	7.61E+03	nc	7.61E+03	N	BSL
	7440-38-2	ARSENIC	39.9	39.9	mg/kg	WA-NW DITCH-S	1/1	-	3.99E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	193	193	mg/kg	WA-NW DITCH-S	1/1	-	1.93E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	N	BSL
	7440-41-7	BERYLLIUM	1 J	1 J	mg/kg	WA-NW DITCH-S	1/1	-	1.00E+00		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	2.1	2.1	mg/kg	WA-NW DITCH-S	1/1	-	2.10E+00		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	143000	143000	mg/kg	WA-NW DITCH-S	1/1	-	1.43E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	192	192	mg/kg	WA-NW DITCH-S	1/1	-	1.92E+02		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	29.1	29.1	mg/kg	WA-NW DITCH-S	1/1	-	2.91E+01			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	326	326	mg/kg	WA-NW DITCH-S	1/1	-	3.26E+02		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	Y	ASL
	7439-89-6	IRON	53900 J	53900 J	mg/kg	WA-NW DITCH-S	1/1	-	5.39E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	692	692	mg/kg	WA-NW DITCH-S	1/1	-	6.92E+02		4.00E+02	NV		4.00E+02	nc	4.00E+02	Y	ASL
	7439-95-4	MAGNESIUM	9270	9270	mg/kg	WA-NW DITCH-S	1/1	-	9.27E+03			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	432 J	432 J	mg/kg	WA-NW DITCH-S	1/1	-	4.32E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	11	4780	mg/kg	WA-NW DITCH-S	5/5	-	4.78E+03			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.686 J	.686 J	mg/kg	WA-NW DITCH-S	1/1	-	6.86E-01			7.82E-01	N	6.11E-01	nc	6.11E-01	Y	ASL
	7440-02-0	NICKEL	301	301	mg/kg	WA-NW DITCH-S	1/1	-	3.01E+02		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	Y	ASL
	7440-09-7	POTASSIUM	1170 J	1170 J	mg/kg	WA-NW DITCH-S	1/1	-	1.17E+03			NV		NV		NV	N	NUT
	7440-22-4	SILVER	0.31 J	0.31 J	mg/kg	WA-NW DITCH-S	1/1	-	3.10E-01		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	278 J	278 J	mg/kg	WA-NW DITCH-S	1/1	-	2.78E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	63.9	63.9	mg/kg	WA-NW DITCH-S	1/1	-	6.39E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	449	449	mg/kg	WA-NW DITCH-S	1/1	-	4.49E+02		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.74	14	mg/kg	WA-NW DITCH #1	4/4	-	1.40E+01			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	33213-65-9	ENDOSULFAN II[d]	0.0042 J	0.0042 J	mg/kg	WA-NW DITCH-S	1/1	-	4.20E-03		2.40E+01	4.69E+01	N	3.67E+01	nc	3.67E+01	N	BSL
	72-20-8	ENDRIN	0.022 J	0.022 J	mg/kg	WA-NW DITCH-S	1/1	-	2.20E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.016 J	0.016 J	mg/kg	WA-NW DITCH-S	1/1	-	1.60E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.0017 J	0.0017 J	mg/kg	WA-NW DITCH-S	1/1	-	1.70E-03			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
	SVOC																	
	91-57-6	2-METHYLNAPHTHALENE	0.32 J	0.32 J	mg/kg	WA-NW DITCH-S	1/1	-	3.20E-01			3.13E+01	N	NV		3.13E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.12 J	0.12 J	mg/kg	WA-NW DITCH-S	1/1	-	1.20E-01		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.17 J	0.17 J	mg/kg	WA-NW DITCH-S	1/1	-	1.70E-01		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.47 J	0.47 J	mg/kg	WA-NW DITCH-S	1/1	-	4.70E-01		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	2.1 J	2.1 J	mg/kg	WA-NW DITCH-S	1/1	-	2.10E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	2 J	2 J	mg/kg	WA-NW DITCH-S	1/1	-	2.00E+00		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	3 J	3 J	mg/kg	WA-NW DITCH-S	1/1	-	3.00E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	1.4 J	1.4 J	mg/kg	WA-NW DITCH-S	1/1	-	1.40E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	1 J	1 J	mg/kg	WA-NW DITCH-S	1/1	-	1.00E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	N	BSL
	86-74-8	CARBAZOLE	0.19 J	0.19 J	mg/kg	WA-NW DITCH-S	1/1	-	1.90E-01			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	2.5 J	2.5 J	mg/kg	WA-NW DITCH-S	1/1	-	2.50E+00		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.44 J	0.44 J	mg/kg	WA-NW DITCH-S	1/1	-	4.40E-01		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.17 J	0.17 J	mg/kg	WA-NW DITCH-S	1/1	-	1.70E-01		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	206-44-0	FLUORANTHENE	2.6 J	2.6 J	mg/kg	WA-NW DITCH-S	1/1	-	2.60E+00		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.14 J	0.14 J	mg/kg	WA-NW DITCH-S	1/1	-	1.40E-01		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	1.2 J	1.2 J	mg/kg	WA-NW DITCH-S	1/1	-	1.20E+00		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.35 J	0.35 J	mg/kg	WA-NW DITCH-S	1/1	-	3.50E-01		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	2 J	2 J	mg/kg	WA-NW DITCH-S	1/1	-	2.00E+00		1.00E+02	NV		NV		NV	Y	NTX
	108-95-2	PHENOL	0.054 J	0.054 J	mg/kg	WA-NW DITCH-S	1/1	-	5.40E-02		1.00E+02	2.35E+03	N	1.83E+03	nc	1.83E+03	N	BSL
	129-00-0	PYRENE	5	5	mg/kg	WA-NW DITCH-S	1/1	-	5.00E+00		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL

TABLE 2.9a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
ON-SITE DITCHES SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	0.33 J	0.33 J	mg/kg	WA-NW DITCH-S	1/2	0.54-0.54	3.30E-01			7.82E+01	N	6.22E+00	nc	6.22E+00	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	0.96	0.96	mg/kg	WA-NW DITCH-S	1/2	0.54-0.54	9.60E-01		100a	7.04E+02	N	6.00E+01	nc	6.00E+01	N	BSL
	541-73-1	1,3-DICHLOROBENZENE	0.073 J	0.073 J	mg/kg	WA-NW DITCH-S	1/2	0.54-0.54	7.30E-02		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	2.1 J	2.1 J	mg/kg	WA-NW DITCH-S	1/2	0.54-0.54	2.10E+00		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	N	BSL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.0016	0.0075	mg/kg	WA-NW DITCH #3	3/3	-	7.54E-03			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT - Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
NA = Not applicable, minimum and maximum values are calculated.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007

TABLE 2.9b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
ON-SITE DITCHES SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-NW DITCH #3	10/1/1998	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	810	810	ng/kg		0.01	8.1
WA-NW DITCH #3	10/1/1998	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	35200	35200	ng/kg		0.01	352
WA-NW DITCH #3	10/1/1998	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	16400	16400	ng/kg		0.01	164
WA-NW DITCH #3	10/1/1998	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	47.8	47.8	ng/kg		0.1	4.78
WA-NW DITCH #3	10/1/1998	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	46900	46900	ng/kg		0.1	4690
WA-NW DITCH #3	10/1/1998	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	75.4	75.4	ng/kg		0.1	7.54
WA-NW DITCH #3	10/1/1998	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	7530	7530	ng/kg		0.1	753
WA-NW DITCH #3	10/1/1998	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	61.9	61.9	ng/kg		0.1	6.19
WA-NW DITCH #3	10/1/1998	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	449	449	ng/kg		0.1	44.9
WA-NW DITCH #3	10/1/1998	0	0.5	40321-76-4	1,2,3,7,8-PECDD	N	41.1	20.55	ng/kg	U	1	20.55
WA-NW DITCH #3	10/1/1998	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	6720	6720	ng/kg		0.03	201.6
WA-NW DITCH #3	10/1/1998	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	729	729	ng/kg		0.1	72.9
WA-NW DITCH #3	10/1/1998	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	2580	2580	ng/kg		0.3	774
WA-NW DITCH #3	10/1/1998	0	0.5	1746-01-6	2,3,7,8-TCDD	N	53.5	26.75	ng/kg	U	1	26.75
WA-NW DITCH #3	10/1/1998	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	3523	3523	ng/kg		0.1	352.3
WA-NW DITCH #3	10/1/1998	0	0.5	3268-87-9	OCDD	Y	3820	3820	ng/kg		0.0003	1.146
WA-NW DITCH #3	10/1/1998	0	0.5	39001-02-0	OCDF	Y	200000	200000	ng/kg		0.0003	60
											Sample Location TEQ =	**7539.8**
WA-NW DITCH #3	10/1/1998	1	1.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2350	2350	ng/kg	J	0.01	23.5
WA-NW DITCH #3	10/1/1998	1	1.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	9750	9750	ng/kg	J	0.01	97.5
WA-NW DITCH #3	10/1/1998	1	1.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	6610	6610	ng/kg	J	0.01	66.1
WA-NW DITCH #3	10/1/1998	1	1.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	20.4	20.4	ng/kg	J	0.1	2.04
WA-NW DITCH #3	10/1/1998	1	1.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	13500	13500	ng/kg	J	0.1	1350
WA-NW DITCH #3	10/1/1998	1	1.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	56.8	56.8	ng/kg	J	0.1	5.68
WA-NW DITCH #3	10/1/1998	1	1.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3400	3400	ng/kg	J	0.1	340
WA-NW DITCH #3	10/1/1998	1	1.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	31.1	31.1	ng/kg	J*	0.1	3.11
WA-NW DITCH #3	10/1/1998	1	1.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	145	145	ng/kg	J	0.1	14.5
WA-NW DITCH #3	10/1/1998	1	1.5	40321-76-4	1,2,3,7,8-PECDD	N	17	8.5	ng/kg	UJ	1	8.5
WA-NW DITCH #3	10/1/1998	1	1.5	57117-41-6	1,2,3,7,8-PECDF	Y	3250	3250	ng/kg	J	0.03	97.5
WA-NW DITCH #3	10/1/1998	1	1.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	497	497	ng/kg	J	0.1	49.7
WA-NW DITCH #3	10/1/1998	1	1.5	57117-31-4	2,3,4,7,8-PECDF	Y	1430	1430	ng/kg	J	0.3	429
WA-NW DITCH #3	10/1/1998	1	1.5	1746-01-6	2,3,7,8-TCDD	Y	21.5	21.5	ng/kg	J*	1	21.5
WA-NW DITCH #3	10/1/1998	1	1.5	51207-31-9	2,3,7,8-TCDF	Y	1010	1010	ng/kg	J	0.1	101
WA-NW DITCH #3	10/1/1998	1	1.5	3268-87-9	OCDD	Y	14000	14000	ng/kg	J	0.0003	4.2
WA-NW DITCH #3	10/1/1998	1	1.5	39001-02-0	OCDF	Y	39600	39600	ng/kg	J	0.0003	11.88
											Sample Location TEQ =	**2625.7**

TABLE 2.9b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
ON-SITE DITCHES SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-NW DITCH-S	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	745	745	ng/kg	J	0.01	7.5
WA-NW DITCH-S	36459	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	3450	3450	ng/kg	J	0.01	34.5
WA-NW DITCH-S	36459	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	3400	3400	ng/kg	J	0.01	34
WA-NW DITCH-S	36459	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	29.6	29.6	ng/kg	J	0.1	2.96
WA-NW DITCH-S	36459	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	6230	6230	ng/kg	J	0.1	623
WA-NW DITCH-S	36459	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	38.5	38.5	ng/kg	J	0.1	3.85
WA-NW DITCH-S	36459	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1260	1260	ng/kg	J	0.1	126
WA-NW DITCH-S	36459	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	32.9	32.9	ng/kg	J	0.1	3.29
WA-NW DITCH-S	36459	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	196	196	ng/kg	J	0.1	19.6
WA-NW DITCH-S	36459	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	15.6	15.6	ng/kg	J	1	15.6
WA-NW DITCH-S	36459	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	2920	2920	ng/kg	J	0.03	87.6
WA-NW DITCH-S	36459	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	494	494	ng/kg	J	0.1	49.4
WA-NW DITCH-S	36459	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	1500	1500	ng/kg	J	0.3	450
WA-NW DITCH-S	36459	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	11.8	11.8	ng/kg	J	1	11.8
WA-NW DITCH-S	36459	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	1690	1690	ng/kg	J	0.1	169
WA-NW DITCH-S	36459	0	0.5	3268-87-9	OCDD	Y	1620	1620	ng/kg	J	0.0003	0.486
WA-NW DITCH-S	36459	0	0.5	39001-02-0	OCDF	Y	15700	15700	ng/kg	J	0.0003	4.71
											Sample Location TEQ =	**1643.2**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration
(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.9c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
ON-SITE DITCHES SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-SEMETDITCH	Highly chlorinated PCBs	0.5	1	11/18/1997	0.74	mg/kg
WA-NW DITCH-S	Highly chlorinated PCBs	0	0.5	10/26/1999	5.01	mg/kg
WA-NW DITCH #2	Highly chlorinated PCBs	0.5	1	11/18/1997	10	mg/kg
WA-NW DITCH #1	Highly chlorinated PCBs	0.5	1	11/18/1997	14	mg/kg

Notes:
*Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.10a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
ON-SITE DITCHES UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
On-Site Ditches - Upper Soil	METALS																	
	7429-90-5	ALUMINUM	6390	6390	mg/kg	WA-NW DITCH-S	1/1	-	6.39E+03			7.82E+03	N	7.61E+03	nc	7.61E+03	N	BSL
	7440-38-2	ARSENIC	39.9	39.9	mg/kg	WA-NW DITCH-S	1/1	-	3.99E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	193	193	mg/kg	WA-NW DITCH-S	1/1	-	1.93E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	N	BSL
	7440-41-7	BERYLLIUM	1 J	1 J	mg/kg	WA-NW DITCH-S	1/1	-	1.00E+00		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	2.1	2.1	mg/kg	WA-NW DITCH-S	1/1	-	2.10E+00		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	143000	143000	mg/kg	WA-NW DITCH-S	1/1	-	1.43E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	192	192	mg/kg	WA-NW DITCH-S	1/1	-	1.92E+02		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	29.1	29.1	mg/kg	WA-NW DITCH-S	1/1	-	2.91E+01			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	326	326	mg/kg	WA-NW DITCH-S	1/1	-	3.26E+02		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	Y	ASL
	7439-89-6	IRON	53900 J	53900 J	mg/kg	WA-NW DITCH-S	1/1	-	5.39E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	692	692	mg/kg	WA-NW DITCH-S	1/1	-	6.92E+02		4.00E+02	NV		4.00E+02	nc	4.00E+02	Y	ASL
	7439-95-4	MAGNESIUM	9270	9270	mg/kg	WA-NW DITCH-S	1/1	-	9.27E+03			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	432 J	432 J	mg/kg	WA-NW DITCH-S	1/1	-	4.32E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	11	4780	mg/kg	WA-NW DITCH-S	7/7	-	4.78E+03			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.686 J	.686 J	mg/kg	WA-NW DITCH-S	1/1	-	6.86E-01			7.82E-01	N	6.11E-01	nc	6.11E-01	Y	ASL
	7440-02-0	NICKEL	301	301	mg/kg	WA-NW DITCH-S	1/1	-	3.01E+02		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	Y	ASL
	7440-09-7	POTASSIUM	1170 J	1170 J	mg/kg	WA-NW DITCH-S	1/1	-	1.17E+03			NV		NV		NV	N	NUT
	7440-22-4	SILVER	0.31 J	0.31 J	mg/kg	WA-NW DITCH-S	1/1	-	3.10E-01		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	278 J	278 J	mg/kg	WA-NW DITCH-S	1/1	-	2.78E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	63.9	63.9	mg/kg	WA-NW DITCH-S	1/1	-	6.39E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	449	449	mg/kg	WA-NW DITCH-S	1/1	-	4.49E+02		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.56	14	mg/kg	WA-NW DITCH #1	6/6	-	1.40E+01			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	33213-65-9	ENDOSULFAN II[d]	0.0042 J	0.0042 J	mg/kg	WA-NW DITCH-S	1/3	0.039-0.25	4.20E-03		2.40E+01	4.69E+01	N	3.67E+01	nc	3.67E+01	N	BSL
	72-20-8	ENDRIN	0.022 J	0.022 J	mg/kg	WA-NW DITCH-S	1/3	0.039-0.25	2.20E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.016 J	0.016 J	mg/kg	WA-NW DITCH-S	1/1	-	1.60E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.0017 J	0.0017 J	mg/kg	WA-NW DITCH-S	1/3	0.02-0.12	1.70E-03			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
	SVOC																	
	91-57-6	2-METHYLNAPHTHALENE	0.32 J	0.32 J	mg/kg	WA-NW DITCH-S	1/1	-	3.20E-01			3.13E+01	N	NV		3.13E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.12 J	0.12 J	mg/kg	WA-NW DITCH-S	1/1	-	1.20E-01		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.17 J	0.17 J	mg/kg	WA-NW DITCH-S	1/1	-	1.70E-01		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.47 J	0.47 J	mg/kg	WA-NW DITCH-S	1/1	-	4.70E-01		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	2.1 J	2.1 J	mg/kg	WA-NW DITCH-S	1/1	-	2.10E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	2 J	2 J	mg/kg	WA-NW DITCH-S	1/1	-	2.00E+00		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	3 J	3 J	mg/kg	WA-NW DITCH-S	1/1	-	3.00E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	1.4 J	1.4 J	mg/kg	WA-NW DITCH-S	1/1	-	1.40E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	1 J	1 J	mg/kg	WA-NW DITCH-S	1/1	-	1.00E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	N	BSL
	86-74-8	CARBAZOLE	0.19 J	0.19 J	mg/kg	WA-NW DITCH-S	1/1	-	1.90E-01			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	2.5 J	2.5 J	mg/kg	WA-NW DITCH-S	1/1	-	2.50E+00		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.44 J	0.44 J	mg/kg	WA-NW DITCH-S	1/1	-	4.40E-01		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.17 J	0.17 J	mg/kg	WA-NW DITCH-S	1/1	-	1.70E-01		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	206-44-0	FLUORANTHENE	2.6 J	2.6 J	mg/kg	WA-NW DITCH-S	1/1	-	2.60E+00		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.14 J	0.14 J	mg/kg	WA-NW DITCH-S	1/1	-	1.40E-01		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.074 J	0.27 J	mg/kg	WA-NIMO1	2/3	0.54-0.54	2.70E-01		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	1.2 J	1.2 J	mg/kg	WA-NW DITCH-S	1/1	-	1.20E+00		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.29	0.35 J	mg/kg	WA-NW DITCH-S	2/3	9.2-9.2	3.50E-01		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	2 J	2 J	mg/kg	WA-NW DITCH-S	1/1	-	2.00E+00		1.00E+02	NV		NV		NV	Y	NTX
	108-95-2	PHENOL	0.054 J	0.054 J	mg/kg	WA-NW DITCH-S	1/1	-	5.40E-02		1.00E+02	2.35E+03	N	1.83E+03	nc	1.83E+03	N	BSL
	129-00-0	PYRENE	5	5	mg/kg	WA-NW DITCH-S	1/1	-	5.00E+00		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL
	VOC																	
	75-34-3	1,1-DICHLOROETHANE	0.0034 J	0.0034 J	mg/kg	WA-NIMO2	1/3	0.016-9.2	3.40E-03		2.60E+01	1.56E+03	N	5.06E+01	nc	5.06E+01	N	BSL
	87-61-6	1,2,3-TRICHLOROBENZENE	0.008 J	2.2 J	mg/kg	WA-NIMO1	2/2	-	2.20E+00			NV		NV		NV	Y	NTX
	120-82-1	1,2,4-TRICHLOROBENZENE	0.014 J	7.5 J	mg/kg	WA-NIMO1	2/3	0.54-0.54	7.50E+00			7.82E+01	N	6.22E+00	nc	6.22E+00	Y	ASL
	95-63-6	1,2,4-TRIMETHYLBENZENE	0.05	0.05	mg/kg	WA-NIMO2	1/2	9.2-9.2	5.00E-02		5.20E+01	NV		5.16E+00	nc	5.16E+00	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	0.23	190	mg/kg	WA-NIMO1	2/3	0.54-0.54	1.90E+02		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	Y	ASL
	108-67-8	1,3,5-TRIMETHYLBENZENE	0.023	0.023	mg/kg	WA-NIMO2	1/2	9.2-9.2	2.30E-02		5.20E+01	NV		2.13E+00	nc	2.13E+00	N	BSL
	541-73-1	1,3-DICHLOROBENZENE	0.16	76	mg/kg	WA-NIMO1	2/3	0.54-0.54	7.60E+01		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	Y	ASL

TABLE 2.10a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
ON-SITE DITCHES UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	106-46-7	1,4-DICHLOROBENZENE	0.44	430	mg/kg	WA-NIMO1	2/3	0.54-0.54	4.30E+02		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	Y	ASL
	71-43-2	BENZENE	0.12	0.12	mg/kg	WA-NIMO2	1/3	0.016-9.2	1.20E-01		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	108-90-7	CHLOROBENZENE	1.2	71	mg/kg	WA-NIMO1	2/3	0.016-0.016	7.10E+01		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	Y	ASL
	100-41-4	ETHYLBENZENE	0.0038 J	0.0038 J	mg/kg	WA-NIMO2	1/3	0.016-9.2	3.80E-03		4.10E+01	7.82E+02	N	3.95E+01	nc	3.95E+01	N	BSL
	75-09-2	METHYLENE CHLORIDE	0.015 J	2.7 J	mg/kg	WA-NIMO1	2/3	0.016-0.016	2.70E+00		1.00E+02	8.52E+01	C	9.11E+00	ca	9.11E+00	N	BSL
	103-65-1	N-PROPYLBENZENE	0.0081 J	0.0081 J	mg/kg	WA-NIMO2	1/2	9.2-9.2	8.10E-03		1.00E+02	NV		2.40E+01	nc	2.40E+01	N	BSL
	127-18-4	TETRACHLOROETHENE	0.0096 J	0.0096 J	mg/kg	WA-NIMO2	1/3	0.016-9.2	9.60E-03		1.90E+01	1.18E+00	C	4.84E-01	ca	4.84E-01	N	BSL
	108-88-3	TOLUENE	0.17	0.17	mg/kg	WA-NIMO2	1/3	0.016-9.2	1.70E-01		1.00E+02	6.26E+02	N	5.20E+01	nc	5.20E+01	N	BSL
	1330-20-7	XYLENES, TOTAL	0.065	0.065	mg/kg	WA-NIMO2	1/3	0.016-9.2	6.50E-02		1.00E+02	1.56E+03	N	2.71E+01	nc	2.71E+01	N	BSL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.0016	0.0075	mg/kg	WA-NW DITCH #3	3/3	-	7.54E-03			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
NA = Not applicable, minimum and maximum values are calculated.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.10b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
ON-SITE DITCHES UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-NW DITCH #3	10/1/1998	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	810	810	ng/kg		0.01	8.1
WA-NW DITCH #3	10/1/1998	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	35200	35200	ng/kg		0.01	352
WA-NW DITCH #3	10/1/1998	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	16400	16400	ng/kg		0.01	164
WA-NW DITCH #3	10/1/1998	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	47.8	47.8	ng/kg		0.1	4.78
WA-NW DITCH #3	10/1/1998	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	46900	46900	ng/kg		0.1	4690
WA-NW DITCH #3	10/1/1998	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	75.4	75.4	ng/kg		0.1	7.54
WA-NW DITCH #3	10/1/1998	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	7530	7530	ng/kg		0.1	753
WA-NW DITCH #3	10/1/1998	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	61.9	61.9	ng/kg		0.1	6.19
WA-NW DITCH #3	10/1/1998	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	449	449	ng/kg		0.1	44.9
WA-NW DITCH #3	10/1/1998	0	0.5	40321-76-4	1,2,3,7,8-PECDD	N	41.1	20.55	ng/kg	U	1	20.55
WA-NW DITCH #3	10/1/1998	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	6720	6720	ng/kg		0.03	201.6
WA-NW DITCH #3	10/1/1998	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	729	729	ng/kg		0.1	72.9
WA-NW DITCH #3	10/1/1998	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	2580	2580	ng/kg		0.3	774
WA-NW DITCH #3	10/1/1998	0	0.5	1746-01-6	2,3,7,8-TCDD	N	53.5	26.75	ng/kg	U	1	26.75
WA-NW DITCH #3	10/1/1998	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	3523	3523	ng/kg		0.1	352.3
WA-NW DITCH #3	10/1/1998	0	0.5	3268-87-9	OCDD	Y	3820	3820	ng/kg		0.0003	1.146
WA-NW DITCH #3	10/1/1998	0	0.5	39001-02-0	OCDF	Y	200000	200000	ng/kg		0.0003	60
											Sample Location TEQ =	**7539.8**
WA-NW DITCH #3	10/1/1998	1	1.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2350	2350	ng/kg	J	0.01	23.5
WA-NW DITCH #3	10/1/1998	1	1.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	9750	9750	ng/kg	J	0.01	97.5
WA-NW DITCH #3	10/1/1998	1	1.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	6610	6610	ng/kg	J	0.01	66.1
WA-NW DITCH #3	10/1/1998	1	1.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	20.4	20.4	ng/kg	J	0.1	2.04
WA-NW DITCH #3	10/1/1998	1	1.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	13500	13500	ng/kg	J	0.1	1350
WA-NW DITCH #3	10/1/1998	1	1.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	56.8	56.8	ng/kg	J	0.1	5.68
WA-NW DITCH #3	10/1/1998	1	1.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3400	3400	ng/kg	J	0.1	340
WA-NW DITCH #3	10/1/1998	1	1.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	31.1	31.1	ng/kg	J*	0.1	3.11
WA-NW DITCH #3	10/1/1998	1	1.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	145	145	ng/kg	J	0.1	14.5
WA-NW DITCH #3	10/1/1998	1	1.5	40321-76-4	1,2,3,7,8-PECDD	N	17	8.5	ng/kg	UJ	1	8.5
WA-NW DITCH #3	10/1/1998	1	1.5	57117-41-6	1,2,3,7,8-PECDF	Y	3250	3250	ng/kg	J	0.03	97.5
WA-NW DITCH #3	10/1/1998	1	1.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	497	497	ng/kg	J	0.1	49.7
WA-NW DITCH #3	10/1/1998	1	1.5	57117-31-4	2,3,4,7,8-PECDF	Y	1430	1430	ng/kg	J	0.3	429
WA-NW DITCH #3	10/1/1998	1	1.5	1746-01-6	2,3,7,8-TCDD	Y	21.5	21.5	ng/kg	J*	1	21.5
WA-NW DITCH #3	10/1/1998	1	1.5	51207-31-9	2,3,7,8-TCDF	Y	1010	1010	ng/kg	J	0.1	101
WA-NW DITCH #3	10/1/1998	1	1.5	3268-87-9	OCDD	Y	14000	14000	ng/kg	J	0.0003	4.2
WA-NW DITCH #3	10/1/1998	1	1.5	39001-02-0	OCDF	Y	39600	39600	ng/kg	J	0.0003	11.88
											Sample Location TEQ =	**2625.7**

TABLE 2.10b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
ON-SITE DITCHES UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-NW DITCH-S	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	745	745	ng/kg	J	0.01	7.5
WA-NW DITCH-S	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	3450	3450	ng/kg	J	0.01	34.5
WA-NW DITCH-S	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	3400	3400	ng/kg	J	0.01	34.0
WA-NW DITCH-S	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	29.6	29.6	ng/kg	J	0.1	3.0
WA-NW DITCH-S	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	6230	6230	ng/kg	J	0.1	623.0
WA-NW DITCH-S	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	38.5	38.5	ng/kg	J	0.1	3.9
WA-NW DITCH-S	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1260	1260	ng/kg	J	0.1	126.0
WA-NW DITCH-S	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	32.9	32.9	ng/kg	J	0.1	3.3
WA-NW DITCH-S	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	196	196	ng/kg	J	0.1	19.6
WA-NW DITCH-S	10/26/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	15.6	15.6	ng/kg	J	1	15.6
WA-NW DITCH-S	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	2920	2920	ng/kg	J	0.03	87.6
WA-NW DITCH-S	10/26/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	494	494	ng/kg	J	0.1	49.4
WA-NW DITCH-S	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	1500	1500	ng/kg	J	0.3	450.0
WA-NW DITCH-S	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	11.8	11.8	ng/kg	J	1	11.8
WA-NW DITCH-S	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	1690	1690	ng/kg	J	0.1	169.0
WA-NW DITCH-S	10/26/1999	0	0.5	3268-87-9	OCDD	Y	1620	1620	ng/kg	J	0.0003	0.5
WA-NW DITCH-S	10/26/1999	0	0.5	39001-02-0	OCDF	Y	15700	15700	ng/kg	J	0.0003	4.7
											Sample Location TEQ =	**1643.2**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration
(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.10c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
ON-SITE DITCHES UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-NIMO2	Highly chlorinated PCBs	3	3	9/18/1997	0.56	mg/kg
WA-SEMETDITCH	Highly chlorinated PCBs	0.5	1	11/18/1997	0.74	mg/kg
WA-NIMO1	Highly chlorinated PCBs	3	3	9/18/1997	1.2	mg/kg
WA-NW DITCH-S	Highly chlorinated PCBs	0	0.5	10/26/1999	5.01	mg/kg
WA-NW DITCH #2	Highly chlorinated PCBs	0.5	1	11/18/1997	10	mg/kg
WA-NW DITCH #1	Highly chlorinated PCBs	0.5	1	11/18/1997	14	mg/kg

Notes:
* Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.11a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
ON-SITE DITCHES INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Intermediate Soil (0 -20 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Onsite Ditches - Intermediate Soil	METALS																	
	7429-90-5	ALUMINUM	6390	6390	mg/kg	WA-NW DITCH-S	1/1	-	6.39E+03			7.82E+03	N	7.61E+03	nc	7.61E+03	N	BSL
	7440-38-2	ARSENIC	39.9	39.9	mg/kg	WA-NW DITCH-S	1/1	-	3.99E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	193	193	mg/kg	WA-NW DITCH-S	1/1	-	1.93E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	N	BSL
	7440-41-7	BERYLLIUM	1 J	1 J	mg/kg	WA-NW DITCH-S	1/1	-	1.00E+00		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	2.1	2.1	mg/kg	WA-NW DITCH-S	1/1	-	2.10E+00		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	143000	143000	mg/kg	WA-NW DITCH-S	1/1	-	1.43E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	192	192	mg/kg	WA-NW DITCH-S	1/1	-	1.92E+02		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	29.1	29.1	mg/kg	WA-NW DITCH-S	1/1	-	2.91E+01			NV		9.03E+02	ca	9.03E+02	N	BSL
	7440-50-8	COPPER	326	326	mg/kg	WA-NW DITCH-S	1/1	-	3.26E+02		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	Y	ASL
	7439-89-6	IRON	53900 J	53900 J	mg/kg	WA-NW DITCH-S	1/1	-	5.39E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	692	692	mg/kg	WA-NW DITCH-S	1/1	-	6.92E+02		4.00E+02	NV		4.00E+02	nc	4.00E+02	Y	ASL
	7439-95-4	MAGNESIUM	9270	9270	mg/kg	WA-NW DITCH-S	1/1	-	9.27E+03			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	432 J	432 J	mg/kg	WA-NW DITCH-S	1/1	-	4.32E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	11	4780	mg/kg	WA-NW DITCH-S	7/7	-	4.78E+03			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.686 J	.686 J	mg/kg	WA-NW DITCH-S	1/1	-	6.86E-01			7.82E-01	N	6.11E-01	nc	6.11E-01	Y	ASL
	7440-02-0	NICKEL	301	301	mg/kg	WA-NW DITCH-S	1/1	-	3.01E+02		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	Y	ASL
	7440-09-7	POTASSIUM	1170 J	1170 J	mg/kg	WA-NW DITCH-S	1/1	-	1.17E+03			NV		NV		NV	N	NUT
	7440-22-4	SILVER	0.31 J	0.31 J	mg/kg	WA-NW DITCH-S	1/1	-	3.10E-01		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	278 J	278 J	mg/kg	WA-NW DITCH-S	1/1	-	2.78E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	63.9	63.9	mg/kg	WA-NW DITCH-S	1/1	-	6.39E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	449	449	mg/kg	WA-NW DITCH-S	1/1	-	4.49E+02		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.56	14	mg/kg	WA-NW DITCH #1	6/6	-	1.40E+01			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	33213-65-9	ENDOSULFAN II[d]	0.0042 J	0.0042 J	mg/kg	WA-NW DITCH-S	1/3	0.039-0.25	4.20E-03		2.40E+01	4.69E+01	N	3.67E+01	nc	3.67E+01	N	BSL
	72-20-8	ENDRIN	0.022 J	0.022 J	mg/kg	WA-NW DITCH-S	1/3	0.039-0.25	2.20E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.016 J	0.016 J	mg/kg	WA-NW DITCH-S	1/1	-	1.60E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.0017 J	0.0017 J	mg/kg	WA-NW DITCH-S	1/3	0.02-0.12	1.70E-03			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
	SVOC																	
	91-57-6	2-METHYLNAPHTHALENE	0.32 J	0.32 J	mg/kg	WA-NW DITCH-S	1/1	-	3.20E-01			3.13E+01	N	NV		3.13E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.12 J	0.12 J	mg/kg	WA-NW DITCH-S	1/1	-	1.20E-01		1.00E+02	4.69E+02	N	3.68E+03	ca	4.69E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.17 J	0.17 J	mg/kg	WA-NW DITCH-S	1/1	-	1.70E-01		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.47 J	0.47 J	mg/kg	WA-NW DITCH-S	1/1	-	4.70E-01		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	2.1 J	2.1 J	mg/kg	WA-NW DITCH-S	1/1	-	2.10E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	2 J	2 J	mg/kg	WA-NW DITCH-S	1/1	-	2.00E+00		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	3 J	3 J	mg/kg	WA-NW DITCH-S	1/1	-	3.00E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	1.4 J	1.4 J	mg/kg	WA-NW DITCH-S	1/1	-	1.40E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	1 J	1 J	mg/kg	WA-NW DITCH-S	1/1	-	1.00E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	N	BSL
	86-74-8	CARBAZOLE	0.19 J	0.19 J	mg/kg	WA-NW DITCH-S	1/1	-	1.90E-01			3.19E+01	C	3.90E+00	nc	3.90E+00	N	BSL
	218-01-9	CHRYSENE	2.5 J	2.5 J	mg/kg	WA-NW DITCH-S	1/1	-	2.50E+00		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.44 J	0.44 J	mg/kg	WA-NW DITCH-S	1/1	-	4.40E-01		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.17 J	0.17 J	mg/kg	WA-NW DITCH-S	1/1	-	1.70E-01		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	206-44-0	FLUORANTHENE	2.6 J	2.6 J	mg/kg	WA-NW DITCH-S	1/1	-	2.60E+00		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.14 J	0.14 J	mg/kg	WA-NW DITCH-S	1/1	-	1.40E-01		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.074 J	0.27 J	mg/kg	WA-NIMO1	2/3	0.54-0.54	2.70E-01		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	1.2 J	1.2 J	mg/kg	WA-NW DITCH-S	1/1	-	1.20E+00		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.29	0.35 J	mg/kg	WA-NW DITCH-S	2/3	9.2-9.2	3.50E-01		1.00E+02	1.56E+02	N	5.59E+01	ca	5.59E+01	N	BSL
	85-01-8	PHENANTHRENE	2 J	2 J	mg/kg	WA-NW DITCH-S	1/1	-	2.00E+00		1.00E+02	NV		NV		NV	Y	NTX
	108-95-2	PHENOL	0.054 J	0.054 J	mg/kg	WA-NW DITCH-S	1/1	-	5.40E-02		1.00E+02	2.35E+03	N	1.83E+03	nc	1.83E+03	N	BSL
	129-00-0	PYRENE	5	5	mg/kg	WA-NW DITCH-S	1/1	-	5.00E+00		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL

TABLE 2.11a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
ON-SITE DITCHES INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Intermediate Soil (0 -20 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	VOC																	
	75-34-3	1,1-DICHLOROETHANE	0.0034 J	0.0034 J	mg/kg	WA-NIMO2	1/3	0.016-9.2	3.40E-03		2.60E+01	1.56E+03	N	5.06E+01	nc	5.06E+01	N	BSL
	87-61-6	1,2,3-TRICHLOROBENZENE	0.008 J	2.2 J	mg/kg	WA-NIMO1	2/2	-	2.20E+00			NV		NV		NV	Y	NTX
	120-82-1	1,2,4-TRICHLOROBENZENE	0.014 J	7.5 J	mg/kg	WA-NIMO1	2/3	0.54-0.54	7.50E+00			7.82E+01	N	6.22E+00	nc	6.22E+00	Y	ASL
	95-63-6	1,2,4-TRIMETHYLBENZENE	0.05	0.05	mg/kg	WA-NIMO2	1/2	9.2-9.2	5.00E-02		5.20E+01	NV		5.16E+00	nc	5.16E+00	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	0.23	190	mg/kg	WA-NIMO1	2/3	0.54-0.54	1.90E+02		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	Y	ASL
	108-67-8	1,3,5-TRIMETHYLBENZENE	0.023	0.023	mg/kg	WA-NIMO2	1/2	9.2-9.2	2.30E-02		5.20E+01	NV		2.13E+01	ca	2.13E+01	N	BSL
	541-73-1	1,3-DICHLOROBENZENE	0.16	76	mg/kg	WA-NIMO1	2/3	0.54-0.54	7.60E+01		4.90E+01	1.80E+00	C	1.60E+00	ca	1.60E+00	Y	ASL
	106-46-7	1,4-DICHLOROBENZENE	0.44	430	mg/kg	WA-NIMO1	2/3	0.54-0.54	4.30E+02		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	Y	ASL
	71-43-2	BENZENE	0.12	0.12	mg/kg	WA-NIMO2	1/3	0.016-9.2	1.20E-01		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	108-90-7	CHLOROBENZENE	1.2	71	mg/kg	WA-NIMO1	2/3	0.016-0.016	7.10E+01		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	Y	ASL
	100-41-4	ETHYLBENZENE	0.0038 J	0.0038 J	mg/kg	WA-NIMO2	1/3	0.016-9.2	3.80E-03		4.10E+01	7.82E+02	N	3.95E+01	nc	3.95E+01	N	BSL
	75-09-2	METHYLENE CHLORIDE	0.015 J	2.7 J	mg/kg	WA-NIMO1	2/3	0.016-0.016	2.70E+00		1.00E+02	8.52E+01	C	9.11E+00	ca	9.11E+00	N	BSL
	103-65-1	N-PROPYLBENZENE	0.0081 J	0.0081 J	mg/kg	WA-NIMO2	1/2	9.2-9.2	8.10E-03		1.00E+02	NV		2.40E+01	nc	2.40E+01	N	BSL
	127-18-4	TETRACHLOROETHENE	0.0096 J	0.0096 J	mg/kg	WA-NIMO2	1/3	0.016-9.2	9.60E-03		1.90E+01	1.18E+00		4.84E-01	ca	4.84E-01	N	BSL
	108-88-3	TOLUENE	0.17	0.17	mg/kg	WA-NIMO2	1/3	0.016-9.2	1.70E-01		1.00E+02	6.26E+02	N	5.20E+01	nc	5.20E+01	N	BSL
	1330-20-7	XYLENES, TOTAL	0.065	0.065	mg/kg	WA-NIMO2	1/3	0.016-9.2	6.50E-02		1.00E+02	1.56E+03	N	2.71E+01	nc	2.71E+01	N	BSL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.0016	0.0075	mg/kg	WA-NW DITCH #3	3/3	-	7.54E-03			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT - Compound is an essential nutrient and is not screened in
- = Compound detected in 100% of samples.
NA = Not applicable, minimum and maximum values are calculated.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utlized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.11b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
ON-SITE DITCHES INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-NW DITCH #3	10/1/1998	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	810	810	ng/kg		0.01	8.1
WA-NW DITCH #3	10/1/1998	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	35200	35200	ng/kg		0.01	352
WA-NW DITCH #3	10/1/1998	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	16400	16400	ng/kg		0.01	164
WA-NW DITCH #3	10/1/1998	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	47.8	47.8	ng/kg		0.1	4.78
WA-NW DITCH #3	10/1/1998	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	46900	46900	ng/kg		0.1	4690
WA-NW DITCH #3	10/1/1998	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	75.4	75.4	ng/kg		0.1	7.54
WA-NW DITCH #3	10/1/1998	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	7530	7530	ng/kg		0.1	753
WA-NW DITCH #3	10/1/1998	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	61.9	61.9	ng/kg		0.1	6.19
WA-NW DITCH #3	10/1/1998	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	449	449	ng/kg		0.1	44.9
WA-NW DITCH #3	10/1/1998	0	0.5	40321-76-4	1,2,3,7,8-PECDD	N	41.1	20.55	ng/kg	U	1	20.55
WA-NW DITCH #3	10/1/1998	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	6720	6720	ng/kg		0.03	201.6
WA-NW DITCH #3	10/1/1998	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	729	729	ng/kg		0.1	72.9
WA-NW DITCH #3	10/1/1998	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	2580	2580	ng/kg		0.3	774
WA-NW DITCH #3	10/1/1998	0	0.5	1746-01-6	2,3,7,8-TCDD	N	53.5	26.75	ng/kg	U	1	26.75
WA-NW DITCH #3	10/1/1998	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	3523	3523	ng/kg		0.1	352.3
WA-NW DITCH #3	10/1/1998	0	0.5	3268-87-9	OCDD	Y	3820	3820	ng/kg		0.0003	1.146
WA-NW DITCH #3	10/1/1998	0	0.5	39001-02-0	OCDF	Y	200000	200000	ng/kg		0.0003	60
											Sample Location TEQ =	**7539.8**
WA-NW DITCH #3	10/1/1998	1	1.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	2350	2350	ng/kg	J	0.01	23.5
WA-NW DITCH #3	10/1/1998	1	1.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	9750	9750	ng/kg	J	0.01	97.5
WA-NW DITCH #3	10/1/1998	1	1.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	6610	6610	ng/kg	J	0.01	66.1
WA-NW DITCH #3	10/1/1998	1	1.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	20.4	20.4	ng/kg	J	0.1	2.04
WA-NW DITCH #3	10/1/1998	1	1.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	13500	13500	ng/kg	J	0.1	1350
WA-NW DITCH #3	10/1/1998	1	1.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	56.8	56.8	ng/kg	J	0.1	5.68
WA-NW DITCH #3	10/1/1998	1	1.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	3400	3400	ng/kg	J	0.1	340
WA-NW DITCH #3	10/1/1998	1	1.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	31.1	31.1	ng/kg	J*	0.1	3.11
WA-NW DITCH #3	10/1/1998	1	1.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	145	145	ng/kg	J	0.1	14.5
WA-NW DITCH #3	10/1/1998	1	1.5	40321-76-4	1,2,3,7,8-PECDD	N	17	8.5	ng/kg	UJ	1	8.5
WA-NW DITCH #3	10/1/1998	1	1.5	57117-41-6	1,2,3,7,8-PECDF	Y	3250	3250	ng/kg	J	0.03	97.5
WA-NW DITCH #3	10/1/1998	1	1.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	497	497	ng/kg	J	0.1	49.7
WA-NW DITCH #3	10/1/1998	1	1.5	57117-31-4	2,3,4,7,8-PECDF	Y	1430	1430	ng/kg	J	0.3	429
WA-NW DITCH #3	10/1/1998	1	1.5	1746-01-6	2,3,7,8-TCDD	Y	21.5	21.5	ng/kg	J*	1	21.5
WA-NW DITCH #3	10/1/1998	1	1.5	51207-31-9	2,3,7,8-TCDF	Y	1010	1010	ng/kg	J	0.1	101
WA-NW DITCH #3	10/1/1998	1	1.5	3268-87-9	OCDD	Y	14000	14000	ng/kg	J	0.0003	4.2
WA-NW DITCH #3	10/1/1998	1	1.5	39001-02-0	OCDF	Y	39600	39600	ng/kg	J	0.0003	11.88
											Sample Location TEQ =	**2625.7**

TABLE 2.11b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
ON-SITE DITCHES INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-NW DITCH-S	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	745	745	ng/kg	J	0.01	7.5
WA-NW DITCH-S	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	3450	3450	ng/kg	J	0.01	34.5
WA-NW DITCH-S	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	3400	3400	ng/kg	J	0.01	34.0
WA-NW DITCH-S	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	29.6	29.6	ng/kg	J	0.1	3.0
WA-NW DITCH-S	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	6230	6230	ng/kg	J	0.1	623.0
WA-NW DITCH-S	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	38.5	38.5	ng/kg	J	0.1	3.9
WA-NW DITCH-S	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1260	1260	ng/kg	J	0.1	126.0
WA-NW DITCH-S	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	32.9	32.9	ng/kg	J	0.1	3.3
WA-NW DITCH-S	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	196	196	ng/kg	J	0.1	19.6
WA-NW DITCH-S	10/26/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	15.6	15.6	ng/kg	J	1	15.6
WA-NW DITCH-S	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	2920	2920	ng/kg	J	0.03	87.6
WA-NW DITCH-S	10/26/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	494	494	ng/kg	J	0.1	49.4
WA-NW DITCH-S	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	1500	1500	ng/kg	J	0.3	450.0
WA-NW DITCH-S	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	11.8	11.8	ng/kg	J	1	11.8
WA-NW DITCH-S	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	1690	1690	ng/kg	J	0.1	169.0
WA-NW DITCH-S	10/26/1999	0	0.5	3268-87-9	OCDD	Y	1620	1620	ng/kg	J	0.0003	0.5
WA-NW DITCH-S	10/26/1999	0	0.5	39001-02-0	OCDF	Y	15700	15700	ng/kg	J	0.0003	4.7
											Sample Location TEQ =	**1643.2**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration
(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.11c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
ON-SITE DITCHES INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-NIMO2	Highly chlorinated PCBs	3	3	9/18/1997	0.56	mg/kg
WA-SEMETDITCH	Highly chlorinated PCBs	0.5	1	11/18/1997	0.74	mg/kg
WA-NIMO1	Highly chlorinated PCBs	3	3	9/18/1997	1.2	mg/kg
WA-NW DITCH-S	Highly chlorinated PCBs	0	0.5	10/26/1999	5.01	mg/kg
WA-NW DITCH #2	Highly chlorinated PCBs	0.5	1	11/18/1997	10	mg/kg
WA-NW DITCH #1	Highly chlorinated PCBs	0.5	1	11/18/1997	14	mg/kg

Notes:
* Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.12a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Southwest Offsite/	METALS																	
Outfall 006 Exposure	7429-90-5	ALUMINUM	4210	7770	mg/kg	WA-OUT006-SS	4/4	-	7.77E+03			7.82E+03	N	7.61E+03	nc	7.61E+03	Y	ASL
Area - Surface Soil	7440-36-0	ANTIMONY	0.38 J	0.42 J	mg/kg	WA-006MASS#2	2/4	0.31-0.76	4.20E-01			3.13E+00	N	3.13E+00	nc	3.13E+00	N	BSL
	7440-38-2	ARSENIC	12.1	27.6	mg/kg	WA-OUT006-SS	4/4	-	2.76E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	167	673	mg/kg	WA-006MASS#3	4/4	-	6.73E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	Y	ASL
	7440-41-7	BERYLLIUM	0.51 J	1.2 J	mg/kg	WA-OUT006-SS	4/4	-	1.20E+00		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.34 J	0.76 J	mg/kg	WA-006MASS#3	3/4	1.2-1.2	7.60E-01		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	96200	197000	mg/kg	WA-006MASS#3	4/4	-	1.97E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	15.6	183	mg/kg	WA-OUT006-SS	4/4	-	1.83E+02		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	5.7 J	34	mg/kg	WA-OUT006-SS	4/4	-	3.40E+01			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	39.6	138	mg/kg	WA-OUT006-SS	4/4	-	1.38E+02		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	57-12-5	CYANIDE	0.82	3	mg/kg	WA-006MASS#1	3/4	0.76-0.76	3.00E+00			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	7439-89-6	IRON	8930	26400 J	mg/kg	WA-OUT006-SS	4/4	-	2.64E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	63.8	566	mg/kg	WA-006MASS#1	4/4	-	5.66E+02		4.00E+02	NV		4.00E+02	nc	4.00E+02	Y	ASL
	7439-95-4	MAGNESIUM	7350	10100	mg/kg	WA-006MASS#2	4/4	-	1.01E+04			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	132	296 J	mg/kg	WA-OUT006-SS	4/4	-	2.96E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	4.3	1880	mg/kg	WA-006MASS#3	8/8	-	1.88E+03			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.0837 J	.0837 J	mg/kg	WA-OUT006-SS	1/1	-	8.37E-02			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	14.3	112	mg/kg	WA-OUT006-SS	4/4	-	1.12E+02		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	N	BSL
	7440-09-7	POTASSIUM	225 J	1500 J	mg/kg	WA-OUT006-SS	4/4	-	1.50E+03			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	1.1 J	2.3	mg/kg	WA-006MASS#3	3/4	4.2-4.2	2.30E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-22-4	SILVER	0.67 J	0.67 J	mg/kg	WA-OUT006-SS	1/4	0.29-0.31	6.70E-01		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	298 J	814 J	mg/kg	WA-006MASS#2	4/4	-	8.14E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	19	106	mg/kg	WA-OUT006-SS	4/4	-	1.06E+02			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	50.1	275	mg/kg	WA-OUT006-SS	4/4	-	2.75E+02		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.78	35	mg/kg	WA-006B	8/8	-	3.50E+01			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	72-55-9	4,4'-DDE	0.036	0.068 J	mg/kg	WA-OUT006-SS	2/8	0.021-0.82	6.80E-02		8.90E+00	1.88E+00	C	1.72E+00	ca	1.72E+00	N	BSL
	309-00-2	ALDRIN	0.047 J	0.12	mg/kg	WA-006MASS#1	2/8	0.011-0.41	1.20E-01		9.70E-02	3.76E-02	C	2.86E-02	ca	2.86E-02	Y	ASL
	319-86-8	DELTA-BHC	0.0036 J	0.0036 J	mg/kg	WA-006MASS#3	1/8	0.011-0.41	3.60E-03		1.00E+02	NV		NV		NV	Y	NTX
	60-57-1	DIELDRIN	0.019 J	0.019 J	mg/kg	WA-006MASS#2	1/8	0.021-0.82	1.90E-02		2.00E-01	3.99E-02	C	3.04E-02	ca	3.04E-02	N	BSL
	959-98-8	ENDOSULFAN I	0.0032 J	0.0032 J	mg/kg	WA-006MASS#3	1/8	0.011-0.82	3.20E-03		2.40E+01	NV		NV		NV	Y	NTX
	33213-65-9	ENDOSULFAN II[d]	0.063	0.063	mg/kg	WA-006MASS#3	1/8	0.021-0.82	6.30E-02		2.40E+01	4.69E+01	N	3.67E+01	nc	3.67E+01	N	BSL
	72-20-8	ENDRIN	0.23 J	0.23 J	mg/kg	WA-OUT006-SS	1/8	0.021-0.82	2.30E-01		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	7421-93-4	ENDRIN ALDEHYDE[e]	0.061	0.2	mg/kg	WA-006MASS#1	3/7	0.4-0.82	2.00E-01		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.049	0.099	mg/kg	WA-006MASS#3	2/3	0.081-0.081	9.90E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	76-44-8	HEPTACHLOR	0.0039 J	0.12	mg/kg	WA-006MASS#1	2/8	0.011-0.41	1.20E-01		2.10E+00	1.42E-01	C	1.08E-01	ca	1.08E-01	Y	ASL
	1024-57-3	HEPTACHLOR EPOXIDE	0.00091 J	0.022 J	mg/kg	WA-006MASS#1	3/8	0.051-0.41	2.20E-02			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
	72-43-5	METHOXYCHLOR	0.1 J	0.1 J	mg/kg	WA-006MASS#2	1/8	0.11-4.1	1.00E-01			3.91E+01	N	3.06E+01	nc	3.06E+01	N	BSL
		TOTAL CHLORDANE[f]	0.0027	0.0027	mg/kg	WA-006MASS#2	1/8	-	2.70E-03			1.82E+00	C	1.62E-01	nc	1.62E-01	N	BSL
	SVOC																	
	105-67-9	2,4-DIMETHYLPHENOL	0.075 J	0.18 J	mg/kg	WA-006MASS#2	2/4	0.4-0.42	1.80E-01			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.12 J	1.2	mg/kg	WA-OUT006-SS	4/4	-	1.20E+00			3.13E+01	N	NV		3.13E+01	N	BSL
	106-47-8	4-CHLOROANILINE	0.55	0.55	mg/kg	WA-006MASS#2	1/4	0.4-0.51	5.50E-01			3.13E+01	N	2.44E+01	nc	2.44E+01	N	BSL
	106-44-5	4-METHYLPHENOL	0.099 J	0.11 J	mg/kg	WA-OUT006-SS	2/4	0.4-0.42	1.10E-01		1.00E+02	3.91E+01	N	3.06E+01	nc	3.06E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.076 J	0.62	mg/kg	WA-OUT006-SS	3/4	0.43-0.43	6.20E-01		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.49 J	0.49 J	mg/kg	WA-OUT006-SS	1/4	0.4-0.43	4.90E-01		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.22 J	1.7 J	mg/kg	WA-OUT006-SS	4/4	-	1.70E+00		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.56	6.7	mg/kg	WA-OUT006-SS	4/4	-	6.70E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.53	7.8 J	mg/kg	WA-OUT006-SS	4/4	-	7.80E+00		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.91	13 J	mg/kg	WA-OUT006-SS	4/4	-	1.30E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.81	5.8 J	mg/kg	WA-OUT006-SS	4/4	-	5.80E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.23 J	3.3 J	mg/kg	WA-OUT006-SS	4/4	-	3.30E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.09 J	0.39 J	mg/kg	WA-006MASS#3	3/3	-	3.90E-01			4.56E+01	C	3.47E+01	ca	3.47E+01	N	BSL
	86-74-8	CARBAZOLE	0.064 J	0.65 J	mg/kg	WA-OUT006-SS	3/4	0.43-0.43	6.50E-01			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	0.66	9.8	mg/kg	WA-OUT006-SS	4/4	-	9.80E+00		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.28 J	2.4 J	mg/kg	WA-OUT006-SS	4/4	-	2.40E+00		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.092 J	0.84	mg/kg	WA-OUT006-SS	4/4	-	8.40E-01		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	206-44-0	FLUORANTHENE	0.66	10	mg/kg	WA-OUT006-SS	4/4	-	1.00E+01		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.086 J	4.7	mg/kg	WA-006MASS#2	4/4	-	4.70E+00		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.16 J	5.1	mg/kg	WA-006B	7/8	0.43-0.43	5.10E+00		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	Y	ASL
	87-68-3	HEXACHLOROBUTADIENE	0.063 J	0.073 J	mg/kg	WA-006MASS#1	2/5	0.003-0.51	7.30E-02			8.19E+00	C	6.24E-01	nc	6.24E-01	N	BSL

TABLE 2.12a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	67-72-1	HEXACHLOROETHANE	0.073 J	0.93	mg/kg	WA-006MASS#2	4/4	-	9.30E-01			4.56E+01	C	3.47E+00	nc	3.47E+00	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.72	5.1 J	mg/kg	WA-OUT006-SS	4/4	-	5.10E+00		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.38 J	3.1	mg/kg	WA-OUT006-SS	4/5	0.003-0.003	3.10E+00		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	1.1	8.8	mg/kg	WA-OUT006-SS	4/4	-	8.80E+00		1.00E+02	NV		NV		NV	Y	NTX
	108-95-2	PHENOL	0.14 J	0.38 J	mg/kg	WA-006MASS#2	3/4	0.42-0.42	3.80E-01		1.00E+02	2.35E+03	N	1.83E+03	nc	1.83E+03	N	BSL
	129-00-0	PYRENE	0.83	15	mg/kg	WA-OUT006-SS	4/4	-	1.50E+01		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	0.063 J	0.52	mg/kg	WA-OUT006-SS	2/5	0.003-0.43	5.20E-01			7.82E+01	N	6.22E+00	nc	6.22E+00	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	0.049 J	3.3	mg/kg	WA-OUT006-SS	3/5	0.003-0.43	3.30E+00		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	N	BSL
	541-73-1	1,3-DICHLOROBENZENE	0.11 J	0.11 J	mg/kg	WA-OUT006-SS	1/5	0.003-0.43	1.10E-01		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.051 J	1.6	mg/kg	WA-OUT006-SS	3/5	0.003-0.43	1.60E+00		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	N	BSL
	71-43-2	BENZENE	0.002 J	0.002 J	mg/kg	WA-006MASS#2	1/8	0.003-0.015	2.00E-03		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	56-23-5	CARBON TETRACHLORIDE	0.0012 J	0.0012 J	mg/kg	WA-006B	1/8	0.003-0.015	1.20E-03		2.40E+00	4.91E+00	C	2.51E-02	nc	2.51E-02	N	BSL
	67-66-3	CHLOROFORM	0.0016 J	0.013 J	mg/kg	WA-006B	5/8	0.013-0.015	1.30E-02		4.90E+01	7.82E+01	N	2.21E-01	ca	2.21E-01	N	BSL
	156-59-2	CIS-1,2-DICHLOROETHENE	0.0014 J	0.0014 J	mg/kg	WA-006B	1/8	0.003-0.015	1.40E-03		1.00E+02	7.82E+01	N	4.29E+00	nc	4.29E+00	N	BSL
	75-09-2	METHYLENE CHLORIDE	0.0046 J	0.19	mg/kg	WA-006MASS#2	4/8	0.006-0.015	1.90E-01		1.00E+02	8.52E+01	C	9.11E+00	ca	9.11E+00	N	BSL
	127-18-4	TETRACHLOROETHENE	0.001 J	0.015 J	mg/kg	WA-006A	5/7	0.013-0.015	1.50E-02		1.90E+01	1.18E+00	C	4.84E-01	ca	4.84E-01	N	BSL
	108-88-3	TOLUENE	0.002 J	0.002 J	mg/kg	WA-006MASS#2	1/8	0.003-0.015	2.00E-03		1.00E+02	6.26E+02	N	5.20E+01	nc	5.20E+01	N	BSL
	79-01-6	TRICHLOROETHENE	0.0091 J	0.07 J	mg/kg	WA-006B	4/8	0.012-0.015	7.00E-02		2.10E+01	1.60E+00	C	5.30E-02	ca	5.30E-02	Y	ASL
	75-69-4	TRICHLOROFLUOROMETHANE	0.0037 J	0.0037 J	mg/kg	WA-006B	1/4	0.006-0.0062	3.70E-03			2.35E+03	N	3.86E+01	nc	3.86E+01	N	BSL
	1330-20-7	XYLENES, TOTAL	0.006 J	0.006 J	mg/kg	WA-006MASS#2	1/7	0.003-0.015	6.00E-03		1.00E+02	1.56E+03	N	2.71E+01	nc	2.71E+01	N	BSL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.000470882	0.000696239	mg/kg	WA-006B	5/5	-	6.96E-04			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT - Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.
f = RBC value for chlordane (CAS# 57749) and PRG value for technical chlordane (CAS# 12789-03-6) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.12b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-006A	10/1/1998	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	478	478	ng/kg	J	0.01	4.78
WA-006A	10/1/1998	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2240	2240	ng/kg	J	0.01	22.4
WA-006A	10/1/1998	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	751	751	ng/kg	J	0.01	7.51
WA-006A	10/1/1998	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	26.7	26.7	ng/kg	J	0.1	2.67
WA-006A	10/1/1998	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2350	2350	ng/kg	J	0.1	235
WA-006A	10/1/1998	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	19.1	19.1	ng/kg	J	0.1	1.91
WA-006A	10/1/1998	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	677	677	ng/kg	J	0.1	67.7
WA-006A	10/1/1998	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	21.3	21.3	ng/kg	J	0.1	2.13
WA-006A	10/1/1998	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	40	40	ng/kg	J	0.1	4
WA-006A	10/1/1998	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	12.2	12.2	ng/kg	J	1	12.2
WA-006A	10/1/1998	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	820	820	ng/kg	J	0.03	24.6
WA-006A	10/1/1998	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	163	163	ng/kg	J	0.1	16.3
WA-006A	10/1/1998	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	455	455	ng/kg	J	0.3	136.5
WA-006A	10/1/1998	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	32.8	32.8	ng/kg	J	1	32.8
WA-006A	10/1/1998	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	928	928	ng/kg	J	0.1	92.8
WA-006A	10/1/1998	0	0.5	3268-87-9	OCDD	Y	3860	3860	ng/kg	J	0.0003	1.158
WA-006A	10/1/1998	0	0.5	39001-02-0	OCDF	Y	5390	5390	ng/kg	J	0.0003	1.617
											Sample Location TEQ =	**666.1**
WA-006A	10/1/1998	1	1.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	397	397	ng/kg	J	0.01	3.97
WA-006A	10/1/1998	1	1.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2070	2070	ng/kg	J	0.01	20.7
WA-006A	10/1/1998	1	1.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	682	682	ng/kg	J	0.01	6.82
WA-006A	10/1/1998	1	1.5	39227-28-6	1,2,3,4,7,8-HXCDD	N	7.88	3.94	ng/kg	UJ	0.1	0.394
WA-006A	10/1/1998	1	1.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2210	2210	ng/kg	J	0.1	221
WA-006A	10/1/1998	1	1.5	57653-85-7	1,2,3,6,7,8-HXCDD	N	7.88	3.94	ng/kg	UJ	0.1	0.394
WA-006A	10/1/1998	1	1.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	642	642	ng/kg	J	0.1	64.2
WA-006A	10/1/1998	1	1.5	19408-74-3	1,2,3,7,8,9-HXCDD	N	7.88	3.94	ng/kg	UJ	0.1	0.394
WA-006A	10/1/1998	1	1.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	17.1	17.1	ng/kg	J	0.1	1.71
WA-006A	10/1/1998	1	1.5	40321-76-4	1,2,3,7,8-PECDD	Y	13.8	13.8	ng/kg	J	1	13.8
WA-006A	10/1/1998	1	1.5	57117-41-6	1,2,3,7,8-PECDF	Y	820	820	ng/kg	J	0.03	24.6
WA-006A	10/1/1998	1	1.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	144	144	ng/kg	J	0.1	14.4
WA-006A	10/1/1998	1	1.5	57117-31-4	2,3,4,7,8-PECDF	Y	436	436	ng/kg	J	0.3	130.8
WA-006A	10/1/1998	1	1.5	1746-01-6	2,3,7,8-TCDD	Y	80	80	ng/kg	J	1	80
WA-006A	10/1/1998	1	1.5	51207-31-9	2,3,7,8-TCDF	Y	875	875	ng/kg	J	0.1	87.5
WA-006A	10/1/1998	1	1.5	3268-87-9	OCDD	Y	3610	3610	ng/kg	J	0.0003	1.083
WA-006A	10/1/1998	1	1.5	39001-02-0	OCDF	Y	5310	5310	ng/kg	J	0.0003	1.593
											Sample Location TEQ =	**673.4**

TABLE 2.12b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-006B	10/1/1998	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	1020	1020	ng/kg	J	0.01	10.2
WA-006B	10/1/1998	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2010	2010	ng/kg	J	0.01	20.1
WA-006B	10/1/1998	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	664	664	ng/kg	J	0.01	6.64
WA-006B	10/1/1998	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	52.8	52.8	ng/kg	J	0.1	5.28
WA-006B	10/1/1998	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2250	2250	ng/kg	J	0.1	225
WA-006B	10/1/1998	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	38.3	38.3	ng/kg	J	0.1	3.83
WA-006B	10/1/1998	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	511	511	ng/kg	J	0.1	51.1
WA-006B	10/1/1998	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	33.7	33.7	ng/kg	J	0.1	3.37
WA-006B	10/1/1998	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	30.8	30.8	ng/kg	J	0.1	3.08
WA-006B	10/1/1998	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	20.3	20.3	ng/kg	J	1	20.3
WA-006B	10/1/1998	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	778	778	ng/kg	J	0.03	23.34
WA-006B	10/1/1998	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	71.4	71.4	ng/kg	J	0.1	7.14
WA-006B	10/1/1998	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	401	401	ng/kg	J	0.3	120.3
WA-006B	10/1/1998	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	54.6	54.6	ng/kg	J	1	54.6
WA-006B	10/1/1998	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	1370	1370	ng/kg	J	0.1	137
WA-006B	10/1/1998	0	0.5	3268-87-9	OCDD	Y	8260	8260	ng/kg	J	0.0003	2.478
WA-006B	10/1/1998	0	0.5	39001-02-0	OCDF	Y	8270	8270	ng/kg	J	0.0003	2.481
											Sample Location TEQ =	**696.2**
WA-006B	10/1/1998	1	1.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	892	892	ng/kg	J	0.01	8.92
WA-006B	10/1/1998	1	1.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2520	2520	ng/kg	J	0.01	25.2
WA-006B	10/1/1998	1	1.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	9500	9500	ng/kg	J	0.01	95
WA-006B	10/1/1998	1	1.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	72.5	72.5	ng/kg	J	0.1	7.25
WA-006B	10/1/1998	1	1.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	57.3	57.3	ng/kg	J	0.1	5.73
WA-006B	10/1/1998	1	1.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	907	907	ng/kg	J	0.1	90.7
WA-006B	10/1/1998	1	1.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	59.6	59.6	ng/kg	J	0.1	5.96
WA-006B	10/1/1998	1	1.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	103	103	ng/kg	J	0.1	10.3
WA-006B	10/1/1998	1	1.5	40321-76-4	1,2,3,7,8-PECDD	Y	36.7	36.7	ng/kg	J	1	36.7
WA-006B	10/1/1998	1	1.5	57117-41-6	1,2,3,7,8-PECDF	Y	1490	1490	ng/kg	J	0.03	44.7
WA-006B	10/1/1998	1	1.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	121	121	ng/kg	J	0.1	12.1
WA-006B	10/1/1998	1	1.5	1746-01-6	2,3,7,8-TCDD	Y	119	119	ng/kg	J	1	119
WA-006B	10/1/1998	1	1.5	51207-31-9	2,3,7,8-TCDF	Y	1620	1620	ng/kg	J	0.1	162
WA-006B	10/1/1998	1	1.5	3268-87-9	OCDD	Y	7630	7630	ng/kg	J	0.0003	2.289
WA-006B	10/1/1998	1	1.5	39001-02-0	OCDF	Y	6000	6000	ng/kg	J	0.0003	1.8
											Sample Location TEQ =	**627.6**

TABLE 2.12b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-OUT006-SS	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	574	574	ng/kg		0.01	5.74
WA-OUT006-SS	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	1180	1180	ng/kg		0.01	11.8
WA-OUT006-SS	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	648	648	ng/kg		0.01	6.48
WA-OUT006-SS	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	31.7	31.7	ng/kg		0.1	3.17
WA-OUT006-SS	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	1220	1220	ng/kg		0.1	122
WA-OUT006-SS	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	24.4	24.4	ng/kg		0.1	2.44
WA-OUT006-SS	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	432	432	ng/kg		0.1	43.2
WA-OUT006-SS	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	29.4	29.4	ng/kg		0.1	2.94
WA-OUT006-SS	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	40.2	40.2	ng/kg		0.1	4.02
WA-OUT006-SS	10/26/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	18.7	18.7	ng/kg		1	18.7
WA-OUT006-SS	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	457	457	ng/kg		0.03	13.71
WA-OUT006-SS	10/26/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	105	105	ng/kg		0.1	10.5
WA-OUT006-SS	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	392	392	ng/kg		0.3	117.6
WA-OUT006-SS	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	41.3	41.3	ng/kg		1	41.3
WA-OUT006-SS	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	655	655	ng/kg		0.1	65.5
WA-OUT006-SS	10/26/1999	0	0.5	3268-87-9	OCDD	Y	3230	3230	ng/kg		0.0003	0.969
WA-OUT006-SS	10/26/1999	0	0.5	39001-02-0	OCDF	Y	2710	2710	ng/kg		0.0003	0.813
											Sample Location TEQ =	**470.9**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration

(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.12c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-006MASS#2	Highly chlorinated PCBs	0	2	10/23/1998	0.78	mg/kg
WA-006MASS#3	Highly chlorinated PCBs	0	2	10/23/1998	1.8	mg/kg
WA-006MASS#1	Highly chlorinated PCBs	0	2	10/23/1998	2.2	mg/kg
WA-OUT006-SS	Highly chlorinated PCBs	0	0.5	10/26/1999	4.5	mg/kg
WA-006A	Highly chlorinated PCBs	0	0.5	9/15/1997	7.9	mg/kg
WA-006A	Highly chlorinated PCBs	1	1.5	9/15/1997	19	mg/kg
WA-006B	Highly chlorinated PCBs	1	1.5	9/15/1997	35	mg/kg
WA-006B	Highly chlorinated PCBs	0	0.5	9/15/1997	35	mg/kg

Notes:
*Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.12d
DERIVATION OF TOTAL CHLORDANES
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location Chlordane Concentration	Units
WA-006MASS#2	0	2	10/23/1998	0.0027	mg/kg

TABLE 2.13a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Southwest Off-site/ Outfall 006 Exposure Area - Upper Soil	METALS																	
	7429-90-5	ALUMINUM	4210	7770	mg/kg	WA-OUT006-SS	4/4	-	7.77E+03			7.82E+02	N	7.61E+03	nc	7.82E+02	Y	ASL
	7440-36-0	ANTIMONY	0.38 J	0.42 J	mg/kg	WA-006MASS#2	2/4	0.31-0.76	4.20E-01			3.13E+00	N	3.13E+00	nc	3.13E+00	N	BSL
	7440-38-2	ARSENIC	12.1	27.6	mg/kg	WA-OUT006-SS	4/4	-	2.76E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	167	673	mg/kg	WA-006MASS#3	4/4	-	6.73E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	Y	ASL
	7440-41-7	BERYLLIUM	0.51 J	1.2 J	mg/kg	WA-OUT006-SS	4/4	-	1.20E+00		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.34 J	0.76 J	mg/kg	WA-006MASS#3	3/4	1.2-1.2	7.60E-01		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	96200	197000	mg/kg	WA-006MASS#3	4/4	-	1.97E+05			NV		NV			N	NUT
	7440-47-3	CHROMIUM[a]	15.6	183	mg/kg	WA-OUT006-SS	4/4	-	1.83E+02		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	5.7 J	34	mg/kg	WA-OUT006-SS	4/4	-	3.40E+01			NV		9.03E+02	ca	9.03E+02	N	BSL
	7440-50-8	COPPER	39.6	138	mg/kg	WA-OUT006-SS	4/4	-	1.38E+02		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	57-12-5	CYANIDE	0.82	3	mg/kg	WA-006MASS#1	3/4	0.76-0.76	3.00E+00			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	7439-89-6	IRON	8930	26400 J	mg/kg	WA-OUT006-SS	4/4	-	2.64E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	63.8	566	mg/kg	WA-006MASS#1	4/4	-	5.66E+02		4.00E+02	NV		4.00E+02	nc	4.00E+02	Y	ASL
	7439-95-4	MAGNESIUM	7350	10100	mg/kg	WA-006MASS#2	4/4	-	1.01E+04			NV		NV			N	NUT
	7439-96-5	MANGANESE	132	296 J	mg/kg	WA-OUT006-SS	4/4	-	2.96E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	4.3	1880	mg/kg	WA-006MASS#3	10/10	-	1.88E+03			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.0837 J	.0837 J	mg/kg	WA-OUT006-SS	1/1	-	8.37E-02			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	14.3	112	mg/kg	WA-OUT006-SS	4/4	-	1.12E+02		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	N	BSL
	7440-09-7	POTASSIUM	225 J	1500 J	mg/kg	WA-OUT006-SS	4/4	-	1.50E+03			NV		NV			N	NUT
	7782-49-2	SELENIUM	1.1 J	2.3	mg/kg	WA-006MASS#3	3/4	4.2-4.2	2.30E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-22-4	SILVER	0.67 J	0.67 J	mg/kg	WA-OUT006-SS	1/4	0.29-0.31	6.70E-01		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	298 J	814 J	mg/kg	WA-006MASS#2	4/4	-	8.14E+02			NV		NV			N	NUT
	7440-62-2	VANADIUM	19	106	mg/kg	WA-OUT006-SS	4/4	-	1.06E+02			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	50.1	275	mg/kg	WA-OUT006-SS	4/4	-	2.75E+02		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.78	35	mg/kg	WA-006B	8/10	-	3.50E+01			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	72-55-9	4,4'-DDE	0.036	0.068 J	mg/kg	WA-OUT006-SS	2/10	0.021-0.82	6.80E-02		8.90E+00	1.88E+00	C	1.72E+00	ca	1.72E+00	N	BSL
	309-00-2	ALDRIN	0.047 J	0.12	mg/kg	WA-006MASS#1	2/10	0.011-0.41	1.20E-01		9.70E-02	3.76E-02	C	2.86E-02	ca	2.86E-02	Y	ASL
	319-86-8	DELTA-BHC	0.0036 J	0.0036 J	mg/kg	WA-006MASS#3	1/10	0.011-0.41	3.60E-03		1.00E+02	NV		NV			N	BSL
	60-57-1	DIELDRIN	0.019 J	0.019 J	mg/kg	WA-006MASS#2	1/10	0.021-0.82	1.90E-02		2.00E-01	3.99E-02	C	3.04E-02	ca	3.04E-02	N	BSL
	959-98-8	ENDOSULFAN I	0.0032 J	0.0032 J	mg/kg	WA-006MASS#3	1/10	0.011-0.82	3.20E-03		2.40E+01	NV		NV			N	BSL
	33213-65-9	ENDOSULFAN II[d]	0.063	0.063	mg/kg	WA-006MASS#3	1/10	0.021-0.82	6.30E-02		2.40E+01	4.69E+01	N	3.67E+01	nc	3.67E+01	N	BSL
	72-20-8	ENDRIN	0.23 J	0.23 J	mg/kg	WA-OUT006-SS	1/10	0.021-0.82	2.30E-01		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	7421-93-4	ENDRIN ALDEHYDE[e]	0.061	0.2	mg/kg	WA-006MASS#1	3/9	0.046-0.82	2.00E-01		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.049	0.099	mg/kg	WA-006MASS#3	2/3	0.081-0.081	9.90E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	76-44-8	HEPTACHLOR	0.0039 J	0.12	mg/kg	WA-006MASS#1	2/10	0.011-0.41	1.20E-01		2.10E+00	1.42E-01	C	1.08E-01	ca	1.08E-01	Y	ASL
	1024-57-3	HEPTACHLOR EPOXIDE	0.00091 J	0.022 J	mg/kg	WA-006MASS#1	3/10	0.023-0.41	2.20E-02			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
	72-43-5	METHOXYCHLOR	0.1 J	0.1 J	mg/kg	WA-006MASS#2	1/10	0.11-4.1	1.00E-01			3.91E+01	N	3.06E+01	nc	3.06E+01	N	BSL
		TOTAL CHLORDANE[f]	0.0027	0.0027	mg/kg	WA-006MASS#2	1/10	-	2.70E-03			1.82E+00	C	1.62E-01	nc	1.62E-01	N	BSL
	SVOC																	
	105-67-9	2,4-DIMETHYLPHENOL	0.075 J	0.18 J	mg/kg	WA-006MASS#2	2/4	0.4-0.42	1.80E-01			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.12 J	1.2	mg/kg	WA-OUT006-SS	4/4	-	1.20E+00			3.13E+01	N	NV		3.13E+01	N	BSL
	106-47-8	4-CHLOROANILINE	0.55	0.55	mg/kg	WA-006MASS#2	1/4	0.4-0.51	5.50E-01			3.13E+01	N	2.44E+01	nc	2.44E+01	N	BSL
	106-44-5	4-METHYLPHENOL	0.099 J	0.11 J	mg/kg	WA-OUT006-SS	2/4	0.4-0.42	1.10E-01		1.00E+02	3.91E+01	N	3.06E+01	nc	3.06E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.076 J	0.62	mg/kg	WA-OUT006-SS	3/4	0.43-0.43	6.20E-01		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.49 J	0.49 J	mg/kg	WA-OUT006-SS	1/4	0.4-0.43	4.90E-01		1.00E+02	NV		NV			N	BSL
	120-12-7	ANTHRACENE	0.22 J	1.7 J	mg/kg	WA-OUT006-SS	4/4	-	1.70E+00		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.56	6.7	mg/kg	WA-OUT006-SS	4/4	-	6.70E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.53	7.8 J	mg/kg	WA-OUT006-SS	4/4	-	7.80E+00		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.91	13 J	mg/kg	WA-OUT006-SS	4/4	-	1.30E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.81	5.8 J	mg/kg	WA-OUT006-SS	4/4	-	5.80E+00		1.00E+02	NV		NV			N	BSL
	207-08-9	BENZO(K)FLUORANTHENE	0.23 J	3.3 J	mg/kg	WA-OUT006-SS	4/4	-	3.30E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.09 J	0.39 J	mg/kg	WA-006MASS#3	3/3	-	3.90E-01			4.56E+01	C	3.47E+01	ca	3.47E+01	N	BSL
	86-74-8	CARBAZOLE	0.064 J	0.65 J	mg/kg	WA-OUT006-SS	3/4	0.43-0.43	6.50E-01			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	0.66	9.8	mg/kg	WA-OUT006-SS	4/4	-	9.80E+00		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.28 J	2.4 J	mg/kg	WA-OUT006-SS	4/4	-	2.40E+00		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL

TABLE 2.13a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	132-64-9	DIBENZOFURAN	0.092 J	0.84	mg/kg	WA-OUT006-SS	4/4	-	8.40E-01		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	206-44-0	FLUORANTHENE	0.66	10	mg/kg	WA-OUT006-SS	4/4	-	1.00E+01		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.086 J	4.7	mg/kg	WA-006MASS#2	4/4	-	4.70E+00		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.087 J	5.1	mg/kg	WA-006B	9/10	0.43-0.43	5.10E+00		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	Y	ASL
	87-68-3	HEXACHLOROBUTADIENE	0.0017 J	0.073 J	mg/kg	WA-006MASS#1	3/7	0.003-7.9	7.30E-02			8.19E+00	C	6.24E+00	ca	6.24E+00	N	BSL
	67-72-1	HEXACHLOROETHANE	0.073 J	0.93	mg/kg	WA-006MASS#2	4/4	-	9.30E-01			4.56E+01	C	3.47E+01	ca	3.47E+01	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.72	5.1 J	mg/kg	WA-OUT006-SS	4/4	-	5.10E+00		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.0017 J	3200 J	mg/kg	WA-006MATP2A	6/7	0.003-0.003	3.20E+03		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	Y	ASL
	85-01-8	PHENANTHRENE	1.1	8.8	mg/kg	WA-OUT006-SS	4/4	-	8.80E+00		1.00E+02	NV		NV			N	BSL
	108-95-2	PHENOL	0.14 J	0.38 J	mg/kg	WA-006MASS#2	3/4	0.42-0.42	3.80E-01		1.00E+02	2.35E+03	N	1.83E+03	nc	1.83E+03	N	BSL
	129-00-0	PYRENE	0.83	15	mg/kg	WA-OUT006-SS	4/4	-	1.50E+01		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	0.063 J	0.52	mg/kg	WA-OUT006-SS	2/7	0.003-7.9	5.20E-01			7.82E+01	N	6.22E+00	nc	6.22E+00	N	BSL
	95-63-6	1,2,4-TRIMETHYLBENZENE	140 J	140 J	mg/kg	WA-006MATP2A	1/3	0.003-0.0034	1.40E+02		5.20E+01	NV		5.16E+00	nc	5.16E+00	Y	ASL
	95-50-1	1,2-DICHLOROBENZENE	0.049 J	3.3	mg/kg	WA-OUT006-SS	3/7	0.003-7.9	3.30E+00		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	N	BSL
	108-67-8	1,3,5-TRIMETHYLBENZENE	100 J	100 J	mg/kg	WA-006MATP2A	1/3	0.003-0.0034	1.00E+02		5.20E+01	NV		2.13E+00	nc	2.13E+00	Y	ASL
	541-73-1	1,3-DICHLOROBENZENE	0.11 J	0.11 J	mg/kg	WA-OUT006-SS	1/7	0.003-7.9	1.10E-01		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.0041 J	76 J	mg/kg	WA-006MATP2A	5/7	0.003-0.43	7.60E+01		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	Y	ASL
	71-43-2	BENZENE	0.002 J	7600 J	mg/kg	WA-006MATP2A	2/10	0.003-0.015	7.60E+03		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	104-51-8	BUTYLBENZENE	3.6 J	3.6 J	mg/kg	WA-006MATP2A	1/3	0.003-0.0034	3.60E+00		1.00E+02	NV		2.40E+01	nc	2.40E+01	N	BSL
	56-23-5	CARBON TETRACHLORIDE	0.0012 J	0.0012 J	mg/kg	WA-006B	1/10	0.003-7.9	1.20E-03		2.40E+00	4.91E+00	C	2.51E-01	ca	2.51E-01	N	BSL
	67-66-3	CHLOROFORM	0.0016 J	0.013 J	mg/kg	WA-006B, WA-006MASS#2, WA-006MASS#3,	6/10	0.013-7.9	1.30E-02		4.90E+01	7.82E+01	N	2.21E-01	ca	2.21E-01	N	BSL
	156-59-2	CIS-1,2-DICHLOROETHENE	0.0014 J	0.0014 J	mg/kg	WA-006B	1/10	0.003-7.9	1.40E-03		1.00E+02	7.82E+01	N	4.29E+00	nc	4.29E+00	N	BSL
	100-41-4	ETHYLBENZENE	88 J	88 J	mg/kg	WA-006MATP2A	1/9	0.003-0.015	8.80E+01		4.10E+01	7.82E+02	N	3.95E+01	nc	3.95E+01	Y	ASL
	75-09-2	METHYLENE CHLORIDE	0.0046 J	3 J	mg/kg	WA-006MATP2A	6/10	0.006-0.015	3.00E+00		1.00E+02	8.52E+01	C	9.11E+00	ca	9.11E+00	N	BSL
	103-65-1	N-PROPYLBENZENE	5.7 J	5.7 J	mg/kg	WA-006MATP2A	1/3	0.003-0.0034	5.70E+00		1.00E+02	NV		2.40E+01	nc	2.40E+01	N	BSL
	99-87-6	P-ISOPROPYLTOLUENE	14 J	14 J	mg/kg	WA-006MATP2A	1/3	0.003-0.0034	1.40E+01			NV		NV			N	BSL
	135-98-8	SEC-BUTYLBENZENE	130 J	130 J	mg/kg	WA-006MATP2A	1/3	0.003-0.0034	1.30E+02		1.00E+02	NV		2.20E+01	nc	2.20E+01	Y	ASL
	98-06-6	TERT-BUTYLBENZENE	43 J	43 J	mg/kg	WA-006MATP2A	1/3	0.003-0.0034	4.30E+01		1.00E+02	NV		3.90E+01	nc	3.90E+01	Y	ASL
	127-18-4	TETRACHLOROETHENE	0.001 J	0.015 J	mg/kg	A-006A, WA-OUT006-S	6/9	0.013-7.9	1.50E-02		1.90E+01	1.18E+00	C	4.84E-01	ca	4.84E-01	N	BSL
	108-88-3	TOLUENE	0.002 J	3100 J	mg/kg	WA-006MATP2A	2/10	0.003-0.015	3.10E+03		1.00E+02	6.26E+02	N	5.20E+01	nc	5.20E+01	Y	ASL
	79-01-6	TRICHLOROETHENE	0.0061 J	0.07 J	mg/kg	WA-006B	5/10	0.012-7.9	7.00E-02		2.10E+01	1.60E+00	C	5.30E-02	ca	5.30E-02	Y	ASL
	75-69-4	TRICHLOROFLUOROMETHANE	0.0037 J	0.0037 J	mg/kg	WA-006B	1/6	0.006-16	3.70E-03			2.35E+03	N	3.86E+01	nc	3.86E+01	N	BSL
	1330-20-7	XYLENES, TOTAL	0.006 J	1700 J	mg/kg	WA-006MATP2A	2/9	0.003-0.015	1.70E+03		1.00E+02	1.56E+03	N	2.71E+01	nc	2.71E+01	Y	ASL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.000627649	0.000696239	mg/kg	WA-006B	5/5	-	6.96E-04			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.
f = RBC value for chlordane (CAS# 57749) and PRG value for technical chlordane (CAS# 12789-03-6) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.13b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-006A	10/1/1998	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	478	478	ng/kg	J	0.01	4.78
WA-006A	10/1/1998	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2240	2240	ng/kg	J	0.01	22.4
WA-006A	10/1/1998	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	751	751	ng/kg	J	0.01	7.51
WA-006A	10/1/1998	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	26.7	26.7	ng/kg	J	0.1	2.67
WA-006A	10/1/1998	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2350	2350	ng/kg	J	0.1	235
WA-006A	10/1/1998	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	19.1	19.1	ng/kg	J	0.1	1.91
WA-006A	10/1/1998	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	677	677	ng/kg	J	0.1	67.7
WA-006A	10/1/1998	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	21.3	21.3	ng/kg	J	0.1	2.13
WA-006A	10/1/1998	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	40	40	ng/kg	J	0.1	4
WA-006A	10/1/1998	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	12.2	12.2	ng/kg	J	1	12.2
WA-006A	10/1/1998	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	820	820	ng/kg	J	0.03	24.6
WA-006A	10/1/1998	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	163	163	ng/kg	J	0.1	16.3
WA-006A	10/1/1998	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	455	455	ng/kg	J	0.3	136.5
WA-006A	10/1/1998	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	32.8	32.8	ng/kg	J	1	32.8
WA-006A	10/1/1998	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	928	928	ng/kg	J	0.1	92.8
WA-006A	10/1/1998	0	0.5	3268-87-9	OCDD	Y	3860	3860	ng/kg	J	0.0003	1.158
WA-006A	10/1/1998	0	0.5	39001-02-0	OCDF	Y	5390	5390	ng/kg	J	0.0003	1.617
											Sample Location TEQ =	**666.1**
WA-006A	10/1/1998	1	1.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	397	397	ng/kg	J	0.01	3.97
WA-006A	10/1/1998	1	1.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2070	2070	ng/kg	J	0.01	20.7
WA-006A	10/1/1998	1	1.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	682	682	ng/kg	J	0.01	6.82
WA-006A	10/1/1998	1	1.5	39227-28-6	1,2,3,4,7,8-HXCDD	N	7.88	3.94	ng/kg	UJ	0.1	0.394
WA-006A	10/1/1998	1	1.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2210	2210	ng/kg	J	0.1	221
WA-006A	10/1/1998	1	1.5	57653-85-7	1,2,3,6,7,8-HXCDD	N	7.88	3.94	ng/kg	UJ	0.1	0.394
WA-006A	10/1/1998	1	1.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	642	642	ng/kg	J	0.1	64.2
WA-006A	10/1/1998	1	1.5	19408-74-3	1,2,3,7,8,9-HXCDD	N	7.88	3.94	ng/kg	UJ	0.1	0.394
WA-006A	10/1/1998	1	1.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	17.1	17.1	ng/kg	J	0.1	1.71
WA-006A	10/1/1998	1	1.5	40321-76-4	1,2,3,7,8-PECDD	Y	13.8	13.8	ng/kg	J	1	13.8
WA-006A	10/1/1998	1	1.5	57117-41-6	1,2,3,7,8-PECDF	Y	820	820	ng/kg	J	0.03	24.6
WA-006A	10/1/1998	1	1.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	144	144	ng/kg	J	0.1	14.4
WA-006A	10/1/1998	1	1.5	57117-31-4	2,3,4,7,8-PECDF	Y	436	436	ng/kg	J	0.3	130.8
WA-006A	10/1/1998	1	1.5	1746-01-6	2,3,7,8-TCDD	Y	80	80	ng/kg	J	1	80
WA-006A	10/1/1998	1	1.5	51207-31-9	2,3,7,8-TCDF	Y	875	875	ng/kg	J	0.1	87.5
WA-006A	10/1/1998	1	1.5	3268-87-9	OCDD	Y	3610	3610	ng/kg	J	0.0003	1.083
WA-006A	10/1/1998	1	1.5	39001-02-0	OCDF	Y	5310	5310	ng/kg	J	0.0003	1.593
											Sample Location TEQ =	**673.4**

TABLE 2.13b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-006B	10/1/1998	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	1020	1020	ng/kg	J	0.01	10.2
WA-006B	10/1/1998	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2010	2010	ng/kg	J	0.01	20.1
WA-006B	10/1/1998	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	664	664	ng/kg	J	0.01	6.64
WA-006B	10/1/1998	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	52.8	52.8	ng/kg	J	0.1	5.28
WA-006B	10/1/1998	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2250	2250	ng/kg	J	0.1	225
WA-006B	10/1/1998	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	38.3	38.3	ng/kg	J	0.1	3.83
WA-006B	10/1/1998	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	511	511	ng/kg	J	0.1	51.1
WA-006B	10/1/1998	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	33.7	33.7	ng/kg	J	0.1	3.37
WA-006B	10/1/1998	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	30.8	30.8	ng/kg	J	0.1	3.08
WA-006B	10/1/1998	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	20.3	20.3	ng/kg	J	1	20.3
WA-006B	10/1/1998	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	778	778	ng/kg	J	0.03	23.34
WA-006B	10/1/1998	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	71.4	71.4	ng/kg	J	0.1	7.14
WA-006B	10/1/1998	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	401	401	ng/kg	J	0.3	120.3
WA-006B	10/1/1998	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	54.6	54.6	ng/kg	J	1	54.6
WA-006B	10/1/1998	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	1370	1370	ng/kg	J	0.1	137
WA-006B	10/1/1998	0	0.5	3268-87-9	OCDD	Y	8260	8260	ng/kg	J	0.0003	2.478
WA-006B	10/1/1998	0	0.5	39001-02-0	OCDF	Y	8270	8270	ng/kg	J	0.0003	2.481
											Sample Location TEQ =	**696.2**
WA-006B	10/1/1998	1	1.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	892	892	ng/kg	J	0.01	8.92
WA-006B	10/1/1998	1	1.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	2520	2520	ng/kg	J	0.01	25.2
WA-006B	10/1/1998	1	1.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	9500	9500	ng/kg	J	0.01	95
WA-006B	10/1/1998	1	1.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	72.5	72.5	ng/kg	J	0.1	7.25
WA-006B	10/1/1998	1	1.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	57.3	57.3	ng/kg	J	0.1	5.73
WA-006B	10/1/1998	1	1.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	907	907	ng/kg	J	0.1	90.7
WA-006B	10/1/1998	1	1.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	59.6	59.6	ng/kg	J	0.1	5.96
WA-006B	10/1/1998	1	1.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	103	103	ng/kg	J	0.1	10.3
WA-006B	10/1/1998	1	1.5	40321-76-4	1,2,3,7,8-PECDD	Y	36.7	36.7	ng/kg	J	1	36.7
WA-006B	10/1/1998	1	1.5	57117-41-6	1,2,3,7,8-PECDF	Y	1490	1490	ng/kg	J	0.03	44.7
WA-006B	10/1/1998	1	1.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	121	121	ng/kg	J	0.1	12.1
WA-006B	10/1/1998	1	1.5	1746-01-6	2,3,7,8-TCDD	Y	119	119	ng/kg	J	1	119
WA-006B	10/1/1998	1	1.5	51207-31-9	2,3,7,8-TCDF	Y	1620	1620	ng/kg	J	0.1	162
WA-006B	10/1/1998	1	1.5	3268-87-9	OCDD	Y	7630	7630	ng/kg	J	0.0003	2.289
WA-006B	10/1/1998	1	1.5	39001-02-0	OCDF	Y	6000	6000	ng/kg	J	0.0003	1.8
											Sample Location TEQ =	**627.6**

TABLE 2.13b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-OUT006-SS	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	574	574	ng/kg		0.01	5.74
WA-OUT006-SS	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	1180	1180	ng/kg		0.01	11.8
WA-OUT006-SS	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	648	648	ng/kg		0.01	6.48
WA-OUT006-SS	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	31.7	31.7	ng/kg		0.1	3.17
WA-OUT006-SS	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	1220	1220	ng/kg		0.1	122
WA-OUT006-SS	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	24.4	24.4	ng/kg		0.1	2.44
WA-OUT006-SS	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	432	432	ng/kg		0.1	43.2
WA-OUT006-SS	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	29.4	29.4	ng/kg		0.1	2.94
WA-OUT006-SS	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	40.2	40.2	ng/kg		0.1	4.02
WA-OUT006-SS	10/26/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	18.7	18.7	ng/kg		1	18.7
WA-OUT006-SS	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	457	457	ng/kg		0.03	13.71
WA-OUT006-SS	10/26/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	105	105	ng/kg		0.1	10.5
WA-OUT006-SS	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	392	392	ng/kg		0.3	117.6
WA-OUT006-SS	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	41.3	41.3	ng/kg		1	41.3
WA-OUT006-SS	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	655	655	ng/kg		0.1	65.5
WA-OUT006-SS	10/26/1999	0	0.5	3268-87-9	OCDD	Y	3230	3230	ng/kg		0.0003	0.969
WA-OUT006-SS	10/26/1999	0	0.5	39001-02-0	OCDF	Y	2710	2710	ng/kg		0.0003	0.813
											Sample Location TEQ =	**470.9**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration

(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.13c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-006MASS#2	Highly chlorinated PCBs	0	2	10/23/1998	0.78	mg/kg
WA-006MASS#3	Highly chlorinated PCBs	0	2	10/23/1998	1.8	mg/kg
WA-006MASS#1	Highly chlorinated PCBs	0	2	10/23/1998	2.2	mg/kg
WA-OUT006-SS	Highly chlorinated PCBs	0	0.5	10/26/1999	4.5	mg/kg
WA-006A	Highly chlorinated PCBs	0	0.5	9/15/1997	7.9	mg/kg
WA-006A	Highly chlorinated PCBs	1	1.5	9/15/1997	19	mg/kg
WA-006B	Highly chlorinated PCBs	1	1.5	9/15/1997	35	mg/kg
WA-006B	Highly chlorinated PCBs	0	0.5	9/15/1997	35	mg/kg

Notes:
*Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.13d
DERIVATION OF TOTAL CHLORDANES
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location Chlordane Concentration	Units
WA-006MASS#2	0	2	10/23/1998	0.0027	mg/kg

TABLE 2.14a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
State Fair Blvd/Northwest	METALS																	
Off-site/Outfall 004	7439-97-6	MERCURY[a]	7.3	160	mg/kg	WA-004B	4/4	-	1.60E+02			7.82E-01	N	6.11E-01	nc	6.11E-01	Y	ASL
Exposure Area -Surface Soil	PCB																	
		HIGHLY CHLORINATED PCBs[b]	0.73	1.5	mg/kg	WA-004B	3/4	-	1.50E+00			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	SVOC																	
	118-74-1	HEXACHLOROBENZENE	0.069	0.14	mg/kg	WA-004B	3/3	-	1.40E-01		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	N	BSL
	91-20-3	NAPHTHALENE	0.0038	0.0038	mg/kg	WA-004A	1/4	0.0028-0.003	3.80E-03		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	VOC																	
	87-61-6	1,2,3-TRICHLOROBENZENE	0.002 J	0.012 J	mg/kg	WA-004B	2/4	0.0028-0.0029	1.20E-02			NV		NV		NV	Y	NTX
	120-82-1	1,2,4-TRICHLOROBENZENE	0.0028 J	0.013 J	mg/kg	WA-004B	2/4	0.0028-0.0029	1.30E-02			7.82E+01	N	6.22E+00	nc	6.22E+00	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	0.0045	0.028	mg/kg	WA-004A	3/4	0.0029-0.0029	2.80E-02		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	N	BSL
	541-73-1	1,3-DICHLOROBENZENE	0.0061 J	0.0071	mg/kg	WA-004A	2/4	0.0028-0.0029	7.10E-03		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.0043	0.046	mg/kg	WA-004A	3/4	0.0029-0.0029	4.60E-02		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	N	BSL
	71-43-2	BENZENE	0.0014 J	0.0014 J	mg/kg	WA-004A	1/4	0.0028-0.003	1.40E-03		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	108-90-7	CHLOROBENZENE	0.0073 J	0.016	mg/kg	WA-004A	2/4	0.0028-0.0029	1.60E-02		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	N	BSL
	67-66-3	CHLOROFORM	0.0013 J	0.0013 J	mg/kg	WA-004B	1/4	0.0028-0.0029	1.30E-03		4.90E+01	7.82E+01	N	2.21E-01	ca	2.21E-01	N	BSL
	127-18-4	TETRACHLOROETHENE	0.0017 J	0.0017 J	mg/kg	WA-004B	1/4	0.0028-0.0029	1.70E-03		1.90E+01	1.18E+00	C	4.84E-01	ca	4.84E-01	N	BSL
	79-01-6	TRICHLOROETHENE	0.0074 J	0.021	mg/kg	WA-004A	4/4	-	2.10E-02		2.10E+01	1.60E+00	C	5.30E-02	ca	5.30E-02	N	BSL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.000447109	0.000527972	mg/kg	WA-004A	2/2	-	5.28E-04			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level
- = Compound detected in 100% of samples.
a = Where mercury was not speciated RBC and PRG values for methyl mercury utilized.
b = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.14b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [(1)]	Calculated Dioxin Equivalency (ng/kg)
WA-004A	10/1/1998	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	1580	1580	ng/kg	J	0.01	15.8
WA-004A	10/1/1998	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	468	468	ng/kg	J	0.01	4.68
WA-004A	10/1/1998	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	248	248	ng/kg	J	0.01	2.48
WA-004A	10/1/1998	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	23.4	23.4	ng/kg	J	0.1	2.34
WA-004A	10/1/1998	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	1210	1210	ng/kg	J	0.1	121
WA-004A	10/1/1998	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	65	65	ng/kg	J	0.1	6.5
WA-004A	10/1/1998	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	189	189	ng/kg	J	0.1	18.9
WA-004A	10/1/1998	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	38.8	38.8	ng/kg	J	0.1	3.88
WA-004A	10/1/1998	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	20.5	20.5	ng/kg	J	0.1	2.05
WA-004A	10/1/1998	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	11.8	11.8	ng/kg	J	1	11.8
WA-004A	10/1/1998	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	904	904	ng/kg	J	0.03	27.12
WA-004A	10/1/1998	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	112	112	ng/kg	J	0.1	11.2
WA-004A	10/1/1998	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	413	413	ng/kg	J	0.3	123.9
WA-004A	10/1/1998	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	34.3	34.3	ng/kg	J	1	34.3
WA-004A	10/1/1998	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	1370	1370	ng/kg	J	0.1	137
WA-004A	10/1/1998	0	0.5	3268-87-9	OCDD	Y	14900	14900	ng/kg	J	0.0003	4.47
WA-004A	10/1/1998	0	0.5	39001-02-0	OCDF	Y	1840	1840	ng/kg	J	0.0003	0.552
											Sample Location TEQ =	**528.0**

TABLE 2.14b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF (1)	Calculated Dioxin Equivalency (ng/kg)
WA-004A	10/1/1998	1	1.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	609	609	ng/kg	J	0.01	6.09
WA-004A	10/1/1998	1	1.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	285	285	ng/kg	J	0.01	2.85
WA-004A	10/1/1998	1	1.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	205	205	ng/kg	J	0.01	2.05
WA-004A	10/1/1998	1	1.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	10.3	10.3	ng/kg	J	0.1	1.03
WA-004A	10/1/1998	1	1.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	1080	1080	ng/kg	J	0.1	108
WA-004A	10/1/1998	1	1.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	29.9	29.9	ng/kg	J	0.1	2.99
WA-004A	10/1/1998	1	1.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	177	177	ng/kg	J	0.1	17.7
WA-004A	10/1/1998	1	1.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	16.6	16.6	ng/kg	J	0.1	1.66
WA-004A	10/1/1998	1	1.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	20.7	20.7	ng/kg	J	0.1	2.07
WA-004A	10/1/1998	1	1.5	40321-76-4	1,2,3,7,8-PECDD	Y	5.66	5.66	ng/kg	J	1	5.66
WA-004A	10/1/1998	1	1.5	57117-41-6	1,2,3,7,8-PECDF	Y	802	802	ng/kg	J	0.03	24.06
WA-004A	10/1/1998	1	1.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	41.9	41.9	ng/kg	J	0.1	4.19
WA-004A	10/1/1998	1	1.5	57117-31-4	2,3,4,7,8-PECDF	Y	399	399	ng/kg	J	0.3	119.7
WA-004A	10/1/1998	1	1.5	1746-01-6	2,3,7,8-TCDD	Y	21.1	21.1	ng/kg	J	1	21.1
WA-004A	10/1/1998	1	1.5	51207-31-9	2,3,7,8-TCDF	Y	1260	1260	ng/kg	J	0.1	126
WA-004A	10/1/1998	1	1.5	3268-87-9	OCDD	Y	5530	5530	ng/kg	J	0.0003	1.659
WA-004A	10/1/1998	1	1.5	39001-02-0	OCDF	Y	1000	1000	ng/kg	J	0.0003	0.3
											Sample Location TEQ =	**447.1**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration

(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.14c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-004A	Highly chlorinated PCBs	1	1.5	9/15/1997	0.73	mg/kg
WA-004A	Highly chlorinated PCBs	0	0.5	9/15/1997	0.92	mg/kg
WA-004B	Highly chlorinated PCBs	0	0.5	9/15/1997	1.5	mg/kg

Notes:
*Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.15a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
State Fair Blvd/Northwest	METALS																	
Offsite/Outfall 004 Exposure	7439-97-6	MERCURY[a]	7.3	160	mg/kg	WA-004B	5/5	-	1.60E+02			7.82E-01	N	6.11E-01	nc	6.11E-01	Y	ASL
Area -Upper Soil	PCB																	
		LESS CHLORINATED PCBs[b]	0.69	0.69	mg/kg	WA-SS#3	1/5	-	6.90E-01			5.48E-01	N	3.93E-01	nc	3.93E-01	Y	ASL
		HIGHLY CHLORINATED PCBs[c]	0.73	1.5	mg/kg	WA-004B	4/5	-	1.50E+00			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	SVOC																	
	118-74-1	HEXACHLOROBENZENE	0.069	0.73	mg/kg	WA-SS#3	4/4	-	7.30E-01		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.0038	0.35 J	mg/kg	WA-SS#3	2/5	0.0028-0.003	3.50E-01		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	VOC																	
	87-61-6	1,2,3-TRICHLOROBENZENE	0.002 J	7.4	mg/kg	WA-SS#3	3/5	0.0028-0.0029	7.40E+00			NV		NV		NV	Y	NTX
	120-82-1	1,2,4-TRICHLOROBENZENE	0.0028 J	5.2	mg/kg	WA-SS#3	3/5	0.0028-0.0029	5.20E+00			7.82E+01	N	6.22E+00	nc	6.22E+00	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	0.0045	0.028	mg/kg	WA-004A	3/5	0.0029-0.98	2.80E-02		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	N	BSL
	541-73-1	1,3-DICHLOROBENZENE	0.0061 J	0.0071	mg/kg	WA-004A	2/5	0.0028-0.98	7.10E-03		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.0043	2400	mg/kg	WA-SS#3	4/5	0.0029-0.0029	2.40E+03		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	Y	ASL
	106-43-4	4-CHLOROTOLUENE	0.51 J	0.51 J	mg/kg	WA-SS#3	1/5	0.0028-0.003	5.10E-01			5.48E+02	N	NV		5.48E+02	N	BSL
	71-43-2	BENZENE	0.0014 J	0.0014 J	mg/kg	WA-004A	1/5	0.0028-0.98	1.40E-03		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	108-86-1	BROMOBENZENE	0.26 J	0.26 J	mg/kg	WA-SS#3	1/5	0.0028-0.003	2.60E-01			NV		2.78E+00	nc	2.78E+00	N	BSL
	108-90-7	CHLOROBENZENE	0.0073 J	2.2	mg/kg	WA-SS#3	3/5	0.0028-0.0029	2.20E+00		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	N	BSL
	67-66-3	CHLOROFORM	0.0013 J	0.0013 J	mg/kg	WA-004B	1/5	0.0028-0.98	1.30E-03		4.90E+01	7.82E+01	N	2.21E-01	ca	2.21E-01	N	BSL
	156-59-2	CIS-1,2-DICHLOROETHENE	0.57 J	0.57 J	mg/kg	WA-SS#3	1/5	0.0028-0.003	5.70E-01		1.00E+02	7.82E+01	N	4.29E+00	nc	4.29E+00	N	BSL
	127-18-4	TETRACHLOROETHENE	0.0017 J	0.34 J	mg/kg	WA-SS#3	2/5	0.0028-0.0029	3.40E-01		1.90E+01	1.18E+00	C	4.84E-01	ca	4.84E-01	N	BSL
	79-01-6	TRICHLOROETHENE	0.0074 J	0.57 J	mg/kg	WA-SS#3	5/5	-	5.70E-01		2.10E+01	1.60E+00	C	5.30E-02	ca	5.30E-02	Y	ASL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.00045	0.00053	mg/kg	WA-004A	2/2	-	5.28E-04			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level
- = Compound detected in 100% of samples.
a = Where mercury was not speciated RBC and PRG values for methyl mercury utilized.
b = When detected, reflects summary statistics of Aroclor 1221, 1232, 1016, and 1242. RBC and PRG values for Aroclor-1016 (CAS# 12674112) utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.15b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [(1)]	Calculated Dioxin Equivalency (ng/kg)
WA-004A	10/1/1998	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	1580	1580	ng/kg	J	0.01	15.8
WA-004A	10/1/1998	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	468	468	ng/kg	J	0.01	4.68
WA-004A	10/1/1998	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	248	248	ng/kg	J	0.01	2.48
WA-004A	10/1/1998	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	23.4	23.4	ng/kg	J	0.1	2.34
WA-004A	10/1/1998	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	1210	1210	ng/kg	J	0.1	121
WA-004A	10/1/1998	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	65	65	ng/kg	J	0.1	6.5
WA-004A	10/1/1998	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	189	189	ng/kg	J	0.1	18.9
WA-004A	10/1/1998	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	38.8	38.8	ng/kg	J	0.1	3.88
WA-004A	10/1/1998	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	20.5	20.5	ng/kg	J	0.1	2.05
WA-004A	10/1/1998	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	11.8	11.8	ng/kg	J	1	11.8
WA-004A	10/1/1998	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	904	904	ng/kg	J	0.03	27.12
WA-004A	10/1/1998	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	112	112	ng/kg	J	0.1	11.2
WA-004A	10/1/1998	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	413	413	ng/kg	J	0.3	123.9
WA-004A	10/1/1998	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	34.3	34.3	ng/kg	J	1	34.3
WA-004A	10/1/1998	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	1370	1370	ng/kg	J	0.1	137
WA-004A	10/1/1998	0	0.5	3268-87-9	OCDD	Y	14900	14900	ng/kg	J	0.0003	4.47
WA-004A	10/1/1998	0	0.5	39001-02-0	OCDF	Y	1840	1840	ng/kg	J	0.0003	0.552
										Sample Location TEQ =		**528.0**

TABLE 2.15b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [(1)]	Calculated Dioxin Equivalency (ng/kg)
WA-004A	10/1/1998	1	1.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	609	609	ng/kg	J	0.01	6.09
WA-004A	10/1/1998	1	1.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	285	285	ng/kg	J	0.01	2.85
WA-004A	10/1/1998	1	1.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	205	205	ng/kg	J	0.01	2.05
WA-004A	10/1/1998	1	1.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	10.3	10.3	ng/kg	J	0.1	1.03
WA-004A	10/1/1998	1	1.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	1080	1080	ng/kg	J	0.1	108
WA-004A	10/1/1998	1	1.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	29.9	29.9	ng/kg	J	0.1	2.99
WA-004A	10/1/1998	1	1.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	177	177	ng/kg	J	0.1	17.7
WA-004A	10/1/1998	1	1.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	16.6	16.6	ng/kg	J	0.1	1.66
WA-004A	10/1/1998	1	1.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	20.7	20.7	ng/kg	J	0.1	2.07
WA-004A	10/1/1998	1	1.5	40321-76-4	1,2,3,7,8-PECDD	Y	5.66	5.66	ng/kg	J	1	5.66
WA-004A	10/1/1998	1	1.5	57117-41-6	1,2,3,7,8-PECDF	Y	802	802	ng/kg	J	0.03	24.06
WA-004A	10/1/1998	1	1.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	41.9	41.9	ng/kg	J	0.1	4.19
WA-004A	10/1/1998	1	1.5	57117-31-4	2,3,4,7,8-PECDF	Y	399	399	ng/kg	J	0.3	119.7
WA-004A	10/1/1998	1	1.5	1746-01-6	2,3,7,8-TCDD	Y	21.1	21.1	ng/kg	J	1	21.1
WA-004A	10/1/1998	1	1.5	51207-31-9	2,3,7,8-TCDF	Y	1260	1260	ng/kg	J	0.1	126
WA-004A	10/1/1998	1	1.5	3268-87-9	OCDD	Y	5530	5530	ng/kg	J	0.0003	1.659
WA-004A	10/1/1998	1	1.5	39001-02-0	OCDF	Y	1000	1000	ng/kg	J	0.0003	0.3
											Sample Location TEQ =	**447.1**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration

(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.15c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-004A	Highly chlorinated PCBs	1	1.5	9/15/1997	0.73	mg/kg
WA-004A	Highly chlorinated PCBs	0	0.5	9/15/1997	0.92	mg/kg
WA-SS#3	Highly chlorinated PCBs	9	9	9/15/1997	1	mg/kg
WA-004B	Highly chlorinated PCBs	0	0.5	9/15/1997	1.5	mg/kg
WA-SS#3	Less chlorinated PCBs	9	9	9/15/1997	0.69	mg/kg

Notes:
* Less chlorinated PCBs were defined as Aroclors 1221, 1232, 1016, and 1242. Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.16a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
LAKESHORE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Lakeshore Area - Surface Soil	METALS																	
	7429-90-5	ALUMINUM	4260	8790	mg/kg	WA-LS-3	6/6	-	8.79E+03			7.82E+03	N	7.61E+03	nc	7.61E+03	Y	ASL
	7440-36-0	ANTIMONY	0.34 J	0.61 J	mg/kg	WA-LS-4	2/6	0.28-0.33	6.10E-01			3.13E+00	N	3.13E+00	nc	3.13E+00	N	BSL
	7440-38-2	ARSENIC	4.5	13.5 J	mg/kg	WA-LS-6	6/6	-	1.35E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	25.2 J	195	mg/kg	WA-LS-2	6/6	-	1.95E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	N	BSL
	7440-41-7	BERYLLIUM	0.33 J	0.55 J	mg/kg	WA-LS-4	6/6	-	5.50E-01		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.3 J	0.7 J	mg/kg	WA-LS-2	6/6	-	7.00E-01		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	92700	116000	mg/kg	WA-LS-1	6/6	-	1.16E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	20.9	56.4	mg/kg	WA-LS-4	6/6	-	5.64E+01		1.10E+02	2.35E+02	N	3.01E+01	ca	3.01E+01	Y	TOX
	7440-48-4	COBALT	6 J	11.8	mg/kg	WA-LS-4	6/6	-	1.18E+01			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	15.7	37.2	mg/kg	WA-LS-2	6/6	-	3.72E+01		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	7439-89-6	IRON	13000	19000	mg/kg	WA-LS-4	6/6	-	1.90E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	13.7	79.6	mg/kg	WA-LS-2	6/6	-	7.96E+01		4.00E+02	NV		4.00E+02	nc	4.00E+02	N	BSL
	7439-95-4	MAGNESIUM	12900	51500	mg/kg	WA-LS-1	6/6	-	5.15E+04			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	300 J	397 J	mg/kg	WA-LS-4	6/6	-	3.97E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	0.17	3.2	mg/kg	WA-LS-6	6/6	-	3.20E+00			7.82E-01	N	6.11E-01	nc	6.11E-01	Y	ASL
	7440-02-0	NICKEL	16.1	36.5	mg/kg	WA-LS-4	6/6	-	3.65E+01		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	N	BSL
	7440-09-7	POTASSIUM	775 J	2060	mg/kg	WA-LS-1	6/6	-	2.06E+03			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	0.78 J	1.2 J	mg/kg	WA-LS-5	6/6	-	1.20E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	232 J	705 J	mg/kg	WA-LS-4	6/6	-	7.05E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	13.2	22.5	mg/kg	WA-LS-4	6/6	-	5.53E+01			NV		NV		NV	Y	NTX
	7440-66-6	ZINC	29.8	125	mg/kg	WA-LS-2	6/6	-	3.46E+02		1.00E+04	NV		NV		NV	Y	NTX
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.027	3.7	mg/kg	WA-LS-2	6/6	-	3.70E+00			3.19E-02	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	319-84-6	ALPHA-BHC	0.00086 J	0.016 J	mg/kg	WA-LS-3	4/6	0.00012-0.11	1.60E-02		4.80E-01	1.01E-01	C	9.02E-02	ca	9.02E-02	N	BSL
	319-85-7	BETA-BHC	0.0019 J	0.016 J	mg/kg	WA-LS-2	4/5	0.032-0.032	1.60E-02		3.60E-01	3.55E-01	C	3.16E-01	ca	3.16E-01	N	BSL
	959-98-8	ENDOSULFAN I	0.025 J	0.025 J	mg/kg	WA-LS-2	1/6	0.0004-0.097	2.50E-02		2.40E+01	NV		NV		NV	Y	NTX
	33213-65-9	ENDOSULFAN II[d]	0.11 J	0.11 J	mg/kg	WA-LS-2	1/6	0.0021-0.037	1.10E-01		2.40E+01	4.69E+01	N	3.67E+01	nc	3.67E+01	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.0084	0.065 J	mg/kg	WA-LS-3	4/6	0.00084-0.02	6.50E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.015 J	0.015 J	mg/kg	WA-LS-3	1/6	0.00056-0.012	1.50E-02			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
		TOTAL CHLORDANE[f]	0.00098	0.00098	mg/kg	WA-LS-1	1/6	-	9.80E-04			1.82E-01	C	1.62E-01	nc	1.62E-01	N	BSL
	SVOC																	
	91-57-6	2-METHYLNAPHTHALENE	0.14 J	2.3 J	mg/kg	WA-LS-3	2/6	0.36-7.4	2.30E+00			3.13E+02	N	NV		3.13E+02	N	BSL
	83-32-9	ACENAPHTHENE	1.4 J	1.4 J	mg/kg	WA-LS-3	1/6	0.36-7.4	1.40E+00		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.057 J	2.1 J	mg/kg	WA-LS-3	3/6	0.36-7.4	2.10E+00		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.095 J	4.8 J	mg/kg	WA-LS-3	4/6	0.36-7.4	4.80E+00		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.054 J	11	mg/kg	WA-LS-3	6/6	-	1.10E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.051 J	8.9 J	mg/kg	WA-LS-3	6/6	-	8.90E+00		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.089 J	12 J	mg/kg	WA-LS-3	6/6	-	1.20E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.4 J	3.4 J	mg/kg	WA-LS-3	5/6	0.36-0.36	3.40E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.21 J	4.3 J	mg/kg	WA-LS-3	5/6	0.36-0.36	4.30E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.066 J	0.079 J	mg/kg	WA-LS-4	2/6	0.36-9.7	7.90E-02			4.56E+01	C	3.47E+01	ca	3.47E+01	N	BSL
	86-74-8	CARBAZOLE	0.054 J	1.7 J	mg/kg	WA-LS-3	2/6	0.36-7.4	1.70E+00			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	0.07 J	12	mg/kg	WA-LS-3	6/6	-	1.20E+01		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.12 J	1.2 J	mg/kg	WA-LS-3, WA-LS-5	5/6	0.36-0.36	1.20E+00		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.079 J	2.5 J	mg/kg	WA-LS-3	2/6	0.36-7.4	2.50E+00		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	206-44-0	FLUORANTHENE	0.11 J	22	mg/kg	WA-LS-3	6/6	-	2.20E+01		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.15 J	4.7 J	mg/kg	WA-LS-3	3/6	0.36-7.4	4.70E+00		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.2 J	0.2 J	mg/kg	WA-LS-2	1/6	0.36-9.7	2.00E-01		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.34 J	3.4 J	mg/kg	WA-LS-3	5/6	0.36-0.36	3.40E+00		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.099 J	1.2 J	mg/kg	WA-LS-3	4/6	0.36-7.4	1.20E+00		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	0.06 J	27	mg/kg	WA-LS-3	6/6	-	2.70E+01		1.00E+02	NV		NV		NV	Y	NTX
	129-00-0	PYRENE	0.12 J	26	mg/kg	WA-LS-3	6/6	-	2.60E+01		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	0.82 J	0.82 J	mg/kg	WA-LS-2	1/6	0.36-9.7	8.20E-01			7.82E+01	N	6.22E+00	nc	6.22E+00	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	0.065 J	1.6 J	mg/kg	WA-LS-5	4/6	0.36-9.7	1.60E+00		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.11 J	1.5 J	mg/kg	WA-LS-5	4/6	0.36-9.7	1.50E+00		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	N	BSL
	67-64-1	ACETONE	0.002 J	0.003 J	mg/kg	WA-LS-4, WA-LS-6, WA-LS-3, WA-LS-2	6/6	-	3.00E-03		1.00E+02	7.04E+03	N	1.41E+03	nc	1.41E+03	N	BSL
	75-09-2	METHYLENE CHLORIDE	0.001 J	0.003 J	mg/kg	WA-LS-2	5/6	0.011-0.011	3.00E-03		1.00E+02	8.52E+01	C	9.11E+00	ca	9.11E+00	N	BSL

TABLE 2.16a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
LAKESHORE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.0000092	0.000076	mg/kg	WA-LS-3	3/3	-	7.62E-05			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.
f = RBC value for chlordane (CAS# 57749) and PRG value for technical chlordane (CAS# 12789-03-6) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.16b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
LAKESHORE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-LS-1	4/5/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	105	105	ng/kg	J	0.01	1.05
WA-LS-1	4/5/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	13.5	13.5	ng/kg	J	0.01	0.135
WA-LS-1	4/5/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2.38	2.38	ng/kg	J	0.01	0.0238
WA-LS-1	4/5/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.85	1.85	ng/kg	J	0.1	0.185
WA-LS-1	4/5/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	8.81	8.81	ng/kg	J	0.1	0.881
WA-LS-1	4/5/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	4.93	4.93	ng/kg	J	0.1	0.493
WA-LS-1	4/5/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1.9	1.9	ng/kg	J	0.1	0.19
WA-LS-1	4/5/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.29	2.29	ng/kg	J	0.1	0.229
WA-LS-1	4/5/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.21	0.21	ng/kg	J	0.1	0.021
WA-LS-1	4/5/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	1.86	1.86	ng/kg		1	1.86
WA-LS-1	4/5/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	8.46	8.46	ng/kg		0.03	0.2538
WA-LS-1	4/5/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	N	0.46	0.23	ng/kg	UJ	0.1	0.023
WA-LS-1	4/5/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	4.09	4.09	ng/kg		0.3	1.227
WA-LS-1	4/5/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	0.27	0.27	ng/kg	J	1	0.27
WA-LS-1	4/5/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	20.8	20.8	ng/kg	J	0.1	2.08
WA-LS-1	4/5/1999	0	0.5	3268-87-9	OCDD	Y	936	936	ng/kg	J	0.0003	0.2808
WA-LS-1	4/5/1999	0	0.5	39001-02-0	OCDF	Y	73	73	ng/kg	J	0.0003	0.0219
											Sample Location TEQ =	**9.2**
WA-LS-3	4/5/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	245	245	ng/kg	J	0.01	2.45
WA-LS-3	4/5/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	91.5	91.5	ng/kg	J	0.01	0.915
WA-LS-3	4/5/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	33.4	33.4	ng/kg	J	0.01	0.334
WA-LS-3	4/5/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.37	4.37	ng/kg	J	0.1	0.437
WA-LS-3	4/5/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	131	131	ng/kg	J	0.1	13.1
WA-LS-3	4/5/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	13.6	13.6	ng/kg	J	0.1	1.36
WA-LS-3	4/5/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	26	26	ng/kg	J	0.1	2.6
WA-LS-3	4/5/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	7.75	7.75	ng/kg	J	0.1	0.775
WA-LS-3	4/5/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.92	2.92	ng/kg	J	0.1	0.292
WA-LS-3	4/5/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	5.18	5.18	ng/kg		1	5.18
WA-LS-3	4/5/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	127	127	ng/kg		0.03	3.81
WA-LS-3	4/5/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	5.87	5.87	ng/kg	J	0.1	0.587
WA-LS-3	4/5/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	55.3	55.3	ng/kg		0.3	16.59
WA-LS-3	4/5/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	1.15	1.15	ng/kg		1	1.15
WA-LS-3	4/5/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	260	260	ng/kg	J	0.1	26
WA-LS-3	4/5/1999	0	0.5	3268-87-9	OCDD	Y	1830	1830	ng/kg	J	0.0003	0.549
WA-LS-3	4/5/1999	0	0.5	39001-02-0	OCDF	Y	227	227	ng/kg	J	0.0003	0.0681
											Sample Location TEQ =	**76.2**

TABLE 2.16b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
LAKESHORE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-LS-5	4/5/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	17.4	17.4	ng/kg	J	0.01	0.174
WA-LS-5	4/5/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	7.03	7.03	ng/kg	J	0.01	0.0703
WA-LS-5	4/5/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	0.78	0.78	ng/kg	J	0.01	0.0078
WA-LS-5	4/5/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.44	0.44	ng/kg	J	0.1	0.044
WA-LS-5	4/5/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2.91	2.91	ng/kg	J	0.1	0.291
WA-LS-5	4/5/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1.53	1.53	ng/kg	J	0.1	0.153
WA-LS-5	4/5/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	0.82	0.82	ng/kg	J	0.1	0.082
WA-LS-5	4/5/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	104	104	ng/kg	J	0.1	10.4
WA-LS-5	4/5/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.11	0.11	ng/kg	J	0.1	0.011
WA-LS-5	4/5/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	0.66	0.66	ng/kg	J	1	0.66
WA-LS-5	4/5/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	1.72	1.72	ng/kg		0.03	0.0516
WA-LS-5	4/5/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	N	0.47	0.235	ng/kg	UJ	0.1	0.0235
WA-LS-5	4/5/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	2.67	2.67	ng/kg		0.3	0.801
WA-LS-5	4/5/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	1.71	1.71	ng/kg		1	1.71
WA-LS-5	4/5/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	6.22	6.22	ng/kg	J	0.1	0.622
WA-LS-5	4/5/1999	0	0.5	3268-87-9	OCDD	Y	117	117	ng/kg	J	0.0003	0.0351
WA-LS-5	4/5/1999	0	0.5	39001-02-0	OCDF	Y	17.4	17.4	ng/kg		0.0003	0.00522
											Sample Location TEQ =	**15.1**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration

(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.16c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
LAKESHORE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-LS-6	Highly chlorinated PCBs	0	0.5	4/5/1999	0.027	mg/kg
WA-LS-4	Highly chlorinated PCBs	0	0.5	4/5/1999	0.027	mg/kg
WA-LS-1	Highly chlorinated PCBs	0	0.5	4/5/1999	0.029	mg/kg
WA-LS-5	Highly chlorinated PCBs	0	0.5	4/5/1999	0.035	mg/kg
WA-LS-3	Highly chlorinated PCBs	0	0.5	4/5/1999	0.46	mg/kg
WA-LS-2	Highly chlorinated PCBs	0	0.5	4/5/1999	3.7	mg/kg

Notes:
* Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.16d
DERIVATION OF TOTAL CHLORDANES
LAKESHORE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location Chlordane Concentration	Units
WA-LS-1	0	0.5	4/5/1999	0.00098	mg/kg

TABLE 2.17a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
LAKESHORE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Lakeshore Area - Upper Soil	METALS																	
	7429-90-5	ALUMINUM	4260	8790	mg/kg	WA-LS-3	6/6	-	8.79E+03			7.82E+03	N	7.61E+03	nc	7.61E+03	Y	ASL
	7440-36-0	ANTIMONY	0.34 J	0.61 J	mg/kg	WA-LS-4	2/6	0.28-0.33	6.10E-01			3.13E+00	N	3.13E+00	nc	3.13E+00	N	BSL
	7440-38-2	ARSENIC	4.5	13.5 J	mg/kg	WA-LS-6	6/6	-	1.35E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	25.2 J	195	mg/kg	WA-LS-2	6/6	-	1.95E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	N	BSL
	7440-41-7	BERYLLIUM	0.33 J	0.55 J	mg/kg	WA-LS-4	6/6	-	5.50E-01		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.3 J	0.7 J	mg/kg	WA-LS-2	6/6	-	7.00E-01		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	92700	116000	mg/kg	WA-LS-1	6/6	-	1.16E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	20.9	56.4	mg/kg	WA-LS-4	6/6	-	5.64E+01		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	6 J	11.8	mg/kg	WA-LS-4	6/6	-	1.18E+01			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	15.7	37.2	mg/kg	WA-LS-2	6/6	-	3.72E+01		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	7439-89-6	IRON	13000	19000	mg/kg	WA-LS-4	6/6	-	1.90E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	13.7	79.6	mg/kg	WA-LS-2	6/6	-	7.96E+01		4.00E+02	NV		4.00E+02	nc	4.00E+02	N	BSL
	7439-95-4	MAGNESIUM	12900	51500	mg/kg	WA-LS-1	6/6	-	5.15E+04			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	300 J	397 J	mg/kg	WA-LS-4	6/6	-	3.97E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	0.17	3.2	mg/kg	WA-LS-6	6/6	-	3.20E+00			7.82E-01	N	6.11E-01	nc	6.11E-01	Y	ASL
	7440-02-0	NICKEL	16.1	36.5	mg/kg	WA-LS-4	6/6	-	3.65E+01		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	N	BSL
	7440-09-7	POTASSIUM	775 J	2060	mg/kg	WA-LS-1	6/6	-	2.06E+03			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	0.78 J	1.2 J	mg/kg	WA-LS-5	6/6	-	1.20E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	232 J	705 J	mg/kg	WA-LS-4	6/6	-	7.05E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	13.2	22.5	mg/kg	WA-LS-4	6/6	-	3.46E+02			NV		NV		NV	Y	NTX
	7440-66-6	ZINC	29.8	125	mg/kg	WA-LS-2	6/6	-	3.19E+01		1.00E+04	NV		NV		NV	Y	NTX
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.027	3.7	mg/kg	WA-LS-2	6/6	-	3.70E+00			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	319-84-6	ALPHA-BHC	0.00086 J	0.016 J	mg/kg	WA-LS-3	4/6	0.00012-0.11	1.60E-02		4.80E-01	1.01E-01	C	9.02E-02	ca	9.02E-02	N	BSL
	319-85-7	BETA-BHC	0.0019 J	0.016 J	mg/kg	WA-LS-2	4/5	0.032-0.032	1.60E-02		3.60E-01	3.55E-01	C	3.16E-01	ca	3.16E-01	N	BSL
	959-98-8	ENDOSULFAN I	0.025 J	0.025 J	mg/kg	WA-LS-2	1/6	0.0004-0.097	5.00E-02		2.40E+01	NV		NV		NV	Y	NTX
	33213-65-9	ENDOSULFAN II[d]	0.11 J	0.11 J	mg/kg	WA-LS-2	1/6	0.0021-0.037	1.10E-01		2.40E+01	4.69E+01	N	3.67E+01	nc	3.67E+01	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.0084	0.065 J	mg/kg	WA-LS-3	4/6	0.00084-0.02	6.50E-02		1.10E+01	2.35E+00	N	1.83E+00	nc	1.83E+00	N	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.015 J	0.015 J	mg/kg	WA-LS-3	1/6	0.00056-0.012	1.50E-02			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
		TOTAL CHLORDANE[f]	0.00098	0.00098	mg/kg	WA-LS-1	1/6	-	9.80E-04			1.82E+00	C	1.62E-01	nc	1.62E-01	N	BSL
	SVOC																	
	91-57-6	2-METHYLNAPHTHALENE	0.14 J	2.3 J	mg/kg	WA-LS-3	2/6	0.36-7.4	2.30E+00			3.13E+01	N	NV		3.13E+01	N	BSL
	83-32-9	ACENAPHTHENE	1.4 J	1.4 J	mg/kg	WA-LS-3	1/6	0.36-7.4	1.40E+00		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.057 J	2.1 J	mg/kg	WA-LS-3	3/6	0.36-7.4	2.10E+00		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.095 J	4.8 J	mg/kg	WA-LS-3	4/6	0.36-7.4	4.80E+00		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.054 J	11	mg/kg	WA-LS-3	6/6	-	1.10E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.051 J	8.9 J	mg/kg	WA-LS-3	6/6	-	8.90E+00		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.089 J	12 J	mg/kg	WA-LS-3	6/6	-	1.20E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.4 J	3.4 J	mg/kg	WA-LS-3	5/6	0.36-0.36	3.40E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.21 J	4.3 J	mg/kg	WA-LS-3	5/6	0.36-0.36	4.30E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.066 J	0.079 J	mg/kg	WA-LS-4	2/6	0.36-9.7	7.90E-02			4.56E+01	C	3.47E+01	ca	3.47E+01	N	BSL
	86-74-8	CARBAZOLE	0.054 J	1.7 J	mg/kg	WA-LS-3	2/6	0.36-7.4	1.70E+00			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	0.07 J	12	mg/kg	WA-LS-3	6/6	-	1.20E+01		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.12 J	1.2 J	mg/kg	WA-LS-3, WA-LS-5	5/6	0.36-0.36	1.20E+00		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.079 J	2.5 J	mg/kg	WA-LS-3	2/6	0.36-7.4	2.50E+00		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	206-44-0	FLUORANTHENE	0.11 J	22	mg/kg	WA-LS-3	6/6	-	2.20E+01		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.15 J	4.7 J	mg/kg	WA-LS-3	3/6	0.36-7.4	4.70E+00		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.2 J	0.2 J	mg/kg	WA-LS-2	1/6	0.36-9.7	2.00E-01		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.34 J	3.4 J	mg/kg	WA-LS-3	5/6	0.36-0.36	3.40E+00		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.099 J	1.2 J	mg/kg	WA-LS-3	4/6	0.36-7.4	1.20E+00		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	0.06 J	27	mg/kg	WA-LS-3	6/6	-	2.70E+01		1.00E+02	NV		NV		NV	Y	NTX
	129-00-0	PYRENE	0.12 J	26	mg/kg	WA-LS-3	6/6	-	2.60E+01		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL

TABLE 2.17a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
LAKESHORE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	0.82 J	0.82 J	mg/kg	WA-LS-2	1/6	0.36-9.7	8.20E-01			7.82E+01	N	6.22E+00	nc	6.22E+00	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	0.065 J	1.6 J	mg/kg	WA-LS-5	4/6	0.36-9.7	1.60E+00		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.11 J	1.5 J	mg/kg	WA-LS-5	4/6	0.36-9.7	1.50E+00		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	N	BSL
	67-64-1	ACETONE	0.002 J	0.003 J	mg/kg	WA-LS-4, WA-LS-6, WA-LS-3, WA-LS-2	6/6	-	3.00E-03		1.00E+02	7.04E+03	N	1.41E+03	nc	1.41E+03	N	BSL
	75-09-2	METHYLENE CHLORIDE	0.001 J	0.003 J	mg/kg	WA-LS-2	5/6	0.011-0.011	3.00E-03		1.00E+02	8.52E+01	C	9.11E+00	ca	9.11E+00	N	BSL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.0000092	0.000076	mg/kg	WA-LS-3	3/3	-	7.62E-05			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.
f = RBC value for chlordane (CAS# 57749) and PRG value for technical chlordane (CAS# 12789-03-6) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007

TABLE 2.17b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
LAKESHORE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-LS-1	4/5/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	105	105	ng/kg	J	0.01	1.05
WA-LS-1	4/5/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	13.5	13.5	ng/kg	J	0.01	0.135
WA-LS-1	4/5/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	2.38	2.38	ng/kg	J	0.01	0.0238
WA-LS-1	4/5/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	1.85	1.85	ng/kg	J	0.1	0.185
WA-LS-1	4/5/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	8.81	8.81	ng/kg	J	0.1	0.881
WA-LS-1	4/5/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	4.93	4.93	ng/kg	J	0.1	0.493
WA-LS-1	4/5/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	1.9	1.9	ng/kg	J	0.1	0.19
WA-LS-1	4/5/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.29	2.29	ng/kg	J	0.1	0.229
WA-LS-1	4/5/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.21	0.21	ng/kg	J	0.1	0.021
WA-LS-1	4/5/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	1.86	1.86	ng/kg		1	1.86
WA-LS-1	4/5/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	8.46	8.46	ng/kg		0.03	0.2538
WA-LS-1	4/5/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	N	0.46	0.23	ng/kg	UJ	0.1	0.023
WA-LS-1	4/5/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	4.09	4.09	ng/kg		0.3	1.227
WA-LS-1	4/5/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	0.27	0.27	ng/kg	J	1	0.27
WA-LS-1	4/5/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	20.8	20.8	ng/kg	J	0.1	2.08
WA-LS-1	4/5/1999	0	0.5	3268-87-9	OCDD	Y	936	936	ng/kg	J	0.0003	0.2808
WA-LS-1	4/5/1999	0	0.5	39001-02-0	OCDF	Y	73	73	ng/kg	J	0.0003	0.0219
											Sample Location TEQ =	**9.2**
WA-LS-3	4/5/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	245	245	ng/kg	J	0.01	2.45
WA-LS-3	4/5/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	91.5	91.5	ng/kg	J	0.01	0.915
WA-LS-3	4/5/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	33.4	33.4	ng/kg	J	0.01	0.334
WA-LS-3	4/5/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	4.37	4.37	ng/kg	J	0.1	0.437
WA-LS-3	4/5/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	131	131	ng/kg	J	0.1	13.1
WA-LS-3	4/5/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	13.6	13.6	ng/kg	J	0.1	1.36
WA-LS-3	4/5/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	26	26	ng/kg	J	0.1	2.6
WA-LS-3	4/5/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	7.75	7.75	ng/kg	J	0.1	0.775
WA-LS-3	4/5/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	2.92	2.92	ng/kg	J	0.1	0.292
WA-LS-3	4/5/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	5.18	5.18	ng/kg		1	5.18
WA-LS-3	4/5/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	127	127	ng/kg		0.03	3.81
WA-LS-3	4/5/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	5.87	5.87	ng/kg	J	0.1	0.587
WA-LS-3	4/5/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	55.3	55.3	ng/kg		0.3	16.59
WA-LS-3	4/5/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	1.15	1.15	ng/kg		1	1.15
WA-LS-3	4/5/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	260	260	ng/kg	J	0.1	26
WA-LS-3	4/5/1999	0	0.5	3268-87-9	OCDD	Y	1830	1830	ng/kg	J	0.0003	0.549
WA-LS-3	4/5/1999	0	0.5	39001-02-0	OCDF	Y	227	227	ng/kg	J	0.0003	0.0681
											Sample Location TEQ =	**76.2**

TABLE 2.17b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
LAKESHORE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [(1)]	Calculated Dioxin Equivalency (ng/kg)
WA-LS-5	4/5/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	17.4	17.4	ng/kg	J	0.01	0.174
WA-LS-5	4/5/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	7.03	7.03	ng/kg	J	0.01	0.0703
WA-LS-5	4/5/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	0.78	0.78	ng/kg	J	0.01	0.0078
WA-LS-5	4/5/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.44	0.44	ng/kg	J	0.1	0.044
WA-LS-5	4/5/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	2.91	2.91	ng/kg	J	0.1	0.291
WA-LS-5	4/5/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	1.53	1.53	ng/kg	J	0.1	0.153
WA-LS-5	4/5/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	0.82	0.82	ng/kg	J	0.1	0.082
WA-LS-5	4/5/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	104	104	ng/kg	J	0.1	10.4
WA-LS-5	4/5/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.11	0.11	ng/kg	J	0.1	0.011
WA-LS-5	4/5/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	0.66	0.66	ng/kg	J	1	0.66
WA-LS-5	4/5/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	1.72	1.72	ng/kg		0.03	0.0516
WA-LS-5	4/5/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	N	0.47	0.235	ng/kg	UJ	0.1	0.0235
WA-LS-5	4/5/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	2.67	2.67	ng/kg		0.3	0.801
WA-LS-5	4/5/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	1.71	1.71	ng/kg		1	1.71
WA-LS-5	4/5/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	6.22	6.22	ng/kg	J	0.1	0.622
WA-LS-5	4/5/1999	0	0.5	3268-87-9	OCDD	Y	117	117	ng/kg	J	0.0003	0.0351
WA-LS-5	4/5/1999	0	0.5	39001-02-0	OCDF	Y	17.4	17.4	ng/kg		0.0003	0.00522
											Sample Location TEQ =	**15.1**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration

(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.17c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
LAKESHORE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-LS-6	Highly chlorinated PCBs	0	0.5	4/5/1999	0.027	mg/kg
WA-LS-4	Highly chlorinated PCBs	0	0.5	4/5/1999	0.027	mg/kg
WA-LS-1	Highly chlorinated PCBs	0	0.5	4/5/1999	0.029	mg/kg
WA-LS-5	Highly chlorinated PCBs	0	0.5	4/5/1999	0.035	mg/kg
WA-LS-3	Highly chlorinated PCBs	0	0.5	4/5/1999	0.46	mg/kg
WA-LS-2	Highly chlorinated PCBs	0	0.5	4/5/1999	3.7	mg/kg
WA-LS-6	Total PCBs	0	0.5	4/5/1999	0.027	mg/kg
WA-LS-4	Total PCBs	0	0.5	4/5/1999	0.027	mg/kg
WA-LS-1	Total PCBs	0	0.5	4/5/1999	0.029	mg/kg
WA-LS-5	Total PCBs	0	0.5	4/5/1999	0.035	mg/kg
WA-LS-3	Total PCBs	0	0.5	4/5/1999	0.46	mg/kg
WA-LS-2	Total PCBs	0	0.5	4/5/1999	3.7	mg/kg

Notes:
* Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported. Total PCBs are the sum of all detected Aroclors.

TABLE 2.17d
DERIVATION OF TOTAL CHLORDANES
LAKESHORE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location Chlordane Concentration	Units
WA-LS-1	0	0.5	4/5/1999	0.00098	mg/kg

TABLE 2.18
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
LAKESHORE AREA SHALLOW GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Shallow Groundwater (0 - 10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Potential ARAR/TBC Value (4)	USEPA RBC for Tap Water (5)		USEPA PRG for Tap Water (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Lakeshore Area - Shallow Groundwater	METALS																
	7429-90-5	ALUMINUM	0.557	2.81	mg/L	WA-WA-01S	3/4	0.826-0.826	2.81E+00	2.00 E-01	3.65E+00	N	3.65E+00	nc	3.65E+00	N	BSL
	7440-38-2	ARSENIC	0.0163 J	0.0178 J	mg/L	WA-WA-02S	2/4	0.0036-0.01	1.78E-02	1.00 E-02	4.46E-05	C	4.48E-05	ca	4.46E-05	Y	TOX
	7440-39-3	BARIUM	0.0682	0.325	mg/L	WA-WA-02S	4/4	-	3.25E-01	2.00 E+00	7.30E-01	N	2.55E-01	nc	2.55E-01	Y	ASL
	7440-41-7	BERYLLIUM	0.0283	0.0283	mg/L	WA-WA-02S	1/4	0.001-0.001	2.83E-02	4.00 E-03	7.30E-03	N	7.30E-03	nc	7.30E-03	Y	ASL
	7440-70-2	CALCIUM	200	245	mg/L	WA-WA-02S	3/4	0.19-0.19	2.45E+02		NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	0.0044	0.0352	mg/L	WA-WA-02S	3/4	0.003-0.003	3.52E-02		1.10E-02	N	1.09E-01	ca	1.10E-02	Y	TOX
	57-12-5	CYANIDE	0.0323	0.0323	mg/L	WA-WA-02S	1/2	0.01-0.01	3.23E-02	2.00 E-01	7.30E-02	N	7.30E-02	nc	7.30E-02	N	BSL
	7439-89-6	IRON	2.95 J	2.95 J	mg/L	WA-WA-01S	1/3	0.0346-20.5	2.95E+00	3.00 E-01	2.56E+00	N	1.09E+00	nc	1.09E+00	Y	ASL
	7439-92-1	LEAD	0.0075 J	0.0088 J	mg/L	WA-WA-02S	2/4	0.01-0.01	8.80E-03	1.50 E-02	NV		NV		1.50 E-02	N	BSL
	7439-95-4	MAGNESIUM	0.238	11.3	mg/L	WA-WA-01S	2/3	131-131	1.13E+01		NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	0.0949 J	0.0949 J	mg/L	WA-WA-01S	1/3	0.006-1.94	9.49E-02	5.00 E-02	7.30E-02	N	8.76E-02	nc	7.30E-02	Y	ASL
	7439-97-6	MERCURY[b]	0.00048	0.0089	mg/L	WA-WA-01S	5/6	0.0002-0.000	8.90E-03		3.65E-04	N	3.65E-04	nc	3.65E-04	Y	ASL
	7440-02-0	NICKEL	0.0105	0.0118	mg/L	WA-WA-02S	2/4	0.01-0.1	1.18E-02		7.30E-02	N	7.30E-02	nc	7.30E-02	N	BSL
	7440-09-7	POTASSIUM	101 J	185 J	mg/L	WA-WA-01S	4/4	-	1.85E+02		NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	0.002 J	0.002 J	mg/L	WA-WA-01S	1/4	0.002-0.02	2.00E-03	5.00 E-02	1.83E-02	N	1.82E-02	nc	1.82E-02	N	BSL
	7440-22-4	SILVER	0.0108	0.0108	mg/L	WA-WA-01S	1/4	0.003-0.0944	1.08E-02	1.00 E-01	1.83E-02	N	1.82E-02	nc	1.82E-02	N	BSL
	7440-23-5	SODIUM	1110 J	1420	mg/L	WA-WA-02S	3/4	0.27-0.27	1.42E+03		NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	0.0239 J	0.0788	mg/L	WA-WA-01S	3/4	0.132-0.132	7.88E-02		3.65E-03	N	3.65E-03	nc	3.65E-03	Y	ASL
	7440-66-6	ZINC	0.0182 J	0.0878	mg/L	WA-WA-02S	3/4	0.003-0.003	8.78E-02	5.00 E+00	1.10E+00	N	1.09E+00	nc	1.09E+00	N	BSL
	SVOC																
	120-83-2	2,4-DICHLOROPHENOL	15	23	ug/L	WA-WA-02S	2/2	-	2.30E+01		1.10E+01	N	1.09E+01	nc	1.09E+01	Y	ASL
	91-58-7	2-CHLORONAPHTHALENE	8 J	15	ug/L	WA-WA-01S	2/2	-	1.50E+01		4.87E+01	N	4.87E+01	nc	4.87E+01	N	BSL
	95-57-8	2-CHLOROPHENOL	26	41 J	ug/L	WA-WA-02S	2/2	-	4.10E+01		3.04E+00	N	3.04E+00	nc	3.04E+00	Y	ASL
	91-57-6	2-METHYLNAPHTHALENE	6 J	6 J	ug/L	WA-WA-02S	1/2	10-10	6.00E+00		2.43E+00	N	NV		NV	Y	NTX
	59-50-7	4-CHLORO-3-METHYLPHENOL	3 J	3 J	ug/L	WA-WA-01S	1/2	10-10	3.00E+00		NV		NV		NV	Y	NTX
	106-44-5	4-METHYLPHENOL	13	62 J	ug/L	WA-WA-02S	2/2	-	6.20E+01		1.83E+01	N	1.82E+01	nc	1.82E+01	Y	ASL
	65-85-0	BENZOIC ACID	53	53	ug/L	WA-WA-02S	1/2	51-51	5.30E+01		1.46E+04	N	1.46E+04	nc	1.46E+04	N	BSL
	85-01-8	PHENANTHRENE	2 J	2 J	ug/L	WA-WA-02S	1/2	10-10	2.00E+00		NV		NV		NV	Y	NTX
	108-95-2	PHENOL	44	200 J	ug/L	WA-WA-02S	2/2	-	2.00E+02		1.10E+03	N	1.09E+03	nc	1.09E+03	N	BSL
	VOC																
	120-82-1	1,2,4-TRICHLOROBENZENE	21	21	ug/L	WA-WA-01S	1/2	10-10	2.10E+01	7.00 E-02	6.08E+00	N	7.16E-01	nc	7.16E-01	Y	ASL
	95-50-1	1,2-DICHLOROBENZENE	2900	6600	ug/L	WA-WA-02S	2/2	-	6.60E+03	6.00 E-01	2.68E+01	N	3.70E+01	nc	2.68E+01	Y	ASL
	541-73-1	1,3-DICHLOROBENZENE	290	480 J	ug/L	WA-WA-02S	2/4	5000-5000	4.80E+02		1.83E+00	N	1.83E+01	nc	1.83E+00	Y	ASL
	91-20-3	NAPHTHALENE	49	140	ug/L	WA-WA-02S	2/2	-	1.40E+02		6.51E-01	N	6.20E-01	nc	6.20E-01	Y	ASL
	106-46-7	1,4-DICHLOROBENZENE	4200	12000	ug/L	WA-WA-02S	4/4	-	1.20E+04	7.50 E-02	2.81E-01	C	5.02E-01	ca	2.81E-01	Y	ASL
	71-43-2	BENZENE	7100	30000	ug/L	WA-WA-02S	4/4	-	3.00E+04	5.00 E-03	3.36E-01	C	3.54E-01	ca	3.36E-01	Y	TOX
	75-15-0	CARBON DISULFIDE	250 J	250 J	ug/L	WA-WA-01S	1/2	2500-2500	2.50E+02		1.04E+02	N	1.04E+02	nc	1.04E+02	Y	ASL
	108-90-7	CHLOROBENZENE	14000	25000	ug/L	WA-WA-02S	2/4	1000-2500	2.50E+04	1.00 E-01	8.96E+00	N	1.06E+01	nc	8.96E+00	Y	ASL
	108-88-3	TOLUENE	19000	27000	ug/L	WA-WA-02S	2/4	1000-1000	2.70E+04	1.00 E+00	2.27E+02	N	7.23E+01	nc	7.23E+01	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) United States Environmental Protection Agency. 2008. National Primary and Secondary Drinking Water Regulations
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = Where mercury was not speciated RBC and PRG values for methyl mercury utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered

USEPA: United States Environmental Protection Agency

TABLE 2.19a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
TRIBUTARY 5A SEDIMENT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Sediment
Exposure Medium: Sediment (0-1 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value	USEPA RBC for Residential Soil (4)		USEPA PRG for Residential Soil (5)		Screening Toxicity Value (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
Tributary 5A - Sediment	METALS																	
	7429-90-5	ALUMINUM	857	11600 J	mg/Kg	WA-5A-SED-1	7/7	-	1.16E+04			7.82E+03	N	7.61E+03	nc	7.61E+03	Y	ASL
	7440-36-0	ANTIMONY	1.2 J	38.5 J	mg/kg	WA-5A-SD-M	4/7	0.96-31.8	3.85E+01			3.13E+00	N	3.13E+00	nc	3.13E+00	Y	ASL
	7440-38-2	ARSENIC	4.8	33.6 J	mg/kg	WA-5A-SED-1	4/4	-	3.36E+01			4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	73.5 J	1450 J	mg/kg	WA-5A-SED-1	7/7	-	1.45E+03			1.56E+03	N	5.37E+02	nc	5.37E+02	Y	ASL
	7440-41-7	BERYLLIUM	1.35	5.8 J	mg/kg	WA-5A-SED-3	4/7	0.24-1.1	5.80E+00			1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-70-2	CALCIUM	36400	394000 J	mg/kg	WA-5A-SD-U	7/7	-	3.94E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	33.8 J	12400	mg/kg	WA-5A-SED-3	7/7	-	1.24E+04			2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	5.73 J	5460 J	mg/kg	WA-5A-SED-3	7/7	-	5.46E+03					9.03E+01	nc	9.03E+01	Y	ASL
	7440-50-8	COPPER	49.6 J	453 J	mg/kg	WA-5A-SED-1	7/7	-	4.53E+02			3.13E+02	N	3.13E+02	nc	3.13E+02	Y	ASL
	57-12-5	CYANIDE	2.89 J	4.4	mg/kg	WA-5A-SED-2	2/7	0.59-1.8	4.40E+00			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	7439-89-6	IRON	12600	229000	mg/kg	WA-5A-SED-3	7/7	-	2.29E+05			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	3.7 J	4100 J	mg/kg	WA-5A-SD-U	7/7	-	4.10E+03			NV		4.00E+02	nc	4.00E+02	Y	ASL
	7439-95-4	MAGNESIUM	3320 J	16900 J	mg/kg	WA-5A-SED-1	7/7	-	1.69E+04			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	153	1520	mg/kg	WA-5A-SED-3	7/7	-	1.52E+03			1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	0.13 J	1.29 J	mg/kg	WA-5A-SD-U	5/7	0.06-0.13	1.29E+00			2.35E+00	N	2.35E+00	nc	2.35E+00	N	BSL
	22967-92-6	METHYL MERCURY	.00192 J	.00465	mg/kg	WA-5A-SED-1	4/4	-	4.65E-03			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	26.8	1710 J	mg/kg	WA-5A-SED-1	4/4	-	1.71E+03			1.56E+02	N	1.56E+02	nc	1.56E+02	Y	ASL
	7440-09-7	POTASSIUM	275 J	2030 J	mg/kg	WA-5A-SED-1	6/7	127-127	2.03E+03			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	4.4	42.5	mg/kg	WA-5A-SED-3	3/7	1.16-4.68	4.25E+01			3.91E+01	N	3.91E+01	nc	3.91E+01	Y	ASL
	7440-22-4	SILVER	0.99 J	2.38 J	mg/kg	WA-5A-SD-M	3/7	0.27-1.25	2.38E+00			3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	221 J	2260 J	mg/kg	WA-5A-SD-U	7/7	-	2.26E+03			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	27.3 J	9670	mg/kg	WA-5A-SED-3	7/7	-	9.67E+03			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	20 J	548 J	mg/kg	WA-5A-SED-1	7/7	-	5.48E+02			2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.069	5.6	mg/kg	WA-5A-SD-M	1/7	-	5.60E+00			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	72-55-9	4,4'-DDE	0.0019 J	0.017	mg/kg	WA-5A-SED-3	3/4	0.012-0.012	1.70E-02			1.88E+00	C	1.72E+00	ca	1.72E+00	N	BSL
	53494-70-5	ENDRIN KETONE[d]	0.029 J	0.035 J	mg/kg	WA-5A-SED-4	2/4	0.0064-0.0078	3.50E-02			2.82E+00	C	2.62E+00	ca	2.62E+00	N	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.0078	0.0078	mg/kg	WA-5A-SED-4	1/4	0.0032-0.006	7.80E-03			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
		TOTAL CHLORDANE[e]	0.0099	0.0099	mg/kg	WA-5A-SED-4	1/4	-	9.90E-03			1.82E-01	C	1.62E-01	nc	1.62E-01	N	BSL
	SVOC																	
	105-67-9	2,4-DIMETHYLPHENOL	0.044 J	0.11 J	mg/kg	WA-5A-SED-4	2/4	0.64-1.2	1.10E-01			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.058 J	0.47 J	mg/kg	WA-5A-SD-U	7/7	-	4.70E-01			3.13E+01	N	NV		3.13E+01	N	BSL
	106-44-5	4-METHYLPHENOL	0.082 J	0.082 J	mg/kg	WA-5A-SED-4	1/4	0.39-1.2	8.20E-02			3.91E+01	N	3.06E+01	nc	3.06E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.1 J	0.45 J	mg/kg	WA-5A-SD-U	5/7	0.39-1.3	4.50E-01			4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.21 J	0.51 J	mg/kg	WA-5A-SED-4	2/7	0.39-1.3	5.10E-01			NV		NV		0.00E+00	Y	ASL
	120-12-7	ANTHRACENE	0.058 J	0.99	mg/kg	WA-5A-SED-4	6/7	0.29-0.29	9.90E-01			2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.21 J	6.1 J	mg/kg	WA-5A-SED-4	5/7	1.2-1.3	6.10E+00			2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.16 J	4.6 J	mg/kg	WA-5A-SED-4	6/7	1.5-1.5	4.60E+00			2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.36 J	11 J	mg/kg	WA-5A-SED-4	5/7	1.3-2.1	1.10E+01			2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.14 J	4.4 J	mg/kg	WA-5A-SED-4	5/7	1.3-1.8	4.40E+00			NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.12 J	4.2 J	mg/kg	WA-5A-SD-U	5/7	0.91-1.3	4.20E+00			2.20E+00	C	6.21E+00	ca	2.20E+00	Y	ASL
	65-85-0	BENZOIC ACID	0.47 J	0.47 J	mg/kg	WA-5A-SD-U	1/3	2.1-6.4	4.70E-01			3.13E+04	N	1.00E+04	nc	1.00E+04	N	BSL
	86-74-8	CARBAZOLE	0.1 J	0.43 J	mg/kg	WA-5A-SED-4	3/4	0.39-0.39	4.30E-01			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	0.26 J	7.9 J	mg/kg	WA-5A-SED-4	7/7	-	7.90E+00			2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.45 J	1.1 J	mg/kg	WA-5A-SED-4	2/5	0.42-1.3	1.10E+00			2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.12 J	0.82 J	mg/kg	WA-5A-SD-U	6/7	0.39-0.39	8.20E-01			7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	206-44-0	FLUORANTHENE	0.27 J	10	mg/kg	WA-5A-SED-4	7/7	-	1.00E+01			3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.098 J	13	mg/kg	WA-5A-SED-4	5/7	0.39-1.3	1.30E+01			3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.12 J	3.6 J	mg/kg	WA-5A-SED-4	6/7	1.3-1.3	3.60E+00			2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.2 J	3.4 J	mg/kg	WA-5A-SD-M	6/7	0.39-0.39	3.40E+00			1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	0.26 J	5.5 J	mg/kg	WA-5A-SED-4	7/7	-	5.50E+00			NV		NV		NV	Y	NTX
	108-95-2	PHENOL	0.067 J	0.98 J	mg/kg	WA-5A-SD-M	4/7	0.42-1.2	9.80E-01			2.35E+03	N	1.83E+03	nc	1.83E+03	N	BSL
	129-00-0	PYRENE	0.57 J	22 J	mg/kg	WA-5A-SED-4	6/7	5.8-5.8	2.20E+01			2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL

TABLE 2.19a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
TRIBUTARY 5A SEDIMENT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Sediment
Exposure Medium: Sediment (0-1 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value	USEPA RBC for Residential Soil (4)		USEPA PRG for Residential Soil (5)		Screening Toxicity Value (6)	COPC Flag (Y/N)	Rationale for Selection or Deletion (7)
	VOC																	
	95-50-1	1,2-DICHLOROBENZENE	0.1 J	0.41 J	mg/kg	WA-5A-SD-U	2/7	0.39-1.3	4.10E-01			7.04E+02	N	6.00E+01	nc	6.00E+01	N	BSL
	541-73-1	1,3-DICHLOROBENZENE	0.19 J	0.19 J	mg/kg	WA-5A-SD-U	1/7	0.39-1.3	1.90E-01			2.35E+01	N	5.31E+01	nc	2.35E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.1 J	0.56 J	mg/kg	WA-5A-SD-U	3/7	0.39-1.3	5.60E-01			2.66E+01	C	3.45E+00	ca	3.45E+00	N	BSL
	78-93-3	2-BUTANONE	0.013 J	0.013 J	mg/kg	WA-5A-SED-2	1/4	0.012-0.036	1.30E-02			4.69E+03	N	2.23E+03	nc	2.23E+03	N	BSL
	71-43-2	BENZENE	4.4	25 J	mg/kg	WA-5A-SD-M	3/10	0.006-0.036	2.50E+01			1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	75-15-0	CARBON DISULFIDE	0.006 J	0.016	mg/kg	WA-5A-SD-D	2/7	0.016-2.4	1.60E-02			7.82E+02	N	3.55E+01	nc	3.55E+01	N	BSL
	108-90-7	CHLOROBENZENE	0.002 J	0.082	mg/kg	WA-5A-SD-D	2/7	0.012-2.4	8.20E-02			1.56E+02	N	1.51E+01	nc	1.51E+01	N	BSL
	67-66-3	CHLOROFORM	0.003 J	0.003 J	mg/kg	WA-5A-SED-2	1/4	0.012-0.036	3.00E-03			7.82E+01	N	2.21E-01	ca	2.21E-01	N	BSL
	100-41-4	ETHYLBENZENE	0.001 J	0.5 J	mg/kg	WA-5A-SD-M	3/7	0.012-0.036	5.00E-01			7.82E+02	N	3.95E+01	nc	3.95E+01	N	BSL
	75-09-2	METHYLENE CHLORIDE	0.005 J	0.014 J	mg/kg	WA-5A-SD-U	2/7	0.012-2.4	1.40E-02			8.52E+01	C	9.11E+00	ca	9.11E+00	N	BSL
	100-42-5	STYRENE	0.023 J	0.023 J	mg/kg	WA-5A-SED-2	1/4	0.012-0.036	2.30E-02			1.56E+03	N	1.70E+02	nc	1.70E+02	N	BSL
	108-88-3	TOLUENE	2.6	9.4 J	mg/kg	WA-5A-SD-M	3/10	0.006-0.036	9.40E+00			6.26E+02	N	5.20E+01	nc	5.20E+01	N	BSL
	1330-20-7	XYLENES, TOTAL	1.5 J	10 J	mg/kg	WA-5A-SD-M	3/10	0.006-0.036	1.00E+01			1.56E+03	N	2.71E+01	nc	2.71E+01	N	BSL
	DIOXIN/FURAN																	
		2,3,7,8-TCDD Equivalent	0.0000023	0.000027	mg/kg	WA-LS-3	4/4	-	2.66E-05			4.26E-06	C	3.90E-06	ca	3.90E-06	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(5) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(6) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(7) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endrin utilized
e = RBC value for chlordane (CAS# 57749) and PRG value for technical chlordane (CAS# 12789-03-6) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007

TABLE 2.19b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
TRIBUTARY 5A SEDIMENT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [(1)]	Calculated Dioxin Equivalency (ng/kg)
WA-5A-SED-1	10/27/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	374	374	ng/kg	J	0.01	3.74
WA-5A-SED-1	10/27/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	149	149	ng/kg	J	0.01	1.49
WA-5A-SED-1	10/27/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	12	12	ng/kg	J	0.01	0.12
WA-5A-SED-1	10/27/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	5.22	5.22	ng/kg	J	0.1	0.522
WA-5A-SED-1	10/27/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	16.6	16.6	ng/kg	J	0.1	1.66
WA-5A-SED-1	10/27/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	33.4	33.4	ng/kg	J	0.1	3.34
WA-5A-SED-1	10/27/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	9.61	9.61	ng/kg	J	0.1	0.961
WA-5A-SED-1	10/27/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	18.2	18.2	ng/kg	J	0.1	1.82
WA-5A-SED-1	10/27/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	N	2.6	1.3	ng/kg	UJ	0.1	0.13
WA-5A-SED-1	10/27/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	5.54	5.54	ng/kg	J	1	5.54
WA-5A-SED-1	10/27/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	6.54	6.54	ng/kg	J	0.03	0.1962
WA-5A-SED-1	10/27/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	13	13	ng/kg	J	0.1	1.3
WA-5A-SED-1	10/27/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	16.7	16.7	ng/kg	J	0.3	5.01
WA-5A-SED-1	10/27/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	0.2	0.2	ng/kg	J	1	0.2
WA-5A-SED-1	10/27/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	0.96	0.96	ng/kg	J	0.1	0.096
WA-5A-SED-1	10/27/1999	0	0.5	3268-87-9	OCDD	Y	1410	1410	ng/kg	J	0.0003	0.423
WA-5A-SED-1	10/27/1999	0	0.5	39001-02-0	OCDF	Y	206	206	ng/kg	J	0.0003	0.0618
										Sample Location TEQ =		**26.6**
WA-5A-SED-2	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	92.5	92.5	ng/kg	J	0.01	0.925
WA-5A-SED-2	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	22.1	22.1	ng/kg	J	0.01	0.221
WA-5A-SED-2	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1.63	1.63	ng/kg	J	0.01	0.0163
WA-5A-SED-2	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.93	0.93	ng/kg	J	0.1	0.093
WA-5A-SED-2	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	3.45	3.45	ng/kg	J	0.1	0.345
WA-5A-SED-2	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	7.58	7.58	ng/kg	J	0.1	0.758
WA-5A-SED-2	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	2.11	2.11	ng/kg	J	0.1	0.211
WA-5A-SED-2	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	2.47	2.47	ng/kg	J	0.1	0.247
WA-5A-SED-2	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	Y	0.1	0.1	ng/kg		0.1	0.01
WA-5A-SED-2	10/26/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	0.65	0.65	ng/kg	J	1	0.65
WA-5A-SED-2	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	1.18	1.18	ng/kg	J	0.03	0.0354
WA-5A-SED-2	10/26/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	2.26	2.26	ng/kg	J	0.1	0.226
WA-5A-SED-2	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	3.04	3.04	ng/kg	J	0.3	0.912
WA-5A-SED-2	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	N	0.1	0.05	ng/kg	UJ	1	0.05
WA-5A-SED-2	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	0.21	0.21	ng/kg		0.1	0.021
WA-5A-SED-2	10/26/1999	0	0.5	3268-87-9	OCDD	Y	523	523	ng/kg	J	0.0003	0.1569
WA-5A-SED-2	10/26/1999	0	0.5	39001-02-0	OCDF	Y	37.3	37.3	ng/kg	J	0.0003	0.01119
										Sample Location TEQ =		**4.9**

TABLE 2.19b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
TRIBUTARY 5A SEDIMENT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [(1)]	Calculated Dioxin Equivalency (ng/kg)
WA-5A-SED-3	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	35.7	35.7	ng/kg	J	0.01	0.357
WA-5A-SED-3	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	11.7	11.7	ng/kg	J	0.01	0.117
WA-5A-SED-3	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	1.15	1.15	ng/kg	J	0.01	0.0115
WA-5A-SED-3	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	0.44	0.44	ng/kg	J	0.1	0.044
WA-5A-SED-3	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	1.57	1.57	ng/kg	J	0.1	0.157
WA-5A-SED-3	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	2.37	2.37	ng/kg	J	0.1	0.237
WA-5A-SED-3	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	0.79	0.79	ng/kg	J	0.1	0.079
WA-5A-SED-3	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	1.28	1.28	ng/kg	J	0.1	0.128
WA-5A-SED-3	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.75	0.375	ng/kg	U	0.1	0.0375
WA-5A-SED-3	10/26/1999	0	0.5	40321-76-4	1,2,3,7,8-PECDD	Y	0.35	0.35	ng/kg	J	1	0.35
WA-5A-SED-3	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	0.97	0.97	ng/kg	J	0.03	0.0291
WA-5A-SED-3	10/26/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	0.99	0.99	ng/kg	J	0.1	0.099
WA-5A-SED-3	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	1.62	1.62	ng/kg	J	0.3	0.486
WA-5A-SED-3	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	0.11	0.11	ng/kg	J	1	0.11
WA-5A-SED-3	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	0.2	0.2	ng/kg		0.1	0.02
WA-5A-SED-3	10/26/1999	0	0.5	3268-87-9	OCDD	Y	261	261	ng/kg	J	0.0003	0.0783
WA-5A-SED-3	10/26/1999	0	0.5	39001-02-0	OCDF	Y	18.4	18.4	ng/kg	J	0.0003	0.00552
											Sample Location TEQ =	**2.3**

TABLE 2.19b
DERIVATION OF TOXICITY EQUIVALENTS FOR DIOXINS
TRIBUTARY 5A SEDIMENT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Sample Date	Start Depth (ft)	End Depth (ft)	CAS Number	Chemical	Detect (Y/N)	Reported Value	Concentration for TEF Derivation	Units	Data Qualifier	Dioxin TEF [1]	Calculated Dioxin Equivalency (ng/kg)
WA-5A-SED-4	10/26/1999	0	0.5	35822-46-9	1,2,3,4,6,7,8-HPCDD	Y	565	565	ng/kg		0.01	5.65
WA-5A-SED-4	10/26/1999	0	0.5	67562-39-4	1,2,3,4,6,7,8-HPCDF	Y	74.3	74.3	ng/kg		0.01	0.743
WA-5A-SED-4	10/26/1999	0	0.5	55673-89-7	1,2,3,4,7,8,9-HPCDF	Y	11	11	ng/kg		0.01	0.11
WA-5A-SED-4	10/26/1999	0	0.5	39227-28-6	1,2,3,4,7,8-HXCDD	Y	3.38	3.38	ng/kg		0.1	0.338
WA-5A-SED-4	10/26/1999	0	0.5	70648-26-9	1,2,3,4,7,8-HXCDF	Y	15.4	15.4	ng/kg		0.1	1.54
WA-5A-SED-4	10/26/1999	0	0.5	57653-85-7	1,2,3,6,7,8-HXCDD	Y	11.6	11.6	ng/kg		0.1	1.16
WA-5A-SED-4	10/26/1999	0	0.5	57117-44-9	1,2,3,6,7,8-HXCDF	Y	6.63	6.63	ng/kg		0.1	0.663
WA-5A-SED-4	10/26/1999	0	0.5	19408-74-3	1,2,3,7,8,9-HXCDD	Y	11.3	11.3	ng/kg		0.1	1.13
WA-5A-SED-4	10/26/1999	0	0.5	72918-21-9	1,2,3,7,8,9-HXCDF	N	0.66	0.33	ng/kg	U	0.1	0.033
WA-5A-SED-4	10/26/1999	0	0.5	57117-41-6	1,2,3,7,8-PECDF	Y	5.3	5.3	ng/kg		0.03	0.159
WA-5A-SED-4	10/26/1999	0	0.5	60851-34-5	2,3,4,6,7,8-HXCDF	Y	3.58	3.58	ng/kg		0.1	0.358
WA-5A-SED-4	10/26/1999	0	0.5	57117-31-4	2,3,4,7,8-PECDF	Y	6.63	6.63	ng/kg		0.3	1.989
WA-5A-SED-4	10/26/1999	0	0.5	1746-01-6	2,3,7,8-TCDD	Y	2.4	2.4	ng/kg		1	2.4
WA-5A-SED-4	10/26/1999	0	0.5	51207-31-9	2,3,7,8-TCDF	Y	11.4	11.4	ng/kg		0.1	1.14
WA-5A-SED-4	10/26/1999	0	0.5	3268-87-9	OCDD	Y	3320	3320	ng/kg		0.0003	0.996
WA-5A-SED-4	10/26/1999	0	0.5	39001-02-0	OCDF	Y	310	310	ng/kg		0.0003	0.093
											Sample Location TEQ =	**18.5**

NOTES:
TCDD/F = Tetra Chlorinated Dibenzo-p-dioxins/Dibenzofurans
PeCDD/F = Penta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HxCDD/F = Hexa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
HpCDD/F = Hepta Chlorinated Dibenzo-p-dioxins/Dibenzofurans
OCDD/F = Octa Chlorinated Dibenzo-p-dioxins/Dibenzofurans
N/A = not applicable
EMPC = Estimated Maximum Possible Concentration

(1) Van den berg, Martin, et al. 2006. The 2005 World Health Organization Reevaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-Like Compounds. Toxicological Sciences 93(2), 223–241.

TABLE 2.19c
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
TRIBUTARY 5A SEDIMENT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-5A-SED-4	Highly chlorinated PCBs	0	0.5	10/27/1999	0.069	mg/kg
WA-5A-SED-2	Highly chlorinated PCBs	0	0.5	10/27/1999	0.084	mg/kg
WA-5A-SD-D	Highly chlorinated PCBs	0	0.5	1/17/1991	0.22	mg/kg
WA-5A-SED-3	Highly chlorinated PCBs	0	0.5	10/27/1999	0.55	mg/kg
WA-5A-SED-1	Highly chlorinated PCBs	0	0.5	10/27/1999	0.57	mg/kg
WA-5A-SD-M	Highly chlorinated PCBs	0	0.5	1/17/1991	5.6	mg/kg

Notes:
* Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.19d
DERIVATION OF TOTAL CHLORDANES
TRIBUTARY 5A SEDIMENT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location Chlordane Concentration	Units
WA-5A-SED-4	0	0.5	10/27/1999	0.0099	mg/kg

TABLE 2.20
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
TRIBUTARY 5A SURFACE WATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Tap Water (5)		USEPA PRG for Tap Water (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Tributary 5A - Surface Water	METALS																	
	7429-90-5	ALUMINUM	0.0274	0.665	mg/L	WA-5A-SW-2	8/11	0.0096-0.208	6.65E-01		2.00 E-01	3.65E+00	N	3.65E+00	nc	3.65E+00	N	BSL
	7440-36-0	ANTIMONY	0.0026	0.003	mg/L	WA-5A-SW-2	2/11	0.0025-0.05	3.00E-03		6.00 E-03	1.46E-03	N	1.46E-03	nc	1.46E-03	Y	ASL
	7440-38-2	ARSENIC	0.0024	0.0082	mg/L	WA-5A-WA-U	5/11	0.002-0.0025	8.20E-03		1.00 E-02	4.46E-05	C	4.48E-05	ca	4.46E-05	Y	TOX
	7440-39-3	BARIUM	0.0229	0.317	mg/L	WA-5A-WA-D	11/11	-	3.17E-01		2.00 E+00	7.30E-01	N	2.55E-01	nc	2.55E-01	Y	ASL
	7440-70-2	CALCIUM	53.1	165	mg/L	WA-5A-SW-2	11/11	-	1.65E+02			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	0.004	0.055	mg/L	WA-5A-WA-M	8/11	0.002-0.005	5.50E-02			1.10E-02	N	1.09E-02	nc	1.09E-02	Y	TOX
	7440-48-4	COBALT	0.0031	0.36	mg/L	WA-5A-SW-2	8/11	0.0017-0.005	3.60E-01			NV		7.30E-02	nc	7.30E-02	Y	ASL
	7440-50-8	COPPER	0.0054	0.0121	mg/L	WA-5A-SW-3	4/11	0.0011-0.024	1.21E-02			1.46E-01	N	1.46E-01	nc	1.46E-01	N	BSL
	57-12-5	CYANIDE	0.023	0.023	mg/L	WA-5A-WA-U	1/7	0.01-0.01	2.30E-02		2.00 E-01	7.30E-02	N	7.30E-02	nc	7.30E-02	N	BSL
	7439-89-6	IRON	0.0164	1.02	mg/L	WA-5A-WA-M	10/11	0.0107-0.0107	1.02E+00		3.00 E-01	2.56E+00	N	1.09E+00	nc	1.09E+00	N	BSL
	7439-95-4	MAGNESIUM	3.27	23.2	mg/L	WA-5A-SW-2	11/11	-	2.32E+01			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	0.0095	0.198	mg/L	WA-5A-WA-M	11/11	-	1.98E-01		5.00 E-02	7.30E-02	N	8.76E-02	nc	7.30E-02	Y	ASL
	22967-92-6	METHYL MERCURY[b]	0.000339	0.315	ug/L	WA-5A-SW-1	3/4	0.033-0.033	3.15E-01			3.65E-01	N	3.65E-01	nc	3.65E-01	N	BSL
	7440-02-0	NICKEL	0.001	0.999	mg/L	WA-5A-SW-1	9/11	0.0092-0.015	9.99E-01			7.30E-02	N	7.30E-02	nc	7.30E-02	Y	ASL
	7440-09-7	POTASSIUM	2.28	30.7	mg/L	WA-5A-SW-4	11/11	-	3.07E+01			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	0.0032 J	0.0062	mg/L	WA-5A-SW-4	3/10	0.003-0.003	6.20E-03		5.00 E-02	1.83E-02	N	1.82E-02	nc	1.82E-02	N	BSL
	7440-23-5	SODIUM	24.5	420	mg/L	WA-5A-WA-U	11/11	-	4.20E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	0.0024	0.352	mg/L	WA-5A-SW-4	11/11	-	3.52E-01			3.65E-03	N	3.65E-03	nc	3.65E-03	Y	ASL
	7440-66-6	ZINC	0.0073	0.012	mg/L	WA-5A-SW-2	5/11	0.0054-0.49	1.20E-02		5.00 E+00	1.10E+00	N	1.09E+00	nc	1.09E+00	N	BSL
	PESTICIDES																	
	319-86-8	DELTA-BHC	0.0054 J	0.0054 J	ug/L	WA-5A-SW-3	1/4	0.052-0.054	5.40E-03			NV		NV		NV	Y	NTX
	60-57-1	DIELDRIN	0.017 J	0.017 J	ug/L	WA-5A-SW-2	1/4	0.1-0.11	1.70E-02			4.19E-03	C	4.20E-03	ca	4.19E-03	Y	ASL
	SVOC																	
	95-95-4	2,4,5-TRICHLOROPHENOL	1 J	4 J	ug/L	WA-5A-WA-D	3/7	26-26	4.00E+00			3.65E+02	N	3.65E+02	nc	3.65E+02	N	BSL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	870	870	ug/L	WA-5A-WA-U	1/7	10-10	8.70E+02		6.00 E-03	4.78E+00	C	4.80E+00	ca	4.78E+00	Y	ASL
	84-66-2	DIETHYL PHTHALATE	2 J	4 J	ug/L	WA-5A-WA-M	2/7	10-11	4.00E+00			2.92E+03	N	2.92E+03	nc	2.92E+03	N	BSL
	84-74-2	DI-N-BUTYL PHTHALATE	5 J	5 J	ug/L	WA-5A-WA-M	1/7	10-11	5.00E+00			3.65E+02	N	3.65E+02	nc	3.65E+02	N	BSL
	91-20-3	NAPHTHALENE	1 J	1 J	ug/L	WA-5A-WA-M	1/7	10-11	1.00E+00			6.51E-01	N	6.20E-01	nc	6.20E-01	Y	ASL
	86-30-6	N-NITROSODIPHENYLAMINE	70	70	ug/L	WA-5A-WA-U	1/7	10-11	7.00E+01			1.37E+01	C	1.37E+01	ca	1.37E+01	Y	ASL
	87-86-5	PENTACHLOROPHENOL	6 J	6 J	ug/L	WA-5A-WA-D	1/7	26-50	6.00E+00		1.00 E-03	5.58E-01	C	5.60E-01	ca	5.58E-01	Y	ASL
	108-95-2	PHENOL	1 J	1 J	ug/L	WA-5A-SW-2	1/4	10-10	1.00E+00			1.10E+03	N	1.09E+03	nc	1.09E+03	N	BSL
	129-00-0	PYRENE	2 J	2 J	ug/L	WA-5A-WA-U	1/7	10-11	2.00E+00			1.83E+01	N	1.83E+01	nc	1.83E+01	N	BSL
	VOC																	
	106-46-7	1,4-DICHLOROBENZENE	2 J	2 J	ug/L	WA-5A-WA-U	1/7	10-11	2.00E+00		7.50 E-02	2.81E-01	C	5.02E-01	ca	2.81E-01	Y	ASL
	71-43-2	BENZENE	6 J	110	ug/L	WA-5A-WA-M	8/10	10-10	1.10E+02		5.00 E-03	3.36E-01	C	3.54E-01	ca	3.36E-01	Y	TOX
	75-27-4	BROMODICHLOROMETHANE	1 J	2 J	ug/L	WA-5A-SW-3, WA-5A-SW-1, WA-5A-SW-2, WA-5A-WA-D	5/7	5-10	2.00E+00			1.70E-01	C	1.81E-01	ca	1.70E-01	Y	ASL
	75-15-0	CARBON DISULFIDE	1 J	1 J	ug/L	WA-5A-WA-M	1/6	5-10	1.00E+00			1.04E+02	N	1.04E+02	nc	1.04E+02	N	BSL
	108-90-7	CHLOROBENZENE	0.5 J	0.5 J	ug/L	WA-5A-WA-U	1/7	5-10	5.00E-01		1.00 E-01	8.96E+00	N	1.06E+01	nc	8.96E+00	N	BSL
	67-66-3	CHLOROFORM	2 J	16	ug/L	WA-5A-WA-D	10/10	-	1.60E+01			1.55E-01	C	1.66E-01	ca	1.55E-01	Y	ASL
	108-88-3	TOLUENE	0.8 J	13	ug/L	WA-5A-WA-M	4/10	5-10	1.30E+01		1.00 E+00	2.27E+02	N	7.23E+01	nc	7.23E+01	N	BSL
	1330-20-7	XYLENES, TOTAL	3 J	3 J	ug/L	WA-5A-WA-M, WA-5A-WA-D	2/7	5-10	3.00E+00		1.00 E+01	2.13E+01	N	2.06E+01	nc	2.06E+01	N	BSL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) United States Environmental Protection Agency. 2008. National Primary and Secondary Drinking Water Regulations
(5) USEPA Region 3 RBCs (USEPA 2007) for tap water; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for tap water; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = Total mercury was also analyzed, but not detected.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered

TABLE 2.21a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETROLEUM STORAGE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Petroleum Storage Area - Surface Soil	METALS																	
	7429-90-5	ALUMINUM	4210	6030	mg/kg	WA-PSA-2	4/4	-	6.03E+03			7.82E+03	N	7.61E+03	nc	7.61E+03	N	BSL
	7440-36-0	ANTIMONY	0.93 J	0.93 J	mg/kg	WA-PSA-3	1/4	0.57-0.62	9.30E-01			3.13E+00	N	3.13E+00	nc	3.13E+00	N	BSL
	7440-38-2	ARSENIC	7.4	67.6	mg/kg	WA-PSA-3	4/4	-	6.76E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	59.6	115	mg/kg	WA-PSA-3	4/4	-	1.15E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	N	BSL
	7440-41-7	BERYLLIUM	0.33 J	0.77 J	mg/kg	WA-PSA-3	3/4	0.58-0.58	7.70E-01		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.27 J	0.71 J	mg/kg	WA-PSA-3	3/4	0.2-0.2	7.10E-01		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	85400	134000	mg/kg	WA-PSA-SS	4/4	-	1.34E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	15.1 J	28	mg/kg	WA-PSA-SS	4/4	-	2.80E+01		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	6.6 J	8.5 J	mg/kg	WA-PSA-3	4/4	-	8.50E+00			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	42.7	94.6	mg/kg	WA-PSA-1	4/4	-	9.46E+01		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	57-12-5	CYANIDE	0.7	19.8	mg/kg	WA-PSA-2	4/4	-	1.98E+01			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	7439-89-6	IRON	21900	28600	mg/kg	WA-PSA-3	4/4	-	2.86E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	52.1 J	156 J	mg/kg	WA-PSA-1	4/4	-	1.56E+02		4.00E+02	NV		4.00E+02	nc	4.00E+02	N	BSL
	7439-95-4	MAGNESIUM	8730	14700	mg/kg	WA-PSA-SS	4/4	-	1.47E+04			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	257 J	486 J	mg/kg	WA-PSA-1	4/4	-	4.86E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	0.82 J	14.2	mg/kg	WA-PSA-SS	4/4	-	1.42E+01			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.00344 J	.00344 J	mg/kg	WA-PSA-SS	1/1	-	3.44E-03			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	16.3	20.7	mg/kg	WA-PSA-SS	4/4	-	2.07E+01		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	N	BSL
	7440-09-7	POTASSIUM	397 J	1460	mg/kg	WA-PSA-SS	4/4	-	1.46E+03			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	1.7	1.7	mg/kg	WA-PSA-3	1/4	1-1.9	1.70E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	196 J	236 J	mg/kg	WA-PSA-3	4/4	-	2.36E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	15.1	20.1	mg/kg	WA-PSA-SS	4/4	-	2.01E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	87.9	125	mg/kg	WA-PSA-1	4/4	-	1.25E+02		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.14	0.72	mg/kg	WA-PSA-1	3/4	-	7.20E-01			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	309-00-2	ALDRIN	0.0018 J	0.0018 J	mg/kg	WA-PSA-2	1/4	0.0019-0.018	1.80E-03		9.70E-02	3.76E-02	C	2.86E-02	ca	2.86E-02	N	BSL
	319-86-8	DELTA-BHC	0.0012 J	0.0012 J	mg/kg	WA-PSA-3	1/4	0.0019-0.018	1.20E-03		1.00E+02	NV		NV		NV	Y	NTX
	33213-65-9	ENDOSULFAN II[d]	0.0071 J	0.037 J	mg/kg	WA-PSA-1	3/4	0.037-0.037	3.70E-02		2.40E+01	4.69E+01	N	3.67E+02	ca	4.69E+01	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.021	0.032 J	mg/kg	WA-PSA-3	2/4	0.035-0.036	3.20E-02		1.10E+01	2.35E+00	N	1.83E+01	ca	2.35E+00	N	BSL
	SVOC																	
	105-67-9	2,4-DIMETHYLPHENOL	0.043 J	0.043 J	mg/kg	WA-PSA-SS	1/4	0.35-0.37	4.30E-02			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.21 J	0.73	mg/kg	WA-PSA-SS	4/4	-	7.30E-01			3.13E+01	N	NV		3.13E+01	N	BSL
	106-44-5	4-METHYLPHENOL	0.044 J	0.048 J	mg/kg	WA-PSA-1	2/4	0.36-0.37	4.80E-02		1.00E+02	3.91E+01	N	3.06E+01	nc	3.06E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.07 J	0.26 J	mg/kg	WA-PSA-2	4/4	-	2.60E-01		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.18 J	0.69	mg/kg	WA-PSA-1	4/4	-	6.90E-01		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.29 J	0.99	mg/kg	WA-PSA-1	4/4	-	9.90E-01		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	1.6 J	7.3 J	mg/kg	WA-PSA-1	4/4	-	7.30E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	1.7 J	7 J	mg/kg	WA-PSA-1	4/4	-	7.00E+00		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	2.7 J	10 J	mg/kg	WA-PSA-1	4/4	-	1.00E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	2.4 J	6.7 J	mg/kg	WA-PSA-1	4/4	-	6.70E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.96 J	2.8 J	mg/kg	WA-PSA-1	4/4	-	2.80E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.86	7.3 J	mg/kg	WA-PSA-1	3/3	-	7.30E+00			4.56E+01	C	3.47E+01	ca	3.47E+01	N	BSL
	86-74-8	CARBAZOLE	0.13 J	0.45	mg/kg	WA-PSA-2	4/4	-	4.50E-01			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	2.2 J	8.1 J	mg/kg	WA-PSA-1	4/4	-	8.10E+00		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.59	1.7	mg/kg	WA-PSA-1	4/4	-	1.70E+00		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.25 J	0.43	mg/kg	WA-PSA-1	4/4	-	4.30E-01		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	84-74-2	DI-N-BUTYL PHTHALATE	0.1 J	0.11 J	mg/kg	WA-PSA-2	2/4	0.37-0.38	1.10E-01			7.82E+02	N	6.11E+02	nc	6.11E+02	N	BSL
	206-44-0	FLUORANTHENE	1.3	9.9	mg/kg	WA-PSA-1	4/4	-	9.90E+00		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.075 J	0.33 J	mg/kg	WA-PSA-2	4/4	-	3.30E-01		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	1.6	6.1 J	mg/kg	WA-PSA-1	4/4	-	6.10E+00		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.59	2.7	mg/kg	WA-PSA-SS	4/4	-	2.70E+00		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	1.1	4.4	mg/kg	WA-PSA-2	4/4	-	4.40E+00		1.00E+02	NV		NV		NV	Y	NTX
	108-95-2	PHENOL	0.048 J	0.082 J	mg/kg	WA-PSA-2	4/4	-	8.20E-02		1.00E+02	2.35E+03	N	1.83E+03	nc	1.83E+03	N	BSL
	129-00-0	PYRENE	3.4	14 J	mg/kg	WA-PSA-1	4/4	-	1.40E+01		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL

TABLE 2.21a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETROLEUM STORAGE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	VOC																	
	106-46-7	1,4-DICHLOROBENZENE	0.036 J	0.061 J	mg/kg	WA-PSA-SS	3/4	0.36-0.36	6.10E-02		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	N	BSL
	71-43-2	BENZENE	0.003 J	0.086 J	mg/kg	WA-PSA-3	3/4	0.011-0.011	8.60E-02		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	75-15-0	CARBON DISULFIDE	0.002 J	0.002 J	mg/kg	WA-PSA-3	1/4	0.011-0.011	2.00E-03			7.82E+02	N	3.55E+01	nc	3.55E+01	N	BSL
	108-90-7	CHLOROBENZENE	0.001 J	0.001 J	mg/kg	WA-PSA-3	1/4	0.011-0.011	1.00E-03		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	N	BSL
	75-09-2	METHYLENE CHLORIDE	0.017	0.017	mg/kg	WA-PSA-SS	1/4	0.011-0.011	1.70E-02		1.00E+02	8.52E+01	C	9.11E+00	ca	9.11E+00	N	BSL
	108-88-3	TOLUENE	0.003 J	0.083 J	mg/kg	WA-PSA-3	3/4	0.011-0.011	8.30E-02		1.00E+02	6.26E+02	N	5.20E+01	nc	5.20E+01	N	BSL
	1330-20-7	XYLENES, TOTAL	0.004 J	0.024 J	mg/kg	WA-PSA-3	3/4	0.011-0.011	2.40E-02		1.00E+02	1.56E+03	N	2.71E+01	nc	2.71E+01	N	BSL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.21b
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
PETROLEUM STORAGE AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-PSA-3	Highly chlorinated PCBs	0	2	9/30/1998	0.14	mg/kg
WA-PSA-SS	Highly chlorinated PCBs	0	0.5	10/26/1999	0.309	mg/kg
WA-PSA-1	Highly chlorinated PCBs	0	2	9/29/1998	0.72	mg/kg

Notes:
* Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.22a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETROLEUM STORAGE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Petroleum Storage Area - Upper Soil	METALS																	
	7429-90-5	ALUMINUM	4210	15200	mg/kg	WA-PSA-3	8/8	-	1.52E+04			7.82E+03	N	7.61E+03	nc	7.61E+03	Y	ASL
	7440-36-0	ANTIMONY	0.93 J	0.93 J	mg/kg	WA-PSA-3	1/8	0.57-0.69	9.30E-01			3.13E+00	N	3.13E+00	nc	3.13E+00	N	BSL
	7440-38-2	ARSENIC	3.5	67.6	mg/kg	WA-PSA-3	8/8	-	6.76E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	43.1 J	361	mg/kg	WA-PSA-3	8/8	-	3.61E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	N	BSL
	7440-41-7	BERYLLIUM	0.31 J	2.2 J	mg/kg	WA-PSA-3	7/8	0.58-0.58	2.20E+00		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.19 J	1.1 J	mg/kg	WA-PSA-3	7/8	0.2-0.2	1.10E+00		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	78800	151000	mg/kg	WA-PSA-1	8/8	-	1.51E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	10.2 J	28	mg/kg	WA-PSA-SS	8/8	-	2.80E+01		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	4.3 J	25.2	mg/kg	WA-PSA-3	8/8	-	2.52E+01			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	23.9	94.6	mg/kg	WA-PSA-1	8/8	-	9.46E+01		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	57-12-5	CYANIDE	0.7	61	mg/kg	WA-PSA-2	5/8	0.54-0.59	6.10E+01			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	7439-89-6	IRON	11300	28600	mg/kg	WA-PSA-3	8/8	-	2.86E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	6	156 J	mg/kg	WA-PSA-1	8/8	-	1.56E+02		4.00E+02	NV		4.00E+02	nc	4.00E+02	N	BSL
	7439-95-4	MAGNESIUM	8730	19000	mg/kg	WA-PSA-2	8/8	-	1.90E+04			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	257 J	486 J	mg/kg	WA-PSA-1	8/8	-	4.86E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	0.1 J	14.2	mg/kg	WA-PSA-SS	8/8	-	1.42E+01			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.00344 J	.00344 J	mg/kg	WA-PSA-SS	1/1	-	3.44E-03			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	11.2	28 J	mg/kg	WA-PSA-3	8/8	-	2.80E+01		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	N	BSL
	7440-09-7	POTASSIUM	397 J	1460	mg/kg	WA-PSA-SS	8/8	-	1.46E+03			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	1.7	2.2	mg/kg	WA-PSA-3	2/8	1-1.9	2.20E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	139 J	596 J	mg/kg	WA-PSA-3	8/8	-	5.96E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	10 J	20.1	mg/kg	WA-PSA-SS	8/8	-	2.01E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	33	131	mg/kg	WA-PSA-3	8/8	-	1.31E+02		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.14	0.72	mg/kg	WA-PSA-1	3/8	-	7.20E-01			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	309-00-2	ALDRIN	0.0018 J	0.0018 J	mg/kg	WA-PSA-2	1/8	0.0018-0.02	1.80E-03		9.70E-02	3.76E-02	C	2.86E-02	ca	2.86E-02	N	BSL
	319-86-8	DELTA-BHC	0.0012 J	0.0012 J	mg/kg	WA-PSA-3	1/8	0.0018-0.02	1.20E-03		1.00E+02	NV		NV		NV	Y	NTX
	33213-65-9	ENDOSULFAN II[d]	0.0071 J	0.046	mg/kg	WA-PSA-2	4/8	0.0036-0.04	4.60E-02		2.40E+01	4.69E+01	N	3.67E+02	ca	4.69E+01	N	BSL
	1031-07-8	ENDOSULFAN SULFATE[d]	0.023 J	0.023 J	mg/kg	WA-PSA-2	1/8	0.0036-0.04	2.30E-02		2.40E+01	4.69E+01	N	3.67E+02	ca	4.69E+01	N	BSL
	7421-93-4	ENDRIN ALDEHYDE[e]	0.062 J	0.062 J	mg/kg	WA-PSA-2	1/8	0.0036-0.04	6.20E-02		1.10E+01	2.35E+00	N	1.83E+01	ca	2.35E+00	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.021	0.032 J	mg/kg	WA-PSA-3	2/8	0.0036-0.04	3.20E-02		1.10E+01	2.35E+00	N	1.83E+01	ca	2.35E+00	N	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.0032 J	0.0032 J	mg/kg	WA-PSA-2	1/8	0.0018-0.02	3.20E-03			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
		TOTAL CHLORDANE[f]	0.0261	0.0261	mg/kg	WA-PSA-2	1/8	-	2.61E-02			1.82E-01	C	1.62E-01	nc	1.62E-01	N	BSL
	SVOC																	
	105-67-9	2,4-DIMETHYLPHENOL	0.043 J	0.043 J	mg/kg	WA-PSA-SS	1/8	0.35-0.4	4.30E-02			1.56E+02	N	1.22E+02	nc	1.22E+02	N	BSL
	91-57-6	2-METHYLNAPHTHALENE	0.1 J	2.1 J	mg/kg	WA-PSA-3	8/8	-	2.10E+00			3.13E+01	N	NV		3.13E+01	N	BSL
	106-44-5	4-METHYLPHENOL	0.044 J	0.049 J	mg/kg	WA-PSA-2	3/8	0.36-0.4	4.90E-02		1.00E+02	3.91E+01	N	3.06E+01	nc	3.06E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.07 J	0.59	mg/kg	WA-PSA-2	6/8	0.36-0.39	5.90E-01		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.082 J	0.69	mg/kg	WA-PSA-1	5/8	0.36-0.4	6.90E-01		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.048 J	0.99	mg/kg	WA-PSA-1	7/8	0.4-0.4	9.90E-01		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.051 J	7.3 J	mg/kg	WA-PSA-1	8/8	-	7.30E+00		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.29 J	7 J	mg/kg	WA-PSA-1	7/8	0.36-0.36	7.00E+00		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.062 J	10 J	mg/kg	WA-PSA-1	8/8	-	1.00E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.19 J	6.7 J	mg/kg	WA-PSA-1	7/8	0.36-0.36	6.70E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.18 J	2.8 J	mg/kg	WA-PSA-1	7/8	0.36-0.36	2.80E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.1 J	19 J	mg/kg	WA-PSA-1	6/7	0.4-0.4	1.90E+01			4.56E+01	C	3.47E+01	ca	3.47E+01	N	BSL
	86-74-8	CARBAZOLE	0.13 J	0.45	mg/kg	WA-PSA-2	5/8	0.36-0.4	4.50E-01			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	0.079 J	8.1 J	mg/kg	WA-PSA-1	8/8	-	8.10E+00		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.063 J	1.7	mg/kg	WA-PSA-1	6/8	0.36-0.4	1.70E+00		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.08 J	0.69 J	mg/kg	WA-PSA-3	7/8	0.36-0.36	6.90E-01		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	84-74-2	DI-N-BUTYL PHTHALATE	0.1 J	0.11 J	mg/kg	WA-PSA-2	2/8	0.36-0.4	1.10E-01			7.82E+02	N	6.11E+02	nc	6.11E+02	N	BSL
	206-44-0	FLUORANTHENE	0.1 J	9.9	mg/kg	WA-PSA-1	8/8	-	9.90E+00		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.069 J	0.61	mg/kg	WA-PSA-2	6/8	0.36-0.4	6.10E-01		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.17 J	6.1 J	mg/kg	WA-PSA-1	7/8	0.36-0.36	6.10E+00		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.59	30	mg/kg	WA-PSA-1	8/8	-	3.00E+01		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	Y	ASL
	85-01-8	PHENANTHRENE	0.08 J	4.4	mg/kg	WA-PSA-2	8/8	-	4.40E+00		1.00E+02	NV		NV		NV	Y	NTX
	108-95-2	PHENOL	0.048 J	0.082 J	mg/kg	WA-PSA-2	7/8	0.36-0.36	8.20E-02		1.00E+02	2.35E+03	N	1.83E+03	nc	1.83E+03	N	BSL
	129-00-0	PYRENE	0.064 J	14 J	mg/kg	WA-PSA-1	8/8	-	1.40E+01		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL

TABLE 2.22a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETROLEUM STORAGE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	0.049 J	0.86	mg/kg	WA-PSA-3	3/8	0.35-0.39	8.60E-01			7.82E+01	N	6.22E+00	nc	6.22E+00	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	0.096 J	0.35 J	mg/kg	WA-PSA-2	3/8	0.35-0.38	3.50E-01		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.036 J	0.17 J	mg/kg	WA-PSA-3	6/8	0.36-0.36	1.70E-01		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	N	BSL
	78-93-3	2-BUTANONE	0.002 J	0.018 J	mg/kg	WA-PSA-1	4/8	0.011-0.011	1.80E-02		1.00E+02	4.69E+03	N	2.23E+03	nc	2.23E+03	N	BSL
	67-64-1	ACETONE	0.04	0.04	mg/kg	WA-PSA-3	1/8	0.011-0.12	4.00E-02		1.00E+02	NV		1.41E+03	nc	1.41E+03	N	BSL
	71-43-2	BENZENE	0.003 J	0.14	mg/kg	WA-PSA-1, WA-PSA-2	7/8	0.011-0.011	1.40E-01		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	75-15-0	CARBON DISULFIDE	0.002 J	0.009 J	mg/kg	WA-PSA-3	4/8	0.011-0.12	9.00E-03			7.82E+02	N	3.55E+01	nc	3.55E+01	N	BSL
	108-90-7	CHLOROBENZENE	0.001 J	0.006 J	mg/kg	WA-PSA-3	3/8	0.011-0.12	6.00E-03		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	N	BSL
	100-41-4	ETHYLBENZENE	0.002 J	0.075 J	mg/kg	WA-PSA-1	4/7	0.011-0.011	7.50E-02		4.10E+01	7.82E+02	N	3.95E+01	nc	3.95E+01	N	BSL
	75-09-2	METHYLENE CHLORIDE	0.017	0.017	mg/kg	WA-PSA-SS	1/8	0.011-0.12	1.70E-02		1.00E+02	8.52E+01	C	9.11E+00	ca	9.11E+00	N	BSL
	100-42-5	STYRENE	0.002 J	0.046 J	mg/kg	WA-PSA-1	2/7	0.011-0.027	4.60E-02			1.56E+03	N	1.70E+02	nc	1.70E+02	N	BSL
	108-88-3	TOLUENE	0.003 J	0.2	mg/kg	WA-PSA-1	7/8	0.011-0.011	2.00E-01		1.00E+02	6.26E+02	N	5.20E+01	nc	5.20E+01	N	BSL
	1330-20-7	XYLENES, TOTAL	0.004 J	1.4	mg/kg	WA-PSA-1	7/8	0.011-0.011	1.40E+00		1.00E+02	1.56E+03	N	2.71E+01	nc	2.71E+01	N	BSL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.
f = RBC value for chlordane (CAS# 57749) and PRG value for technical chlordane (CAS# 12789-03-6) utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.22b
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
PETROLEUM STORAGE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-PSA-3	Highly chlorinated PCBs	0	2	9/30/1998	0.14	mg/kg
WA-PSA-SS	Highly chlorinated PCBs	0	0.5	10/26/1999	0.309	mg/kg
WA-PSA-1	Highly chlorinated PCBs	0	2	9/29/1998	0.72	mg/kg

Notes:
* Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.22c
DERIVATION OF TOTAL CHLORDANES
PETROLEUM STORAGE AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location Chlordane Concentration	Units
WA-PSA-2	2	10	9/29/1998	0.0261	mg/kg

TABLE 2.23
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETROLEUM STORAGE AREA SHALLOW GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Shallow Groundwater (0 - 10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Tap Water (5)		USEPA PRG for Tap Water (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Petroleum Storage Area - Shallow Groundwater	METALS																	
	7429-90-5	ALUMINUM	3.66 J	38.3	mg/L	WA-PS-2	3/6	0.0262-0.0321	3.83E+01		2.00 E-01	3.65E+00	N	3.65E+00	nc	3.65E+00	Y	ASL
	7440-39-3	BARIUM	0.0469	0.477	mg/L	WA-PS-2	6/6	-	4.77E-01		2.00 E+00	7.30E-01	N	2.55E-01	nc	2.55E-01	Y	ASL
	7440-41-7	BERYLLIUM	0.0026	0.0028	mg/L	WA-PS-1	2/6	0.001-0.001	2.80E-03		4.00 E-03	7.30E-03	N	7.30E-03	nc	7.30E-03	N	BSL
	7440-70-2	CALCIUM	78.9	349	mg/L	WA-PS-2	6/6	-	3.49E+02			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	0.0082 J	0.0707 J	mg/L	WA-PS-2	3/6	0.003-0.003	7.07E-02			1.10E-02	N	1.09E-01	ca	1.10E-02	Y	TOX
	7440-48-4	COBALT	0.0034	0.0388	mg/L	WA-PS-2	3/6	0.003-0.003	3.88E-02			NV		7.30E-02	nc	7.30E-02	N	BSL
	7440-50-8	COPPER	0.133	0.209	mg/L	WA-PS-2	2/6	0.002-0.0164	2.09E-01			1.46E-01	N	1.46E-01	nc	1.46E-01	Y	ASL
	57-12-5	CYANIDE	0.028	0.028	mg/L	WA-PS-2	1/3	0.01-0.01	2.80E-02		2.00 E-01	7.30E-02	N	7.30E-02	nc	7.30E-02	N	BSL
	7439-89-6	IRON	6.6 J	58 J	mg/L	WA-PS-2	3/6	0.0226-0.0778	5.80E+01		3.00 E-01	2.56E+00	N	1.09E+00	nc	1.09E+00	Y	ASL
	7439-92-1	LEAD	0.015 J	0.114 J	mg/L	WA-PS-1	3/6	0.001-0.01	1.14E-01		1.50 E-02	NV		NV		1.50 E-02	Y	ASL
	7439-95-4	MAGNESIUM	21.3	155	mg/L	WA-PS-2	6/6	-	1.55E+02			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	0.131	2.62 J	mg/L	WA-PS-2	6/6	-	2.62E+00		5.00 E-02	7.30E-02	N	8.76E-02	nc	7.30E-02	Y	ASL
	7439-97-6	MERCURY[b]	0.0022	0.0026 J	mg/L	WA-PS-3S	2/6	0.0002-0.0002	2.60E-03			3.65E-04	N	3.65E-04	nc	3.65E-04	Y	ASL
	7440-02-0	NICKEL	0.0525	0.0802	mg/L	WA-PS-2	2/6	0.01-0.01	8.02E-02			7.30E-02	N	7.30E-02	nc	7.30E-02	Y	ASL
	7440-09-7	POTASSIUM	5.12	12.7	mg/L	WA-PS-2	5/6	3.43-3.43	1.27E+01			NV		NV		NV	N	NUT
	7440-23-5	SODIUM	73.7 J	219 J	mg/L	WA-PS-1	6/6	-	2.19E+02			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	0.0042	0.0861 J	mg/L	WA-PS-2	6/6	-	8.61E-02			3.65E-03	N	3.65E-03	nc	3.65E-03	Y	ASL
	7440-66-6	ZINC	0.0046	0.188 J	mg/L	WA-PS-2	4/6	0.003-0.003	1.88E-01		5.00 E+00	1.10E+00	N	1.09E+00	nc	1.09E+00	N	BSL
	SVOC																	
	91-57-6	2-METHYLNAPHTHALENE	24	24	ug/L	WA-PS-3S	1/3	10-10	2.40E+01			2.43E+00	N	NV		2.43E+00	Y	ASL
	95-48-7	2-METHYLPHENOL	2 J	2 J	ug/L	WA-PS-1	1/3	10-10	2.00E+00			1.83E+02	N	1.82E+02	nc	1.82E+02	N	BSL
	106-44-5	4-METHYLPHENOL	6 J	6 J	ug/L	WA-PS-1	1/3	10-10	6.00E+00			1.83E+01	N	1.82E+01	nc	1.82E+01	N	BSL
	120-12-7	ANTHRACENE	1 J	1 J	ug/L	WA-PS-3S	1/3	10-10	1.00E+00			1.83E+02	N	1.83E+02	nc	1.83E+02	N	BSL
	132-64-9	DIBENZOFURAN	2 J	2 J	ug/L	WA-PS-3S	1/3	10-10	2.00E+00			3.65E+00	N	1.22E+00	nc	1.22E+00	Y	ASL
	206-44-0	FLUORANTHENE	1 J	2 J	ug/L	WA-PS-3S	2/3	10-10	2.00E+00			1.46E+02	N	1.46E+02	nc	1.46E+02	N	BSL
	86-73-7	FLUORENE	4 J	4 J	ug/L	WA-PS-3S	1/3	10-10	4.00E+00			2.43E+01	N	2.43E+01	nc	2.43E+01	N	BSL
	91-20-3	NAPHTHALENE	10 J	230	ug/L	WA-PS-3S	2/3	10-10	2.30E+02			6.51E-01	N	6.20E-01	nc	6.20E-01	Y	ASL
	85-01-8	PHENANTHRENE	6 J	6 J	ug/L	WA-PS-3S	1/3	10-10	6.00E+00			NV		NV		NV	Y	NTX
	108-95-2	PHENOL	1 J	44	ug/L	WA-PS-1	2/3	10-10	4.40E+01			1.10E+03	N	1.09E+03	nc	1.09E+03	N	BSL
	129-00-0	PYRENE	1 J	1 J	ug/L	WA-PS-3S	1/3	10-10	1.00E+00			1.83E+01	N	1.83E+01	nc	1.83E+01	N	BSL
	VOC																	
	71-43-2	BENZENE	3 J	4400	ug/L	WA-PS-1	6/6	-	4.40E+03		5.00 E-03	3.36E-01	C	3.54E-01	ca	3.36E-01	Y	TOX
	75-15-0	CARBON DISULFIDE	1 J	1 J	ug/L	WA-PS-3S	1/3	10-120	1.00E+00			1.04E+02	N	1.04E+02	nc	1.04E+02	N	BSL
	100-41-4	ETHYLBENZENE	3 J	3 J	ug/L	WA-PS-3S	1/6	1-120	3.00E+00		7.00 E-01	1.34E+02	N	1.34E+02	nc	1.34E+02	N	BSL
	108-88-3	TOLUENE	64 J	64 J	ug/L	WA-PS-1	1/6	1-100	6.40E+01		1.00 E+00	2.27E+02	N	7.23E+01	nc	7.23E+01	N	BSL
	1330-20-7	XYLENES, TOTAL	41	41	ug/L	WA-PS-3S	1/6	3-300	4.10E+01		1.00 E+01	2.13E+01	N	2.06E+01	nc	2.06E+01	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) United States Environmental Protection Agency. 2008. National Primary and Secondary Drinking Water Regulations
(5) USEPA Region 3 RBCs (USEPA 2007) for tap water; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for tap water; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = Where mercury was not speciated RBC and PRG values for methyl mercury utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.24
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETROLEUM STORAGE AREA SHALLOW GROUNDWATER: VAPOR INTRUSION
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Groundwater (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	Target Groundwater Concentration Corresponding to Target Indoor Air Concentration Where the Soil Gas to Indoor Air Attenuation Factor = 0.001 and Partitioning Across the Water Table Obeys Henry's Law (10^{-5}) (5)		Screening Toxicity Value	COPC Flag (Y/N)	Rationale for Selection or Deletion (6)
Petroleum Storage Area - Shallow Groundwater	SVOC															
	91-57-6	2-METHYLNAPHTHALENE	24	24	ug/L	WA-PS-3S	1/3	10-10	2.40E+01			3.30E+03	NC	3.30E+03	N	BSL
	95-48-7	2-METHYLPHENOL	2 J	2 J	ug/L	WA-PS-1	1/3	10-10	2.00E+00			NV		NV	Y	NTX
	106-44-5	4-METHYLPHENOL	6 J	6 J	ug/L	WA-PS-1	1/3	10-10	6.00E+00			NV		NV	Y	NTX
	120-12-7	ANTHRACENE	1 J	1 J	ug/L	WA-PS-3S	1/3	10-10	1.00E+00			NV		NV	Y	NTX
	132-64-9	DIBENZOFURAN	2 J	2 J	ug/L	WA-PS-3S	1/3	10-10	2.00E+00			**	NC	**	N	BSL
	206-44-0	FLUORANTHENE	1 J	2 J	ug/L	WA-PS-3S	2/3	10-10	2.00E+00			NV		NV	Y	NTX
	86-73-7	FLUORENE	4 J	4 J	ug/L	WA-PS-3S	1/3	10-10	4.00E+00			**	NC	**	N	BSL
	91-20-3	NAPHTHALENE	10 J	230	ug/L	WA-PS-3S	2/3	10-10	2.30E+02			1.50E+02	NC	1.50E+02	Y	ASL
	85-01-8	PHENANTHRENE	6 J	6 J	ug/L	WA-PS-3S	1/3	10-10	6.00E+00			NV		NV	Y	NTX
	108-95-2	PHENOL	1 J	44	ug/L	WA-PS-1	2/3	10-10	4.40E+01			NV		NV	Y	NTX
	129-00-0	PYRENE	1 J	1 J	ug/L	WA-PS-3S	1/3	10-10	1.00E+00			**	NC	**	N	BSL
	VOC															
	71-43-2	BENZENE	3 J	4400	ug/L	WA-PS-1	6/6	-	4.40E+03		5.00 E-03	5†	C	5†	N	BSL
	75-15-0	CARBON DISULFIDE	1 J	1 J	ug/L	WA-PS-3S	1/3	10-120	1.00E+00			5.60E+02	NC	5.60E+02	N	BSL
	100-41-4	ETHYLBENZENE	3 J	3 J	ug/L	WA-PS-3S	1/6	1-120	3.00E+00		7.00 E-01	700†	C	700†	N	BSL
	108-88-3	TOLUENE	64 J	64 J	ug/L	WA-PS-1	1/6	1-100	6.40E+01		1.00 E+00	1.50E+03	NC	1.50E+03	N	BSL
	1330-20-7	XYLENES, TOTAL[a]	41	41	ug/L	WA-PS-3S	1/6	3-300	4.10E+01		1.00 E+01	2.20E+04	NC	2.20E+04	N	BSL
	METALS															
	7439-97-6	MERCURY[b]	0.0022	0.0026 J	mg/L	WA-PS-3S	2/6	0.0002-0.0002	2.60E-03			6.80E-04	NC	6.80E-04	Y	ASL

Footnotes:
** Target soil gas concentration exceeds maximum possible vapor concentration at this soil gas to indoor air attenuation factor (pathway incomplete)
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) No background screening performed.
(4) United States Environmental Protection Agency. 2008. National Primary and Secondary Drinking Water Regulations
(5) USEPA - OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance) Tables. November 2002. ca = Cancer; nc = Noncancer
(6) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and not screened in.
[a] Screening value based on p-xylene.
[b] Where mercury was not speciated RBC and PRG values for methyl mercury utilized.
†The target groundwater concentration is the MCL.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.25a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CHLOROBENZENE HOT-SPOT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Chlorobenzene Hot-Spot Area - Surface Soil	METALS																	
	7429-90-5	ALUMINUM	2100	4410	mg/kg	WA-CHSA-SS	7/7	-	4.41E+03			7.82E+03	N	7.61E+03	nc	7.61E+03	N	BSL
	7440-36-0	ANTIMONY	0.85 J	1 J	mg/kg	WA-CHSA-4	2/7	0.56-0.65	1.00E+00			3.13E+00	N	3.13E+00	nc	3.13E+00	N	BSL
	7440-38-2	ARSENIC	3.5	18.6	mg/kg	WA-CHSA-4	7/7	-	1.86E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	45.4	168	mg/kg	WA-CHSA-4	7/7	-	1.68E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	N	BSL
	7440-41-7	BERYLLIUM	0.26 J	0.7 J	mg/kg	WA-CHSA-SS	7/7	-	7.00E-01		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.5 J	0.83 J	mg/kg	WA-CHSA-6	6/7	0.26-0.26	8.30E-01		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	68600	262000	mg/kg	WA-CHSA-6	7/7	-	2.62E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	11.4 J	33.9 J	mg/kg	WA-CHSA-4	7/7	-	3.39E+01		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	5.2 J	7.8 J	mg/kg	WA-CHSA-4	7/7	-	7.80E+00			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	21.3	159	mg/kg	WA-CHSA-3	7/7	-	1.59E+02		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	7439-89-6	IRON	9860	27700 J	mg/kg	WA-CHSA-SS	7/7	-	2.77E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	34.3	134	mg/kg	WA-CHSA-3	7/7	-	1.34E+02		4.00E+02	NV		4.00E+02	nc	4.00E+02	N	BSL
	7439-95-4	MAGNESIUM	3610	44200	mg/kg	WA-CHSA-5	7/7	-	4.42E+04			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	238	353	mg/kg	WA-CHSA-6, WA-CHSA-5	7/7	-	3.53E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	0.53 J	3.5	mg/kg	WA-CHSA-4	7/7	-	3.50E+00			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.00367 J	.00367 J	mg/kg	WA-CHSA-SS	1/1	-	3.67E-03			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	11 J	36.3	mg/kg	WA-CHSA-SS	7/7	-	3.63E+01		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	N	BSL
	7440-09-7	POTASSIUM	293 J	983 J	mg/kg	WA-CHSA-SS	7/7	-	9.83E+02			NV		NV		NV	N	NUT
	7440-23-5	SODIUM	230 J	1200 J	mg/kg	WA-CHSA-2	7/7	-	1.20E+03			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	7.5 J	16.4	mg/kg	WA-CHSA-SS	7/7	-	1.64E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	33.5	176	mg/kg	WA-CHSA-SS	7/7	-	1.76E+02		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.75	120	mg/kg	WA-CHSA-2	6/7	-	1.20E+02			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	72-55-9	4,4'-DDE	0.049 J	0.074	mg/kg	WA-CHSA-6	2/7	0.039-19	7.40E-02		8.90E+00	1.88E+00	C	1.72E+00	ca	1.72E+00	N	BSL
	309-00-2	ALDRIN	0.0092 J	0.0092 J	mg/kg	WA-CHSA-3	1/7	0.018-9.4	9.20E-03		9.70E-02	3.76E-02	C	2.86E-02	ca	2.86E-02	N	BSL
	33213-65-9	ENDOSULFAN II[d]	0.018 J	0.064 J	mg/kg	WA-CHSA-6	3/6	0.18-19	6.40E-02		2.40E+01	4.69E+01	N	3.67E+02	ca	4.69E+01	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.05	0.088 J	mg/kg	WA-CHSA-3	2/6	0.075-19	8.80E-02		1.10E+01	2.35E+00	N	1.83E+01	ca	2.35E+00	N	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.026 J	0.044 J	mg/kg	WA-CHSA-6	2/7	0.019-9.4	4.40E-02			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
	SVOC																	
	91-57-6	2-METHYLNAPHTHALENE	0.038 J	2.2 J	mg/kg	WA-CHSA-3	7/7	-	2.20E+00			3.13E+01	N	NV		3.13E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.037 J	2.2 J	mg/kg	WA-CHSA-3	6/7	0.37-0.37	2.20E+00		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.12 J	0.34 J	mg/kg	WA-CHSA-SS	4/7	0.37-10	3.40E-01		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.1 J	6.8 J	mg/kg	WA-CHSA-3	7/7	-	6.80E+00		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.32 J	17	mg/kg	WA-CHSA-3	7/7	-	1.70E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.27 J	14 J	mg/kg	WA-CHSA-3	7/7	-	1.40E+01		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.45	22 J	mg/kg	WA-CHSA-3	7/7	-	2.20E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.23 J	8.7 J	mg/kg	WA-CHSA-3	7/7	-	8.70E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.14 J	6.8 J	mg/kg	WA-CHSA-3	7/7	-	6.80E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.14 J	1.5	mg/kg	WA-CHSA-5	6/7	10-10	1.50E+00			4.56E+01	C	3.47E+01	ca	3.47E+01	N	BSL
	86-74-8	CARBAZOLE	0.041 J	1.3 J	mg/kg	WA-CHSA-3	6/7	0.37-0.37	1.30E+00			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	0.4	19	mg/kg	WA-CHSA-3	7/7	-	1.90E+01		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.26 J	3 J	mg/kg	WA-CHSA-3	6/7	0.37-0.37	3.00E+00		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.063 J	2.7 J	mg/kg	WA-CHSA-3	6/7	0.37-0.37	2.70E+00		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	84-74-2	DI-N-BUTYL PHTHALATE	0.043 J	0.043 J	mg/kg	WA-CHSA-SS	1/7	0.37-10	4.30E-02			7.82E+02	N	6.11E+02	nc	6.11E+02	N	BSL
	117-84-0	DI-N-OCTYL PHTHALATE	0.53 J	0.53 J	mg/kg	WA-CHSA-SS	1/7	0.37-10	5.30E-01			NV		2.44E+02	nc	2.44E+02	N	BSL
	206-44-0	FLUORANTHENE	0.56	31	mg/kg	WA-CHSA-3	7/7	-	3.10E+01		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.044 J	3.7 J	mg/kg	WA-CHSA-3	5/7	0.37-0.39	3.70E+00		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.038 J	5.4 J	mg/kg	WA-CHSA-2	3/7	0.39-10	5.40E+00		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	Y	ASL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.18 J	7.9 J	mg/kg	WA-CHSA-3	7/7	-	7.90E+00		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.038 J	1.9 J	mg/kg	WA-CHSA-3	7/7	-	1.90E+00		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	0.39	25	mg/kg	WA-CHSA-3	7/7	-	2.50E+01		1.00E+02	NV		NV		NV	Y	NTX
	129-00-0	PYRENE	0.63	33 J	mg/kg	WA-CHSA-3	7/7	-	3.30E+01		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL

TABLE 2.25a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CHLOROBENZENE HOT-SPOT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	0.042 J	17	mg/kg	WA-CHSA-2	5/7	0.4-10	1.70E+01			7.82E+01	N	6.22E+00	nc	6.22E+00	Y	ASL
	95-50-1	1,2-DICHLOROBENZENE	0.05 J	5.9 J	mg/kg	WA-CHSA-2	5/7	0.4-10	5.90E+00		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	N	BSL
	541-73-1	1,3-DICHLOROBENZENE	0.35 J	0.35 J	mg/kg	WA-CHSA-2	1/7	0.37-10	3.50E-01		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	0.11 J	6.5 J	mg/kg	WA-CHSA-2	5/7	0.4-10	6.50E+00		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	Y	ASL
	71-43-2	BENZENE	0.001 J	0.008 J	mg/kg	WA-CHSA-2	2/7	0.011-0.012	8.00E-03		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	108-90-7	CHLOROBENZENE	0.001 J	0.046 J	mg/kg	WA-CHSA-2	5/7	0.011-0.012	4.60E-02		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	N	BSL
	1330-20-7	XYLENES, TOTAL	0.002 J	0.002 J	mg/kg	WA-CHSA-3	1/7	0.011-0.012	2.00E-03		1.00E+02	1.56E+03	N	2.71E+01	nc	2.71E+01	N	BSL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.25b
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
CHLOROBENZENE HOT-SPOT AREA SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-CHSA-3	Highly chlorinated PCBs	0	2	9/30/1998	0.75	mg/kg
WA-CHSA-5	Highly chlorinated PCBs	0	2	9/30/1998	2.7	mg/kg
WA-CHSA-6	Highly chlorinated PCBs	0	2	9/30/1998	4	mg/kg
WA-CHSA-SS	Highly chlorinated PCBs	0	0.5	10/26/1999	4.9	mg/kg
WA-CHSA-1	Highly chlorinated PCBs	0	2	9/30/1998	6.2	mg/kg
WA-CHSA-2	Highly chlorinated PCBs	0	2	9/30/1998	120	mg/kg

Notes:
* Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.26a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CHLOROBENZENE HOT-SPOT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Chlorobenzene Hot-Spot Area - Upper Soil	METALS																	
	7429-90-5	ALUMINUM	827	7580	mg/kg	WA-CHSA-2	13/13	-	7.58E+03			7.82E+03	N	7.61E+03	nc	7.61E+03	N	BSL
	7440-36-0	ANTIMONY	0.85 J	1 J	mg/kg	WA-CHSA-4	2/13	0.56-0.72	1.00E+00			3.13E+00	N	3.13E+00	nc	3.13E+00	N	BSL
	7440-38-2	ARSENIC	3	18.6	mg/kg	WA-CHSA-4	13/13	-	1.86E+01		1.60E+01	4.26E-01	C	3.90E-01	ca	3.90E-01	Y	TOX
	7440-39-3	BARIUM	8.7 J	168	mg/kg	WA-CHSA-4	13/13	-	1.68E+02		4.00E+02	1.56E+03	N	5.37E+02	nc	5.37E+02	N	BSL
	7440-41-7	BERYLLIUM	0.25 J	0.7 J	mg/kg	WA-CHSA-SS	13/13	-	7.00E-01		7.20E+01	1.56E+01	N	1.54E+01	nc	1.54E+01	N	BSL
	7440-43-9	CADMIUM	0.17 J	0.83 J	mg/kg	WA-CHSA-6	12/13	0.26-0.26	8.30E-01		4.30E+00	3.91E+00	N	3.70E+00	nc	3.70E+00	N	BSL
	7440-70-2	CALCIUM	68600	305000	mg/kg	WA-CHSA-1	13/13	-	3.05E+05			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	4.8 J	33.9 J	mg/kg	WA-CHSA-4	13/13	-	3.39E+01		1.10E+02	2.35E+01	N	3.01E+01	ca	2.35E+01	Y	TOX
	7440-48-4	COBALT	3.9 J	7.8 J	mg/kg	WA-CHSA-4	13/13	-	7.80E+00			NV		9.03E+01	nc	9.03E+01	N	BSL
	7440-50-8	COPPER	10.2	159	mg/kg	WA-CHSA-3	13/13	-	1.59E+02		2.70E+02	3.13E+02	N	3.13E+02	nc	3.13E+02	N	BSL
	7439-89-6	IRON	5210	27700 J	mg/kg	WA-CHSA-SS	13/13	-	2.77E+04			5.48E+03	N	2.35E+03	nc	2.35E+03	Y	ASL
	7439-92-1	LEAD	13 J	134	mg/kg	WA-CHSA-3	13/13	-	1.34E+02		4.00E+02	NV		4.00E+02	nc	4.00E+02	N	BSL
	7439-95-4	MAGNESIUM	3610	44200	mg/kg	WA-CHSA-5	13/13	-	4.42E+04			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	238	463	mg/kg	WA-CHSA-5	13/13	-	4.63E+02		2.00E+03	1.56E+02	N	1.76E+02	nc	1.56E+02	Y	ASL
	7439-97-6	MERCURY[b]	0.22 J	5.8	mg/kg	WA-CHSA-4	12/13	0.05-0.05	5.80E+00			2.35E+00	N	2.35E+00	nc	2.35E+00	Y	ASL
	22967-92-6	METHYL MERCURY	.00367 J	.00367 J	mg/kg	WA-CHSA-SS	1/1	-	3.67E-03			7.82E-01	N	6.11E-01	nc	6.11E-01	N	BSL
	7440-02-0	NICKEL	9.5 J	36.3	mg/kg	WA-CHSA-SS	13/13	-	3.63E+01		3.10E+02	1.56E+02	N	1.56E+02	nc	1.56E+02	N	BSL
	7440-09-7	POTASSIUM	293 J	1090 J	mg/kg	WA-CHSA-4	13/13	-	1.09E+03			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	1.6	1.6	mg/kg	WA-CHSA-5	1/13	1-1.4	1.60E+00		1.80E+02	3.91E+01	N	3.91E+01	nc	3.91E+01	N	BSL
	7440-23-5	SODIUM	230 J	1900 J	mg/kg	WA-CHSA-4	13/13	-	1.90E+03			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	3.2 J	16.4	mg/kg	WA-CHSA-SS	13/13	-	1.64E+01			7.82E+00	N	7.82E+00	nc	7.82E+00	Y	ASL
	7440-66-6	ZINC	8.3	176	mg/kg	WA-CHSA-SS	13/13	-	1.76E+02		1.00E+04	2.35E+03	N	2.35E+03	nc	2.35E+03	N	BSL
	PCB																	
		HIGHLY CHLORINATED PCBs[c]	0.41	120	mg/kg	WA-CHSA-2	9/13	-	1.20E+02			3.19E-01	C	2.22E-02	nc	2.22E-02	Y	ASL
	PESTICIDES																	
	72-55-9	4,4'-DDE	0.0096 J	0.074	mg/kg	WA-CHSA-6	4/13	0.0039-19	7.40E-02		8.90E+00	1.88E+00	C	1.72E+00	ca	1.72E+00	N	BSL
	309-00-2	ALDRIN	0.0092 J	0.0092 J	mg/kg	WA-CHSA-3	1/13	0.0019-9.4	9.20E-03		9.70E-02	3.76E-02	C	2.86E-02	ca	2.86E-02	N	BSL
	33213-65-9	ENDOSULFAN II[d]	0.014 J	0.064 J	mg/kg	WA-CHSA-6	4/11	0.0039-19	6.40E-02		2.40E+01	4.69E+01	N	3.67E+02	ca	4.69E+01	N	BSL
	7421-93-4	ENDRIN ALDEHYDE[e]	0.017 J	0.017 J	mg/kg	WA-CHSA-1	1/10	0.0039-19	1.70E-02		1.10E+01	2.35E+00	N	1.83E+01	ca	2.35E+00	N	BSL
	53494-70-5	ENDRIN KETONE[e]	0.002 J	0.088 J	mg/kg	WA-CHSA-3	3/12	0.0041-19	8.80E-02		1.10E+01	2.35E+00	N	1.83E+01	ca	2.35E+00	N	BSL
	1024-57-3	HEPTACHLOR EPOXIDE	0.0019 J	0.044 J	mg/kg	WA-CHSA-6	5/13	0.0019-9.4	4.40E-02			7.02E-02	C	5.34E-02	ca	5.34E-02	N	BSL
	72-43-5	METHOXYCHLOR	0.023 J	0.023 J	mg/kg	WA-CHSA-5	1/13	0.019-94	2.30E-02			3.91E+01	N	3.06E+01	nc	3.06E+01	N	BSL
	SVOC																	
	91-57-6	2-METHYLNAPHTHALENE	0.038 J	2.2 J	mg/kg	WA-CHSA-3	10/13	0.36-0.41	2.20E+00			3.13E+01	N	NV		3.13E+01	N	BSL
	83-32-9	ACENAPHTHENE	0.037 J	2.2 J	mg/kg	WA-CHSA-3	8/13	0.36-12	2.20E+00		1.00E+02	4.69E+02	N	3.68E+02	nc	3.68E+02	N	BSL
	208-96-8	ACENAPHTHYLENE	0.049 J	0.34 J	mg/kg	WA-CHSA-SS	6/13	0.36-12	3.40E-01		1.00E+02	NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	0.039 J	6.8 J	mg/kg	WA-CHSA-3	13/13	-	6.80E+00		1.00E+02	2.35E+03	N	2.19E+03	nc	2.19E+03	N	BSL
	56-55-3	BENZO(A)ANTHRACENE	0.085 J	17	mg/kg	WA-CHSA-3, WA-CHSA-2	13/13	-	1.70E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	50-32-8	BENZO(A)PYRENE	0.067 J	14 J	mg/kg	WA-CHSA-3	13/13	-	1.40E+01		1.00E+00	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	205-99-2	BENZO(B)FLUORANTHENE	0.094 J	22 J	mg/kg	WA-CHSA-3	13/13	-	2.20E+01		1.00E+00	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	0.23 J	8.7 J	mg/kg	WA-CHSA-3	12/13	0.36-0.36	8.70E+00		1.00E+02	NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	0.14 J	6.8 J	mg/kg	WA-CHSA-3	12/13	0.36-0.36	6.80E+00		3.90E+00	2.20E+00	C	6.21E+00	ca	2.20E+00	Y	ASL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.14 J	7.6	mg/kg	WA-CHSA-5	11/13	10-12	7.60E+00			4.56E+01	C	3.47E+01	ca	3.47E+01	N	BSL
	86-74-8	CARBAZOLE	0.041 J	1.3 J	mg/kg	WA-CHSA-3	8/13	0.36-12	1.30E+00			3.19E+01	C	2.43E+01	ca	2.43E+01	N	BSL
	218-01-9	CHRYSENE	0.1 J	19	mg/kg	WA-CHSA-2, WA-CHSA-3	13/13	-	1.90E+01		3.90E+00	2.20E+01	C	6.21E+01	ca	2.20E+01	N	BSL
	53-70-3	DIBENZO(A,H)ANTHRACENE	0.097 J	3 J	mg/kg	WA-CHSA-3	11/13	0.36-0.37	3.00E+00		3.30E-01	2.20E-02	C	6.21E-02	ca	2.20E-02	Y	ASL
	132-64-9	DIBENZOFURAN	0.063 J	2.7 J	mg/kg	WA-CHSA-3	8/13	0.36-12	2.70E+00		5.90E+01	7.82E+00	N	1.45E+01	nc	7.82E+00	N	BSL
	84-74-2	DI-N-BUTYL PHTHALATE	0.043 J	0.06 J	mg/kg	WA-CHSA-5	2/13	0.36-12	6.00E-02			7.82E+02	N	6.11E+02	nc	6.11E+02	N	BSL
	117-84-0	DI-N-OCTYL PHTHALATE	0.53 J	0.53 J	mg/kg	WA-CHSA-SS	1/13	0.36-12	5.30E-01			NV		2.44E+02	nc	2.44E+02	N	BSL
	206-44-0	FLUORANTHENE	0.17 J	31	mg/kg	WA-CHSA-3	13/13	-	3.10E+01		1.00E+02	3.13E+02	N	2.29E+02	nc	2.29E+02	N	BSL
	86-73-7	FLUORENE	0.043 J	3.7 J	mg/kg	WA-CHSA-3	8/13	0.36-12	3.70E+00		1.00E+02	3.13E+02	N	2.75E+02	nc	2.75E+02	N	BSL
	118-74-1	HEXACHLOROBENZENE	0.038 J	13	mg/kg	WA-CHSA-2	4/13	0.36-10	1.30E+01		1.20E+00	3.99E-01	C	3.04E-01	ca	3.04E-01	Y	ASL
	193-39-5	INDENO(1,2,3-CD)PYRENE	0.18 J	7.9 J	mg/kg	WA-CHSA-3	12/13	0.36-0.36	7.90E+00		5.00E-01	2.20E-01	C	6.21E-01	ca	2.20E-01	Y	ASL
	91-20-3	NAPHTHALENE	0.038 J	3.6 J	mg/kg	WA-CHSA-2	12/13	0.36-0.36	3.60E+00		1.00E+02	1.56E+02	N	5.59E+00	nc	5.59E+00	N	BSL
	85-01-8	PHENANTHRENE	0.15 J	25	mg/kg	WA-CHSA-3	13/13	-	2.50E+01		1.00E+02	NV		NV		NV	Y	NTX
	129-00-0	PYRENE	0.14 J	33 J	mg/kg	WA-CHSA-3	13/13	-	3.30E+01		1.00E+02	2.35E+02	N	2.32E+02	nc	2.32E+02	N	BSL

TABLE 2.26a
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CHLOROBENZENE HOT-SPOT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Residential Soil (5)		USEPA PRG for Residential Soil (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	VOC																	
	120-82-1	1,2,4-TRICHLOROBENZENE	0.042 J	3000	mg/kg	WA-CHSA-2	8/13	0.37-10	3.00E+03			7.82E+01	N	6.22E+00	nc	6.22E+00	Y	ASL
	95-50-1	1,2-DICHLOROBENZENE	0.05 J	1400	mg/kg	WA-CHSA-2	9/13	0.39-10	1.40E+03		1.00E+02	7.04E+02	N	6.00E+01	nc	6.00E+01	Y	ASL
	541-73-1	1,3-DICHLOROBENZENE	0.35 J	63	mg/kg	WA-CHSA-2	2/13	0.36-10	6.30E+01		4.90E+01	2.35E+01	N	5.31E+01	nc	2.35E+01	Y	ASL
	106-46-7	1,4-DICHLOROBENZENE	0.068 J	2000	mg/kg	WA-CHSA-2	10/13	0.39-10	2.00E+03		1.30E+01	2.66E+01	C	3.45E+00	ca	3.45E+00	Y	ASL
	78-93-3	2-BUTANONE	0.002 J	0.006 J	mg/kg	WA-CHSA-5	3/13	0.011-0.12	6.00E-03		1.00E+02	4.69E+03	N	2.23E+03	nc	2.23E+03	N	BSL
	67-64-1	ACETONE	0.096 J	0.12 J	mg/kg	WA-CHSA-5	2/13	0.011-0.12	1.20E-01		1.00E+02	7.04E+03	N	1.41E+03	nc	1.41E+03	N	BSL
	71-43-2	BENZENE	0.001 J	2.4	mg/kg	WA-CHSA-2	6/13	0.011-0.012	2.40E+00		4.80E+00	1.16E+01	C	6.43E-01	ca	6.43E-01	Y	TOX
	75-15-0	CARBON DISULFIDE	0.002 J	0.002 J	mg/kg	WA-CHSA-5, WA-CHSA-4	2/13	0.011-0.12	2.00E-03			7.82E+02	N	3.55E+01	nc	3.55E+01	N	BSL
	108-90-7	CHLOROBENZENE	0.001 J	56	mg/kg	WA-CHSA-2	10/13	0.011-0.012	5.60E+01		1.00E+02	1.56E+02	N	1.51E+01	nc	1.51E+01	Y	ASL
	127-18-4	TETRACHLOROETHENE	0.002 J	0.002 J	mg/kg	WA-CHSA-5	1/13	0.011-0.12	2.00E-03		1.90E+01	1.18E+00	C	4.84E-01	ca	4.84E-01	N	BSL
	108-88-3	TOLUENE	0.002 J	0.021 J	mg/kg	WA-CHSA-2	3/13	0.011-0.012	2.10E-02		1.00E+02	6.26E+02	N	5.20E+01	nc	5.20E+01	N	BSL
	1330-20-7	XYLENES, TOTAL	0.002 J	0.024 J	mg/kg	WA-CHSA-2	4/13	0.011-0.012	2.40E-02		1.00E+02	1.56E+03	N	2.71E+01	nc	2.71E+01	N	BSL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) NYSDEC Part 375-6.8: Restricted Use Soil Cleanup Objectives, value for restricted residential
(5) USEPA Region 3 RBCs (USEPA 2007) for residential soil; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for residential soil; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = RBC and PRG values for mercury compounds utilized.
c = When detected, reflects summary statistics of Aroclors 1248, 1254, and 1260. RBC and PRG values for Aroclor-1254 (CAS# 11097691) utilized.
d = RBC and PRG values for endosulfan utilized.
e = RBC and PRG values for endrin utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.26b
DERIVATION OF PCB EQUIVALENTS FOR CHLORINATED CHEMICALS
CHLOROBENZENE HOT-SPOT AREA UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Sample Location	Chlorination Level*	Start Depth (ft)	End Depth (ft)	Sample Date	Sum of Location PCB Concentration	Units
WA-CHSA-1	Highly chlorinated PCBs	2	10	9/30/1998	0.41	mg/kg
WA-CHSA-6	Highly chlorinated PCBs	2	10	9/30/1998	0.6	mg/kg
WA-CHSA-5	Highly chlorinated PCBs	2	10	9/30/1998	0.67	mg/kg
WA-CHSA-3	Highly chlorinated PCBs	0	2	9/30/1998	0.75	mg/kg
WA-CHSA-5	Highly chlorinated PCBs	0	2	9/30/1998	2.7	mg/kg
WA-CHSA-6	Highly chlorinated PCBs	0	2	9/30/1998	4	mg/kg
WA-CHSA-SS	Highly chlorinated PCBs	0	0.5	10/26/1999	4.9	mg/kg
WA-CHSA-1	Highly chlorinated PCBs	0	2	9/30/1998	6.2	mg/kg
WA-CHSA-2	Highly chlorinated PCBs	0	2	9/30/1998	120	mg/kg

Notes:
* Highly chlorinated PCBs were defined as Aroclors 1248, 1254, 1260, and higher if reported.

TABLE 2.27
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CHLOROBENZENE HOT-SPOT AREA SHALLOW GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Shallow Groundwater (0 - 10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Tap Water (5)		USEPA PRG for Tap Water (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Chlorobenzene Hot-Spot Area - Shallow Groundwater	METALS																	
	7429-90-5	ALUMINUM	0.44	98	mg/L	WA-C-1	9/15	0.0303-0.055	9.80E+01		2.00 E-01	3.65E+00	N	3.65E+00	nc	3.65E+00	Y	ASL
	7440-38-2	ARSENIC	0.0023 J	0.261 J	mg/L	WA-MW-PW	13/15	0.001-0.001	2.61E-01		1.00 E-02	4.46E-05	C	4.48E-05	ca	4.46E-05	Y	TOX
	7440-39-3	BARIUM	0.0121	0.591	mg/L	WA-C-1	14/15	0.01-0.01	5.91E-01		2.00 E+00	7.30E-01	N	2.55E-01	nc	2.55E-01	Y	ASL
	7440-41-7	BERYLLIUM	0.0028	0.0028	mg/L	WA-C-15	2/15	0.001-0.005	2.80E-03		4.00 E-03	7.30E-03	N	7.30E-03	nc	7.30E-03	N	BSL
	7440-70-2	CALCIUM	9.79	699	mg/L	WA-C-15	12/15	0.488-5.63	6.99E+02			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	0.0195	2.11	mg/L	WA-C-1	7/15	0.003-0.015	2.11E+00			1.10E-02	N	1.09E-01	ca	1.10E-02	Y	TOX
	7440-48-4	COBALT	0.0046	0.0897	mg/L	WA-C-1	6/15	0.003-0.015	8.97E-02			NV		7.30E-02	nc	7.30E-02	Y	ASL
	7440-50-8	COPPER	0.0206 J	0.505	mg/L	WA-C-1	8/15	0.002-0.0119	5.05E-01			1.46E-01	N	1.46E-01	nc	1.46E-01	Y	ASL
	57-12-5	CYANIDE	0.206	0.643	mg/L	WA-C-11	2/7	0.01-0.01	6.43E-01		2.00 E-01	7.30E-02	N	7.30E-02	nc	7.30E-02	Y	ASL
	7439-89-6	IRON	0.207	146	mg/L	WA-C-1	14/15	0.01-0.01	1.46E+02		3.00 E-01	2.56E+00	N	1.09E+00	nc	1.09E+00	Y	ASL
	7439-92-1	LEAD	0.0075 J	0.258 J	mg/L	WA-HR-1	7/16	0.001-0.0102	2.58E-01		1.50 E-02	NV		NV		1.50 E-02	Y	ASL
	7439-95-4	MAGNESIUM	0.623	160	mg/L	WA-C-1	14/15	0.08-0.08	1.60E+02			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	0.0122	3.45	mg/L	WA-C-1	14/15	0.005-0.005	3.45E+00		5.00 E-02	7.30E-02	N	8.76E-02	nc	7.30E-02	Y	ASL
	7439-97-6	MERCURY[b]	0.00033	0.0092	mg/L	WA-R-6-MW	7/19	0.0002-0.002	9.20E-03			3.65E-04	N	3.65E-04	nc	3.65E-04	Y	ASL
	7440-02-0	NICKEL	0.0122	0.996	mg/L	WA-C-1	11/15	0.01-0.05	9.96E-01			7.30E-02	N	7.30E-02	nc	7.30E-02	Y	ASL
	7440-09-7	POTASSIUM	5.15	568	mg/L	WA-R-6-MW	12/15	1.26-3.69	5.68E+02			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	0.0029 J	0.0064 J	mg/L	WA-C-11	2/15	0.002-0.02	6.40E-03		5.00 E-02	1.83E-02	N	1.82E-02	nc	1.82E-02	N	BSL
	7440-23-5	SODIUM	33.7	2880	mg/L	WA-MW-PW	14/15	3170-3170	2.88E+03			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	0.009	0.223	mg/L	WA-HR-1	12/15	0.006-0.015	2.23E-01			3.65E-03	N	3.65E-03	nc	3.65E-03	Y	ASL
	7440-66-6	ZINC	0.0042	0.55	mg/L	WA-MW-111	11/15	0.003-0.0178	5.50E-01		5.00 E+00	1.10E+00	N	1.09E+00	nc	1.09E+00	N	BSL
	SVOC																	
	120-83-2	2,4-DICHLOROPHENOL	4 J	4 J	ug/L	WA-MW-111	1/6	10-10	4.00E+00			1.10E+01	N	1.09E+01	nc	1.09E+01	N	BSL
	95-57-8	2-CHLOROPHENOL	1 J	1 J	ug/L	WA-MW-111	1/6	10-10	1.00E+00			3.04E+00	N	3.04E+00	nc	3.04E+00	N	BSL
	118-74-1	HEXACHLOROBENZENE	2 J	2 J	ug/L	WA-MW-111	1/7	10-10	2.00E+00		1.00 E-03	4.19E-02	C	4.20E-02	ca	4.19E-02	Y	ASL
	91-20-3	NAPHTHALENE	1.1 J	6.8 J	ug/L	WA-C-13	3/11	0.5-25	6.80E+00			6.51E-01	N	6.20E-01	nc	6.20E-01	Y	ASL
	85-01-8	PHENANTHRENE	2 J	2 J	ug/L	WA-HR-1	1/7	10-10	2.00E+00			NV		NV		NV	Y	NTX
	108-95-2	PHENOL	5 J	5 J	ug/L	WA-MW-PW	1/6	10-10	5.00E+00			1.10E+03	N	1.09E+03	nc	1.09E+03	N	BSL
	129-00-0	PYRENE	3 J	3 J	ug/L	WA-HR-1	1/7	10-10	3.00E+00			1.83E+01	N	1.83E+01	nc	1.83E+01	N	BSL

TABLE 2.27
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CHLOROBENZENE HOT-SPOT AREA SHALLOW GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Shallow Groundwater (0 - 10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Tap Water (5)		USEPA PRG for Tap Water (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	VOC																	
	71-55-6	1,1,1-TRICHLOROETHANE	14 J	14 J	ug/L	WA-C-13	1/19	0.5-100	1.40E+01		2.00 E-01	9.13E+02	N	3.17E+02	nc	3.17E+02	N	BSL
	87-61-6	1,2,3-TRICHLOROBENZENE	150	150	ug/L	WA-MW-111	1/4	0.5-25	1.50E+02			NV		NV		NV	Y	NTX
	120-82-1	1,2,4-TRICHLOROBENZENE	0.2 J	360	ug/L	WA-MW-111	4/11	2.5-10	3.60E+02		7.00 E-02	6.08E+00	N	7.16E-01	nc	7.16E-01	Y	ASL
	95-63-6	1,2,4-TRIMETHYLBENZENE	0.45 J	0.45 J	ug/L	WA-C-15	1/4	2.5-25	4.50E-01			1.46E+00	N	1.23E+00	nc	1.23E+00	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	1.8	3800	ug/L	WA-C-13	6/18	5-10	3.80E+03		6.00 E-01	2.68E+01	N	3.70E+01	nc	2.68E+01	Y	ASL
	108-67-8	1,3,5-TRIMETHYLBENZENE	0.11 J	0.11 J	ug/L	WA-C-15	1/4	2.5-25	1.10E-01			NV		1.23E+00	nc	1.23E+00	N	BSL
	541-73-1	1,3-DICHLOROBENZENE	0.78 J	160	ug/L	WA-MW-111	4/19	0.5-500	1.60E+02			1.83E+00	N	1.83E+01	nc	1.83E+00	Y	ASL
	106-46-7	1,4-DICHLOROBENZENE	3.9	9600	ug/L	WA-C-13	7/19	5-10	9.60E+03		7.50 E-02	2.81E-01	C	5.02E-01	ca	2.81E-01	Y	ASL
	71-43-2	BENZENE	0.7	5500	ug/L	WA-C-13	10/19	1-5	5.50E+03		5.00 E-03	3.36E-01	C	3.54E-01	ca	3.36E-01	Y	TOX
	108-90-7	CHLOROBENZENE	1 J	25000	ug/L	WA-C-13	8/19	1-5	2.50E+04		1.00 E-01	8.96E+00	N	1.06E+01	nc	8.96E+00	Y	ASL
	67-66-3	CHLOROFORM	1	1	ug/L	WA-C-11	2/19	0.5-100	1.00E+00			1.55E-01	C	1.66E-01	ca	1.55E-01	Y	ASL
	100-41-4	ETHYLBENZENE	0.38 J	1.6 J	ug/L	WA-C-14	2/19	1-100	1.60E+00		7.00 E-01	1.34E+02	N	1.34E+02	nc	1.34E+02	N	BSL
	108-88-3	TOLUENE	0.38 J	0.38 J	ug/L	WA-C-15	1/19	1-100	3.80E-01		1.00 E+00	2.27E+02	N	7.23E+01	nc	7.23E+01	N	BSL
	1330-20-7	XYLENES, TOTAL	0.59 J	1.3	ug/L	WA-C-15	2/19	3-300	1.30E+00		1.00 E+01	2.13E+01	N	2.06E+01	nc	2.06E+01	N	BSL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) United States Environmental Protection Agency. 2008. National Primary and Secondary Drinking Water Regulations
(5) USEPA Region 3 RBCs (USEPA 2007) for tap water; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for tap water; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened in.
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = Where mercury was not speciated RBC and PRG values for methyl mercury utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.28
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
CHLOROBENZENE HOT-SPOT AREA SHALLOW GROUNDWATER: VAPOR INTRUSION
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Shallow Groundwater (0 - 10 ft)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	Target Groundwater Concentration Corresponding to Target Indoor Air Concentration Where the Soil Gas to Indoor Air Attenuation Factor = 0.001 and Partitioning Across the Water Table Obeys Henry's Law (10^{-6}) (5)		Screening Toxicity Value	COPC Flag (Y/N)	Rationale for Selection or Deletion (6)
Chlorobenzene Hot-Spot Area - Shallow Groundwater	SVOC															
	120-83-2	2,4-DICHLOROPHENOL	4 J	4 J	ug/L	WA-MW-111	1/6	10-10	4.00E+00			NV		NV	Y	NTX
	95-57-8	2-CHLOROPHENOL	1 J	1 J	ug/L	WA-MW-111	1/6	10-10	1.00E+00			1.10E+03	NC	1.10E+03	N	BSL
	118-74-1	HEXACHLOROBENZENE	2 J	2 J	ug/L	WA-MW-111	1/7	10-10	2.00E+00		1.00 E-03	1†	C	1.00E+00	Y	ASL
	91-20-3	NAPHTHALENE	1.1 J	6.8 J	ug/L	WA-C-13	3/11	0.5-25	6.80E+00			1.50E+02	NC	1.50E+02	N	BSL
	85-01-8	PHENANTHRENE	2 J	2 J	ug/L	WA-HR-1	1/7	10-10	2.00E+00			NV		NV	Y	NTX
	108-95-2	PHENOL	5 J	5 J	ug/L	WA-MW-PW	1/6	10-10	5.00E+00			NV		NV	Y	NTX
	129-00-0	PYRENE	3 J	3 J	ug/L	WA-HR-1	1/7	10-10	3.00E+00			**	NC	**	N	BSL
	VOC															
	71-55-6	1,1,1-TRICHLOROETHANE	14 J	14 J	ug/L	WA-C-13	1/19	0.5-100	1.40E+01		2.00 E-01	3.10E+03	NC	3.10E+03	N	BSL
	87-61-6	1,2,3-TRICHLOROBENZENE	150	150	ug/L	WA-MW-111	1/4	0.5-25	1.50E+02			NV		NV	Y	NTX
	120-82-1	1,2,4-TRICHLOROBENZENE	0.2 J	360	ug/L	WA-MW-111	4/11	2.5-10	3.60E+02		7.00 E-02	3.40E+03	NC	3.40E+03	N	BSL
	95-63-6	1,2,4-TRIMETHYLBENZENE	0.45 J	0.45 J	ug/L	WA-C-15	1/4	2.5-25	4.50E-01			2.40E+01	NC	2.40E+01	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	1.8	3800	ug/L	WA-C-13	6/18	5-10	3.80E+03		6.00 E-01	2.60E+03	NC	2.60E+03	Y	ASL
	108-67-8	1,3,5-TRIMETHYLBENZENE	0.11 J	0.11 J	ug/L	WA-C-15	1/4	2.5-25	1.10E-01			2.50E+01	NC	2.50E+01	N	BSL
	541-73-1	1,3-DICHLOROBENZENE	0.78 J	160	ug/L	WA-MW-111	4/19	0.5-500	1.60E+02			8.30E+02	NC	8.30E+02	N	BSL
	106-46-7	1,4-DICHLOROBENZENE	3.9	9600	ug/L	WA-C-13	7/19	5-10	9.60E+03		7.50 E-02	8.20E+03	NC	8.20E+03	Y	ASL
	71-43-2	BENZENE	0.7	5500	ug/L	WA-C-13	10/19	1-5	5.50E+03		5.00 E-03	5†	C	5.00E+00	Y	ASL
	108-90-7	CHLOROBENZENE	1 J	25000	ug/L	WA-C-13	8/19	1-5	2.50E+04		1.00 E-01	3.90E+02	NC	3.90E+02	Y	ASL
	67-66-3	CHLOROFORM	1	1	ug/L	WA-C-11	2/19	0.5-100	1.00E+00			80†	C	8.00E+01	N	BSL
	100-41-4	ETHYLBENZENE	0.38 J	1.6 J	ug/L	WA-C-14	2/19	1-100	1.60E+00		7.00 E-01	700†	C	7.00E+02	N	BSL
	108-88-3	TOLUENE	0.38 J	0.38 J	ug/L	WA-C-15	1/19	1-100	3.80E-01		1.00 E+00	1.50E+03	NC	1.50E+03	N	BSL
	1330-20-7	XYLENES, TOTAL[a]	0.59 J	1.3	ug/L	WA-C-15	2/19	3-300	1.30E+00		1.00 E+01	2.20E+04	NC	2.20E+04	N	BSL
	METALS															
	7439-97-6	MERCURY[b]	0.00033	0.0092	mg/L	WA-R-6-MW	7/19	0.0002-0.002	9.20E-03			6.80E-04	NC	6.80E-04	Y	ASL

Footnotes:
** Target soil gas concentration exceeds maximum possible vapor concentration at this soil gas to indoor air attenuation factor (pathway incomplete)
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) No background screening performed.
(4) United States Environmental Protection Agency. 2008. National Primary and Secondary Drinking Water Regulations
(5) USEPA - OSWER Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance) Tables. November 2002. ca = Cancer; nc = Noncancer
(6) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and not screened in.
[a] Screening value based on p-xylene.
[b] Where mercury was not speciated RBC and PRG values for methyl mercury utilized.
†The target groundwater concentration is the MCL.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirements
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

TABLE 2.29
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SITE WIDE GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Groundwater (All Depths)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Tap Water (5)		USEPA PRG for Tap Water (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
Site Wide - Groundwater	METALS																	
	7429-90-5	ALUMINUM	0.44	287	mg/L	WA-WA-04D	31/56	0.011-1.01	2.87E+02		2.00 E-01	3.65E+00	N	3.65E+00	nc	3.65E+00	Y	ASL
	7440-38-2	ARSENIC	0.001	0.956	mg/L	WA-WA-07I	33/56	0.001-0.0274	9.56E-01		1.00 E-02	4.46E-05	C	4.48E-05	ca	4.46E-05	Y	TOX
	7440-39-3	BARIUM	0.0121	10.9	mg/L	WA-WA-05D	53/56	0.01-0.194	1.09E+01		2.00 E+00	7.30E-01	N	2.55E-01	nc	2.55E-01	Y	ASL
	7440-41-7	BERYLLIUM	0.001	0.031	mg/L	WA-WA-01D	19/57	0.001-0.0346	3.10E-02		4.00 E-03	7.30E-03	N	7.30E-03	nc	7.30E-03	Y	ASL
	7440-70-2	CALCIUM	9.79	14600	mg/L	WA-WA-01D	47/56	0.095-108	1.46E+04			NV		NV		NV	N	NUT
	7440-47-3	CHROMIUM[a]	0.0044	2.7	mg/L	WA-WA-04D	18/56	0.003-0.117	2.70E+00			1.10E-02	N	1.09E-01	ca	1.10E-02	Y	TOX
	7440-48-4	COBALT	0.0034	0.367	mg/L	WA-WA-04D	12/56	0.003-0.09	3.67E-01			NV		7.30E-02	nc	7.30E-02	Y	ASL
	7440-50-8	COPPER	0.0021	0.651	mg/L	WA-WA-04D	24/56	0.002-0.06	6.51E-01			1.46E-01	N	1.46E-01	nc	1.46E-01	Y	ASL
	57-12-5	CYANIDE	0.01	0.643	mg/L	WA-C-11	10/28	0.01-0.01	6.43E-01		2.00 E-01	7.30E-02	N	7.30E-02	nc	7.30E-02	Y	ASL
	7439-89-6	IRON	0.0564	621	mg/L	WA-WA-04D	36/55	0.01-20.5	6.21E+02		3.00 E-01	2.56E+00	N	1.09E+00	nc	1.09E+00	Y	ASL
	7439-92-1	LEAD	0.0017 J	0.488 J	mg/L	WA-WA-07S	26/58	0.001-0.1	4.88E-01		1.50 E-02	NV		NV		1.50 E-02	Y	ASL
	7439-95-4	MAGNESIUM	0.238	1270	mg/L	WA-WA-04D	47/55	0.016-131	1.27E+03			NV		NV		NV	N	NUT
	7439-96-5	MANGANESE	0.0032	20.4	mg/L	WA-WA-04D	41/55	0.001-1.94	2.04E+01		5.00 E-02	7.30E-02	N	8.76E-02	nc	7.30E-02	Y	ASL
	7439-97-6	MERCURY[b]	0.00027 J	0.166 J	mg/L	WA-WA-07I	28/62	0.0002-0.004	1.66E-01			3.65E-04	N	3.65E-04	nc	3.65E-04	Y	ASL
	7440-02-0	NICKEL	0.0105	1.73	mg/L	WA-WA-04D	19/56	0.01-0.411	1.73E+00			7.30E-02	N	7.30E-02	nc	7.30E-02	Y	ASL
	7440-09-7	POTASSIUM	5.12	7760	mg/L	WA-WA-07I	51/56	1.26-12.6	7.76E+03			NV		NV		NV	N	NUT
	7782-49-2	SELENIUM	0.002 J	0.0218 J	mg/L	WA-PS-3D	5/48	0.002-0.0341	2.18E-02		5.00 E-02	1.83E-02	N	1.82E-02	nc	1.82E-02	Y	ASL
	7440-22-4	SILVER	0.0036	0.0354	mg/L	WA-WA-04D	4/56	0.003-0.0944	3.54E-02		1.00 E-01	1.83E-02	N	1.82E-02	nc	1.82E-02	Y	ASL
	7440-23-5	SODIUM	33.7	39000 J	mg/L	WA-WA-01I	49/56	0.135-3170	3.90E+04			NV		NV		NV	N	NUT
	7440-62-2	VANADIUM	0.0042	2.63	mg/L	WA-WA-07I	39/56	0.003-0.231	2.63E+00			3.65E-03	N	3.65E-03	nc	3.65E-03	Y	ASL
	7440-66-6	ZINC	0.0034	1.94	mg/L	WA-WA-04D	42/57	0.003-0.155	1.94E+00		5.00 E+00	1.10E+00	N	1.09E+00	nc	1.09E+00	Y	ASL
	SVOC																	
	95-95-4	2,4,5-TRICHLOROPHENOL	19 J	19 J	ug/L	WA-WA-07S	1/25	50-5000	1.90E+01			3.65E+02	N	3.65E+02	nc	3.65E+02	N	BSL
	88-06-2	2,4,6-TRICHLOROPHENOL	3 J	3 J	ug/L	WA-WA-07S	1/25	10-1000	3.00E+00			6.09E+00	C	3.65E-01	nc	3.65E-01	Y	ASL
	120-83-2	2,4-DICHLOROPHENOL	4 J	23	ug/L	WA-WA-02S	5/25	10-1000	2.30E+01			1.10E+01	N	1.09E+01	nc	1.09E+01	Y	ASL
	105-67-9	2,4-DIMETHYLPHENOL	3 J	3 J	ug/L	WA-WA-05I	1/25	10-1000	3.00E+00			7.30E+01	N	7.30E+01	nc	7.30E+01	N	BSL
	121-14-2	2,4-DINITROTOLUENE	2 J	2 J	ug/L	WA-WA-06S	1/27	10-1000	2.00E+00			7.30E+00	N	7.30E+00	nc	7.30E+00	N	BSL
	91-58-7	2-CHLORONAPHTHALENE	8 J	15	ug/L	WA-WA-01S	2/27	10-1000	1.50E+01			4.87E+01	N	4.87E+01	nc	4.87E+01	N	BSL
	95-57-8	2-CHLOROPHENOL	1 J	180 J	ug/L	WA-WA-02I	5/25	10-1000	1.80E+02			3.04E+00	N	3.04E+00	nc	3.04E+00	Y	ASL
	91-57-6	2-METHYLNAPHTHALENE	1 J	24	ug/L	WA-PS-3S	5/28	10-1000	2.40E+01			2.43E+00	N	NV		2.43E+00	Y	ASL
	95-48-7	2-METHYLPHENOL	2 J	30 J	ug/L	WA-WA-07I	5/26	10-1000	3.00E+01			1.83E+02	N	1.82E+02	nc	1.82E+02	N	BSL
	88-75-5	2-NITROPHENOL	6 J	6 J	ug/L	WA-WA-06S	1/25	10-1000	6.00E+00			NV		NV		NV	Y	NTX
	59-50-7	4-CHLORO-3-METHYLPHENOL	3 J	4 J	ug/L	WA-WA-02I	2/25	10-1000	4.00E+00			NV		NV		NV	Y	NTX
	106-44-5	4-METHYLPHENOL	6 J	500	ug/L	WA-WA-04I	8/25	10-1000	5.00E+02			1.83E+01	N	1.82E+01	nc	1.82E+01	Y	ASL
	100-02-7	4-NITROPHENOL	6 J	6 J	ug/L	WA-WA-06S	1/25	10-5000	6.00E+00			NV		NV		NV	Y	NTX
	120-12-7	ANTHRACENE	1 J	3 J	ug/L	WA-WA-06S	2/27	10-1000	3.00E+00			1.83E+02	N	1.83E+02	nc	1.83E+02	N	BSL
	205-99-2	BENZO(B)FLUORANTHENE	5 J	5 J	ug/L	WA-WA-06S	1/27	10-1000	5.00E+00			3.00E-02	C	9.21E-02	ca	3.00E-02	Y	ASL
	191-24-2	BENZO(G,H,I)PERYLENE	1 J	1 J	ug/L	WA-WA-07S	1/27	10-1000	1.00E+00			NV		NV		NV	Y	NTX
	207-08-9	BENZO(K)FLUORANTHENE	2 J	2 J	ug/L	WA-WA-06S	1/27	10-1000	2.00E+00			3.00E-01	C	9.21E-01	ca	3.00E-01	Y	ASL
	65-85-0	BENZOIC ACID	3 J	80	ug/L	WA-WA-02I	7/25	50-5000	8.00E+01			1.46E+04	N	1.46E+04	nc	1.46E+04	N	BSL
	100-51-6	BENZYL ALCOHOL	12	37	ug/L	WA-WA-07I	2/27	10-1000	3.70E+01			1.83E+03	N	1.09E+03	nc	1.09E+03	N	BSL
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	39	39	ug/L	WA-WA-04S	1/27	10-1000	3.90E+01		6.00 E-03	4.78E+00	C	4.80E+00	ca	4.78E+00	Y	ASL
	85-68-7	BUTYLBENZYL PHTHALATE	2 J	2 J	ug/L	WA-WA-07D	1/27	10-1000	2.00E+00			7.30E+02	N	7.30E+02	nc	7.30E+02	N	BSL
	218-01-9	CHRYSENE	2 J	4 J	ug/L	WA-WA-07S	2/27	10-1000	4.00E+00			3.00E+00	C	9.21E+00	ca	3.00E+00	Y	ASL
	132-64-9	DIBENZOFURAN	2 J	5 J	ug/L	WA-WA-06S	2/27	10-1000	5.00E+00			3.65E+00	N	1.22E+00	nc	1.22E+00	Y	ASL
	84-74-2	DI-N-BUTYL PHTHALATE	0.5 J	1 J	ug/L	WA-WA-07D	2/27	10-1000	1.00E+00			3.65E+02	N	3.65E+02	nc	3.65E+02	N	BSL
	206-44-0	FLUORANTHENE	1 J	50 J	ug/L	WA-WA-01I	5/27	10-11	5.00E+01			1.46E+02	N	1.46E+02	nc	1.46E+02	N	BSL
	86-73-7	FLUORENE	1 J	4 J	ug/L	WA-PS-3S	3/27	10-1000	4.00E+00			2.43E+01	N	2.43E+01	nc	2.43E+01	N	BSL
	118-74-1	HEXACHLOROBENZENE	2 J	2 J	ug/L	WA-MW-111	1/27	10-1000	2.00E+00		1.00 E-03	4.19E-02	C	4.20E-02	ca	4.19E-02	Y	ASL
	193-39-5	INDENO(1,2,3-CD)PYRENE	2 J	2 J	ug/L	WA-WA-07S, WA-WA-06S	2/27	10-1000	2.00E+00			3.00E-02	C	9.21E-02	ca	3.00E-02	Y	ASL
	78-59-1	ISOPHORONE	5 J	9 J	ug/L	WA-WA-07I	2/27	10-1000	9.00E+00			7.05E+01	C	7.08E+01	ca	7.05E+01	N	BSL
	91-20-3	NAPHTHALENE	1.1 J	230	ug/L	WA-PS-3S	17/32	0.5-25	2.30E+02			6.51E-01	N	6.20E-01	nc	6.20E-01	Y	ASL
	86-30-6	N-NITROSODIPHENYLAMINE	3 J	3 J	ug/L	WA-WA-04S	1/27	10-1000	3.00E+00			1.37E+01	C	1.37E+01	ca	1.37E+01	N	BSL
	85-01-8	PHENANTHRENE	2 J	75 J	ug/L	WA-WA-01I	8/28	10-11	7.50E+01			NV		NV		NV	Y	NTX
	108-95-2	PHENOL	1 J	740	ug/L	WA-WA-04I	13/25	10-1000	7.40E+02			1.10E+03	N	1.09E+03	nc	1.09E+03	N	BSL
	129-00-0	PYRENE	1 J	6 J	ug/L	WA-WA-06S	4/27	10-1000	6.00E+00			1.83E+01	N	1.83E+01	nc	1.83E+01	N	BSL

TABLE 2.29
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
SITE WIDE GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Groundwater (All Depths)

Exposure Point	CAS Number	Chemical	Minimum Detected Concentration (1)	Maximum Detected Concentration (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Potential ARAR/TBC Value (4)	USEPA RBC for Tap Water (5)		USEPA PRG for Tap Water (6)		Screening Toxicity Value (7)	COPC Flag (Y/N)	Rationale for Selection or Deletion (8)
	VOC																	
	71-55-6	1,1,1-TRICHLOROETHANE	14 J	14 J	ug/L	WA-C-13	1/61	0.5-5000	1.40E+01		2.00 E-01	9.13E+02	N	3.17E+02	nc	3.17E+02	N	BSL
	79-34-5	1,1,2,2-TETRACHLOROETHANE	1	1	ug/L	WA-PS-3D	1/61	0.5-25000	1.00E+00			5.27E-02	C	5.53E-02	ca	5.27E-02	Y	ASL
	75-34-3	1,1-DICHLOROETHANE	0.9 J	0.9 J	ug/L	WA-WA-07D	1/61	0.5-5000	9.00E-01			8.96E+01	N	8.11E+01	nc	8.11E+01	N	BSL
	87-61-6	1,2,3-TRICHLOROBENZENE	150	150	ug/L	WA-MW-111	1/4	0.5-25	1.50E+02			NV		NV		NV	Y	NTX
	120-82-1	1,2,4-TRICHLOROBENZENE	0.2 J	1000	ug/L	WA-WA-01I	8/32	2.5-150	1.00E+03		7.00 E-02	6.08E+00	N	7.16E-01	nc	7.16E-01	Y	ASL
	95-63-6	1,2,4-TRIMETHYLBENZENE	0.45 J	0.45 J	ug/L	WA-C-15	1/4	2.5-25	4.50E-01			1.46E+00	N	1.23E+00	nc	1.23E+00	N	BSL
	95-50-1	1,2-DICHLOROBENZENE	1.8	29000	ug/L	WA-WA-01I	15/54	5-500	2.90E+04		6.00 E-01	2.68E+01	N	3.70E+01	nc	2.68E+01	Y	ASL
	107-06-2	1,2-DICHLOROETHANE	3	3 J	ug/L	WA-WA-07D	2/61	0.5-5000	3.00E+00		5.00 E-03	1.16E-01	C	1.23E-01	ca	1.16E-01	Y	ASL
	78-87-5	1,2-DICHLOROPROPANE	2	3 J	ug/L	WA-WA-07D	2/61	0.5-5000	3.00E+00		5.00 E-03	2.57E-01	C	1.65E-01	ca	1.65E-01	Y	ASL
	108-67-8	1,3,5-TRIMETHYLBENZENE	0.11 J	0.11 J	ug/L	WA-C-15	1/4	2.5-25	1.10E-01			NV		1.23E+00	nc	1.23E+00	N	BSL
	541-73-1	1,3-DICHLOROBENZENE	0.78 J	9500	ug/L	WA-WA-01I	11/61	0.5-13000	9.50E+03			1.83E+00	N	1.83E+01	nc	1.83E+00	Y	ASL
	106-46-7	1,4-DICHLOROBENZENE	3.9	72000	ug/L	WA-WA-01I	22/61	5-500	7.20E+04		7.50 E-02	2.81E-01	C	5.02E-01	ca	2.81E-01	Y	ASL
	78-93-3	2-BUTANONE	8 J	200	ug/L	WA-WA-02D	5/28	10-10000	2.00E+02			6.97E+02	N	6.97E+02	nc	6.97E+02	N	BSL
	67-64-1	ACETONE	8 J	2800	ug/L	WA-WA-07I	8/28	10-10000	2.80E+03			5.48E+02	N	5.48E+02	nc	5.48E+02	Y	ASL
	71-43-2	BENZENE	0.7	62000	ug/L	WA-WA-01I	46/61	1-5	6.20E+04		5.00 E-03	3.36E-01	C	3.54E-01	ca	3.36E-01	Y	TOX
	75-15-0	CARBON DISULFIDE	1 J	250 J	ug/L	WA-WA-01S	7/28	5-5000	2.50E+02			1.04E+02	N	1.04E+02	nc	1.04E+02	Y	ASL
	108-90-7	CHLOROBENZENE	1 J	87000	ug/L	WA-WA-02I	25/61	1-5000	8.70E+04		1.00 E-01	8.96E+00	N	1.06E+01	nc	8.96E+00	Y	ASL
	67-66-3	CHLOROFORM	1 J	52 J	ug/L	WA-WA-07S	6/61	0.5-5000	5.20E+01			1.55E-01	C	1.66E-01	ca	1.55E-01	Y	ASL
	100-41-4	ETHYLBENZENE	0.38 J	9	ug/L	WA-WA-04I	10/61	1-5000	9.00E+00		7.00 E-01	1.34E+02	N	1.34E+02	nc	1.34E+02	N	BSL
	75-09-2	METHYLENE CHLORIDE	2	1300	ug/L	WA-WA-01I	4/61	0.5-5000	1.30E+03		5.00 E-03	4.10E+00	C	4.28E+00	ca	4.10E+00	Y	ASL
	127-18-4	TETRACHLOROETHENE	4 J	4 J	ug/L	WA-PS-3D	1/61	0.5-5000	4.00E+00		5.00 E-03	1.04E-01	C	1.04E-01	ca	1.04E-01	Y	ASL
	108-88-3	TOLUENE	0.38 J	80000	ug/L	WA-WA-02I	17/61	1-2500	8.00E+04		1.00 E+00	2.27E+02	N	7.23E+01	nc	7.23E+01	Y	ASL
	1330-20-7	XYLENES, TOTAL	0.59 J	43	ug/L	WA-PS-3D	10/61	3-7500	4.30E+01		1.00 E+01	2.13E+01	N	2.06E+01	nc	2.06E+01	Y	ASL

Footnotes:
(1) J - estimated value; N - tentatively identified at an estimated value
(2) Concentration used for screening is the maximum detected concentration.
(3) N/A - No background screening performed.
(4) United States Environmental Protection Agency. 2008. National Primary and Secondary Drinking Water Regulations
(5) USEPA Region 3 RBCs (USEPA 2007) for tap water; C = Cancer RBC; N = Noncancer RBC; NV = No value in Region 3 RBC data set. Noncancer RBCs adjusted by multiplying RBC by 0.1.
(6) USEPA Region 9 PRGs (USEPA 2004) for tap water; ca = Cancer PRG; nc = Noncancer PRG; NV = No value in Region 9 PRG data set. Noncancer PRGs adjusted by multiplying PRG by 0.1.
(7) The Screening Toxicity Value represents the minimum of the Region 3 RBC and the Region 9 PRG.
(8) Selection Rationale: ASL - Above Screening Level; TOX - Class A Carcinogen; NTX - No Toxicity Information. Deletion Rationale: BSL - Below Screening Level; NUT- Compound is an essential nutrient and is not screened ir
- = Compound detected in 100% of samples.
a = RBC and PRG values for chromium VI utilized.
b = Where mercury was not speciated RBC and PRG values for methyl mercury utilized.

Definitions:
ARAR: Applicable or Relevant and Appropriate Requirement
CAS: Chemical Abstract Service
COPC: Compound of Potential Concern
NV: No Value
PRG: Preliminary Remediation Goals; USEPA, 2004
RBC: Risk Based Concentration; USEPA, October, 2007
TBC: To Be Considered
USEPA: United States Environmental Protection Agency

Attachment A
RAGS Table 3 Series

TABLE 3.1
EXPOSURE POINT CONCENTRATION SUMMARY
PLANT AREA - SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Plant Area - Surface Soil	METALS									
	7429-90-5	ALUMINUM	mg/kg	6343.00	8342	15600	8342	mg/kg	95% UCL	95% Student's-t UCL
	7440-38-2	ARSENIC	mg/kg	16.58	26.32	65.70	26.32	mg/kg	95% UCL	95% Approximate Gamma UCL
	7440-39-3	BARIUM	mg/kg	150.70	336	557	336	mg/kg	95% UCL	95% H-UCL
	7440-47-3	CHROMIUM	mg/kg	15.87	18.83	29	18.83	mg/kg	95% UCL	95% Student's-t UCL
	7439-89-6	IRON	mg/kg	17108.00	22748	45800	22748	mg/kg	95% UCL	95% Approximate Gamma UCL
	7439-96-5	MANGANESE	mg/kg	274.60	347.10	643	347.10	mg/kg	95% UCL	95% Approximate Gamma UCL
	7439-97-6	MERCURY	mg/kg	236.30	952.10	2440	952.10	mg/kg	95% UCL	99% Chebyshev (MVUE) UCL
	7440-02-0	NICKEL	mg/kg	362.80	3689	4040	3689	mg/kg	95% UCL	99% Chebyshev (Mean, Sd) UCL
	7440-62-2	VANADIUM	mg/kg	18.55	22.48	31.60	22.48	mg/kg	95% UCL	95% Student's-t UCL
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	1.16	3.55	3.10	3.10	mg/kg	Max	Insufficient Data*
	PESTICIDES									
	319-86-8	DELTA-BHC	mg/kg	0.22	NV	1.90	1.90	mg/kg	Max	Insufficient Data*
	60-57-1	DIELDRIN	mg/kg	0.44	NV	3.70	3.70	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.17	0.21	0.42	0.21	mg/kg	95% UCL	95% KM (t) UCL
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	4.51	9.06	16	9.06	mg/kg	95% UCL	95% Approximate Gamma UCL
	50-32-8	BENZO(A)PYRENE	mg/kg	4.78	11.60	18	11.60	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	6.49	12.53	23	12.53	mg/kg	95% UCL	95% Approximate Gamma UCL
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	4.77	10.39	23	10.39	mg/kg	95% UCL	95% Approximate Gamma UCL
	207-08-9	BENZO(K)FLUORANTHENE	mg/kg	2.38	5.70	7.60	5.70	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	1.33	2.26	5.80	2.26	mg/kg	95% UCL	95% KM (BCA) UCL
	118-74-1	HEXACHLOROBENZENE	mg/kg	5.30	7.13	28	7.13	mg/kg	95% UCL	95% KM (t) UCL
	87-68-3	HEXACHLOROBUTADIENE	mg/kg	0.96	1.86	1.80	1.80	mg/kg	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	3.96	10.23	18	10.23	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	85-01-8	PHENANTHRENE	mg/kg	6.05	14.73	20	14.73	mg/kg	95% UCL	95% KM (Chebyshev) UCL

TABLE 3.1
EXPOSURE POINT CONCENTRATION SUMMARY
PLANT AREA - SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
	VOC									
	120-82-1	1,2,4-TRICHLOROBENZENE	mg/kg	2.80	4.18	13	4.18	mg/kg	95% UCL	95% KM (BCA) UCL
	95-50-1	1,2-DICHLOROBENZENE	mg/kg	49.89	390.20	420	390.20	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	541-73-1	1,3-DICHLOROBENZENE	mg/kg	7.83	8.40	31	8.40	mg/kg	95% UCL	95% KM (t) UCL
	106-46-7	1,4-DICHLOROBENZENE	mg/kg	311.40	2438	2600	2438	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	71-43-2	BENZENE	mg/kg	0.0046	0.0060	0.014	0.006	mg/kg	95% UCL	95% KM (t) UCL
	108-90-7	CHLOROBENZENE	mg/kg	16.67	138.80	150	138.80	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.0003282	0.0006729	0.00209	0.001	mg/kg	95% UCL	95% Approximate Gamma UCL

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Chebyshev (Mean, Sd) UCL = (1-α)100% UCL of the mean based upon the chebyshev theorem (using the sample mean and sample standard deviation - non-parametric).
Chebyshev (MVUE) UCL = (1-α) 100% UCL of the Mean of a Lognormal Population Based Upon the Chebyshev Theorem (Using the MVUE of the Mean and its Standard Error - parametric)
Gamma UCL = Computation of UCL of the mean of a Gamma, G(k,θ) distribution (parametric).
H-UCL = (1-α)100% UCL of the mean based upon H-statistic (H-UCL) (parametric).
KM (BCA) UCL = UCL based upon Kaplan-Meier Estimates using the bias corrected accelerated percentile bootstrap method. (non-parametric).
KM (Chebyshev) UCL = UCL based upon Kaplan-Meier estimates using the Chebyshev inequality (non-parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).
Student's-t UCL = Computation method based upon student's t-distribution (parametric).
Chebyshev UCL or Student's-t UCL for nonparametric distribution based on ProUCL (V. 4.0) recommendation; Gamma UCL for gamma distribution; Nonparametric Bootstrap UCLs introduce some standard error and may not be reproduced precisely.

TABLE 3.2
EXPOSURE POINT CONCENTRATION SUMMARY
PLANT AREA - UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Plant Area - Upper Soil	METALS									
	7429-90-5	ALUMINUM	mg/kg	6912	8770	15600	8770	mg/kg	95% UCL	95% Student's-t UCL
	7440-38-2	ARSENIC	mg/kg	16.58	24.48	65.70	24.48	mg/kg	95% UCL	95% Approximate Gamma UCL
	7440-39-3	BARIUM	mg/kg	134.50	259.80	557	259.80	mg/kg	95% UCL	95% H-UCL
	7440-47-3	CHROMIUM	mg/kg	15.14	17.78	29	17.78	mg/kg	95% UCL	95% Student's-t UCL
	7439-89-6	IRON	mg/kg	16291	20902	45800	20902	mg/kg	95% UCL	95% Approximate Gamma UCL
	7439-96-5	MANGANESE	mg/kg	269.40	332.20	643	332.20	mg/kg	95% UCL	95% Approximate Gamma UCL
	7439-97-6	MERCURY	mg/kg	141.50	328.40	2440	328.40	mg/kg	95% UCL	97.5% Chebyshev (MVUE) UCL
	7440-02-0	NICKEL	mg/kg	312.70	3166	4040	3166	mg/kg	95% UCL	99% Chebyshev (Mean, Sd) UCL
	7440-62-2	VANADIUM	mg/kg	20.83	25.44	43.60	25.44	mg/kg	95% UCL	95% Student's-t UCL
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	0.92	1.93	3.10	1.93	mg/kg	95% UCL	Use 95% Approximate Gamma UCL
	PESTICIDES									
	319-86-8	DELTA-BHC	mg/kg	0.17	NV	1.90	1.90	mg/kg	Max	Insufficient Data*
	60-57-1	DIELDRIN	mg/kg	0.34	NV	3.70	3.70	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.17	0.21	0.42	0.21	mg/kg	95% UCL	95% KM (t) UCL
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	4.51	10.48	16	10.48	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	50-32-8	BENZO(A)PYRENE	mg/kg	4.78	10.89	18	10.89	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	6.49	14.57	23	14.57	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	4.77	12.29	23	12.29	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	207-08-9	BENZO(K)FLUORANTHENE	mg/kg	2.38	5.34	7.60	5.34	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	1.33	2.26	5.80	2.26	mg/kg	95% UCL	95% KM (BCA) UCL
	118-74-1	HEXACHLOROBENZENE	mg/kg	3.25	18.59	28	18.59	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	87-68-3	HEXACHLOROBUTADIENE	mg/kg	0.96	1.26	1.80	1.26	mg/kg	95% UCL	97.5% KM (Chebyshev) UCL
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	3.96	9.58	18	9.58	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	85-01-8	PHENANTHRENE	mg/kg	6.05	13.81	20	13.81	mg/kg	95% UCL	95% KM (Chebyshev) UCL

TABLE 3.2
EXPOSURE POINT CONCENTRATION SUMMARY
PLANT AREA - UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
	VOC									
	87-61-6	1,2,3-TRICHLOROBENZENE	mg/kg	0.0032	NV	0.0033	0.003	mg/kg	Max	Insufficient Data*
	120-82-1	1,2,4-TRICHLOROBENZENE	mg/kg	3.45	4.68	19	4.68	mg/kg	95% UCL	95% KM (BCA) UCL
	95-50-1	1,2-DICHLOROBENZENE	mg/kg	40.61	270.70	420	270.70	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	541-73-1	1,3-DICHLOROBENZENE	mg/kg	6.53	5.80	31	5.80	mg/kg	95% UCL	95% KM (t) UCL
	106-46-7	1,4-DICHLOROBENZENE	mg/kg	231.70	1637	2600	1637	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	71-43-2	BENZENE	mg/kg	0.32	2.11	3.20	2.11	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	108-90-7	CHLOROBENZENE	mg/kg	24.17	127.80	150	127.80	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.0002083	0.0006647	0.00209	0.001	mg/kg	95% UCL	95% Chebyshev (MVUE) UCL

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Chebyshev (Mean, Sd) UCL = (1-α)100% UCL of the mean based upon the chebyshev theorem (using the sample mean and sample standard deviation - non-parametric).
Chebyshev (MVUE) UCL = (1-α) 100% UCL of the Mean of a Lognormal Population Based Upon the Chebyshev Theorem (Using the MVUE of the Mean and its Standard Error - parametric)
Gamma UCL = Computation of UCL of the mean of a Gamma, G(k,θ) distribution (parametric).
H-UCL = (1-α)100% UCL of the mean based upon H-statistic (H-UCL) (parametric).
KM (BCA) UCL = UCL based upon Kaplan-Meier Estimates using the bias corrected accelerated percentile bootstrap method. (non-parametric).
KM (Chebyshev) UCL = UCL based upon Kaplan-Meier estimates using the Chebyshev inequality (non-parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).
Student's-t UCL = Computation method based upon student's t-distribution (parametric).
Chebyshev UCL or Student's-t UCL for nonparametric distribution based on ProUCL (V. 4.0) recommendation; Gamma UCL for gamma distribution; Nonparametric Bootstrap UCLs introduce some standard error and may not be reproduced precisely.

TABLE 3.3
EXPOSURE POINT CONCENTRATION SUMMARY
PLANT AREA - INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Intermediate Soil (0-20 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Plant Area - Intermediate Soil	METALS									
	7429-90-5	ALUMINUM	mg/kg	9086	11919	27100	11919	mg/kg	95% UCL	95% Approximate Gamma UCL
	7440-38-2	ARSENIC	mg/kg	15	20.05	65.7	20.05	mg/kg	95% UCL	95% Approximate Gamma UCL
	7440-39-3	BARIUM	mg/kg	163.4	309.8	958	309.80	mg/kg	95% UCL	95% Chebyshev (MVUE) UCL
	7440-47-3	CHROMIUM	mg/kg	14.7	16.88	29	16.88	mg/kg	95% UCL	95% Student's-t UCL
	7439-89-6	IRON	mg/kg	14641	17805	45800	17805	mg/kg	95% UCL	95% Approximate Gamma UCL
	7439-96-5	MANGANESE	mg/kg	248.1	305.7	643	305.70	mg/kg	95% UCL	95% Approximate Gamma UCL
	7439-97-6	MERCURY	mg/kg	170.8	990.9	2440	990.90	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	7440-02-0	NICKEL	mg/kg	223.3	2222	4040	2222	mg/kg	95% UCL	99% Chebyshev (Mean, Sd) UCL
	7440-62-2	VANADIUM	mg/kg	23.69	29.19	53.6	29.19	mg/kg	95% UCL	95% Approximate Gamma UCL
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	0.92	1.93	3.10	1.93	mg/kg	95% UCL	Use 95% Approximate Gamma UCL
	PESTICIDES									
	319-86-8	DELTA-BHC	mg/kg	0.17	NV	1.90	1.90	mg/kg	Max	Insufficient Data*
	60-57-1	DIELDRIN	mg/kg	0.34	NV	3.70	3.70	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	1.27	4.34	6.80	4.34	mg/kg	95% UCL	97.5% KM (Chebyshev) UCL
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	4.62	6.21	16	6.21	mg/kg	95% UCL	95% KM (BCA) UCL
	50-32-8	BENZO(A)PYRENE	mg/kg	4.84	6.45	18	6.45	mg/kg	95% UCL	95% KM (BCA) UCL
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	6.49	8.96	23	8.96	mg/kg	95% UCL	95% KM (BCA) UCL
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	4.77	7.14	23	7.14	mg/kg	95% UCL	95% KM (BCA) UCL
	207-08-9	BENZO(K)FLUORANTHENE	mg/kg	3.18	4.38	12	4.38	mg/kg	95% UCL	95% KM (BCA) UCL
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	1.33	1.94	5.80	1.94	mg/kg	95% UCL	95% KM (t) UCL
	118-74-1	HEXACHLOROBENZENE	mg/kg	3.25	17.60	28	17.60	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	87-68-3	HEXACHLOROBUTADIENE	mg/kg	0.96	1.19	1.80	1.19	mg/kg	95% UCL	97.5% KM (Chebyshev) UCL
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	3.86	5.43	18	5.43	mg/kg	95% UCL	95% KM (BCA) UCL
	91-20-3	NAPHTHALENE	mg/kg	4.09	7.18	43	7.18	mg/kg	95% UCL	95% KM (BCA) UCL
	85-01-8	PHENANTHRENE	mg/kg	8.42	12.13	42	12.13	mg/kg	95% UCL	95% KM (BCA) UCL

TABLE 3.3
EXPOSURE POINT CONCENTRATION SUMMARY
PLANT AREA - INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Intermediate Soil (0-20 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
	VOC									
	87-61-6	1,2,3-TRICHLOROBENZENE	mg/kg	0.0032	NV	0.0033	0.003	mg/kg	Max	Insufficient Data*
	120-82-1	1,2,4-TRICHLOROBENZENE	mg/kg	28.21	47.79	360	47.79	mg/kg	95% UCL	95% KM (BCA) UCL
	95-50-1	1,2-DICHLOROBENZENE	mg/kg	163.80	541.80	2200	541.80	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	541-73-1	1,3-DICHLOROBENZENE	mg/kg	46.37	42.53	290	42.53	mg/kg	95% UCL	95% KM (t) UCL
	106-46-7	1,4-DICHLOROBENZENE	mg/kg	258.50	1343.00	2600	1343	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	71-43-2	BENZENE	mg/kg	0.74	2.95	4.30	2.95	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	108-90-7	CHLOROBENZENE	mg/kg	47.94	167.00	230	167	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	2.08E-04	6.65E-04	1.21E-06	1.21E-06	mg/kg	Max	95% Chebyshev (MVUE) UCL

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Chebyshev (Mean, Sd) UCL = (1-α)100% UCL of the mean based upon the chebyshev theorem (using the sample mean and sample standard deviation - non-parametric).
Chebyshev (MVUE) UCL = (1-α) 100% UCL of the Mean of a Lognormal Population Based Upon the Chebyshev Theorem (Using the MVUE of the Mean and its Standard Error - parametric)
Gamma UCL = Computation of UCL of the mean of a Gamma, G(k,θ) distribution (parametric).
H-UCL = (1-α)100% UCL of the mean based upon H-statistic (H-UCL) (parametric).
KM (BCA) UCL = UCL based upon Kaplan-Meier Estimates using the bias corrected accelerated percentile bootstrap method. (non-parametric).
KM (Chebyshev) UCL = UCL based upon Kaplan-Meier estimates using the Chebyshev inequality (non-parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).
Student's-t UCL = Computation method based upon student's t-distribution (parametric).
Chebyshev UCL or Student's-t UCL for nonparametric distribution based on ProUCL (V. 4.0) recommendation; Gamma UCL for gamma distribution; Nonparametric Bootstrap UCLs introduce some standard error and may not be reproduced precisely.

TABLE 3.4
EXPOSURE POINT CONCENTRATION SUMMARY
PLANT AREA - INTERMEDIATE GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Intermediate Groundwater (0 - 20 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[a]	Rationale
Plant Area - Intermediate Groundwater	METALS									
	7429-90-5	ALUMINUM	mg/L	18.24	NV	49.90	49.90	mg/L	Max	Insufficient Data*
	7440-38-2	ARSENIC	mg/L	0.05	NV	0.11	0.11	mg/L	Max	Insufficient Data*
	7440-39-3	BARIUM	mg/L	0.49	NV	1.82	1.82	mg/L	Max	Insufficient Data*
	7440-50-8	COPPER	mg/L	0.14	NV	0.38	0.38	mg/L	Max	Insufficient Data*
	7439-89-6	IRON	mg/L	24.53	NV	46.60	46.60	mg/L	Max	Insufficient Data*
	7439-92-1	LEAD	mg/L	0.12	1.10	0.49	0.49	mg/L	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/L	0.27	NV	0.42	0.42	mg/L	Max	Insufficient Data*
	7439-97-6	MERCURY	mg/L	0.0025	NV	0.0066	0.01	mg/L	Max	Insufficient Data*
	7440-02-0	NICKEL	mg/L	0.15	NV	0.15	0.15	mg/L	Max	Insufficient Data*
	7440-62-2	VANADIUM	mg/L	0.23	NV	0.39	0.39	mg/L	Max	Insufficient Data*
	SVOC									
	120-83-2	2,4-DICHLOROPHENOL	ug/L	18	NV	18	18	ug/L	Max	Insufficient Data*
	95-57-8	2-CHLOROPHENOL	ug/L	4	NV	4	4	ug/L	Max	Insufficient Data*
	191-24-2	BENZO(G,H,I)PERYLENE	ug/L	1	NV	1	1	ug/L	Max	Insufficient Data*
	218-01-9	CHRYSENE	ug/L	4	NV	4	4	ug/L	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	ug/L	2	NV	2	2	ug/L	Max	Insufficient Data*
	91-20-3	NAPHTHALENE	ug/L	33	NV	33	33	ug/L	Max	Insufficient Data*
	85-01-8	PHENANTHRENE	ug/L	6	NV	6	6	ug/L	Max	Insufficient Data*
	VOC									
	120-82-1	1,2,4-TRICHLOROBENZENE	ug/L	19	NV	19	19	ug/L	Max	Insufficient Data*
	95-50-1	1,2-DICHLOROBENZENE	ug/L	260	NV	260	260	ug/L	Max	Insufficient Data*
	541-73-1	1,3-DICHLOROBENZENE	ug/L	17	NV	17	17	ug/L	Max	Insufficient Data*
	106-46-7	1,4-DICHLOROBENZENE	ug/L	615	NV	650	650	ug/L	Max	Insufficient Data*
	71-43-2	BENZENE	ug/L	887	NV	1700	1700	ug/L	Max	Insufficient Data*
	108-90-7	CHLOROBENZENE	ug/L	2405.75	NV	5100	5100	ug/L	Max	Insufficient Data*
	67-66-3	CHLOROFORM	ug/L	52	NV	52	52	ug/L	Max	Insufficient Data*
	75-09-2	METHYLENE CHLORIDE	ug/L	150	NV	150	150	ug/L	Max	Insufficient Data*

Footnotes:
a = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.

TABLE 3.5
EXPOSURE POINT CONCENTRATION SUMMARY
FORMER CHLORINATION BUILDING - SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Former Chlorination Building - Surface Soil	METALS									
	7440-38-2	ARSENIC	mg/kg	6.75	NV	10.40	10.40	mg/kg	Max	Insufficient Data*
	7440-47-3	CHROMIUM	mg/kg	12.10	NV	13.50	13.50	mg/kg	Max	Insufficient Data*
	7439-89-6	IRON	mg/kg	6210	NV	8570	8570	mg/kg	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/kg	257.50	NV	338	338	mg/kg	Max	Insufficient Data*
	7439-97-6	MERCURY	mg/kg	4.70	NV	8.20	8.20	mg/kg	Max	Insufficient Data*
	7440-62-2	VANADIUM	mg/kg	10.05	NV	12.40	12.40	mg/kg	Max	Insufficient Data*
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	3.37	NV	5.50	5.50	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.040	NV	0.040	0.04	mg/kg	Max	Insufficient Data*
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	1.24	NV	1.60	1.60	mg/kg	Max	Insufficient Data*
	50-32-8	BENZO(A)PYRENE	mg/kg	1.23	NV	1.50	1.50	mg/kg	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	2.20	NV	2.80	2.80	mg/kg	Max	Insufficient Data*
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	1.10	NV	1.10	1.10	mg/kg	Max	Insufficient Data*
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.31	NV	0.31	0.31	mg/kg	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	0.88	NV	0.88	0.88	mg/kg	Max	Insufficient Data*
	85-01-8	PHENANTHRENE	mg/kg	1.31	NV	1.90	1.90	mg/kg	Max	Insufficient Data*
	VOC									
	120-82-1	1,2,4-TRICHLOROBENZENE	mg/kg	10.42	NV	20	20	mg/kg	Max	Insufficient Data*
	95-50-1	1,2-DICHLOROBENZENE	mg/kg	39.65	NV	78	78	mg/kg	Max	Insufficient Data*
	106-46-7	1,4-DICHLOROBENZENE	mg/kg	9.23	NV	18	18	mg/kg	Max	Insufficient Data*
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.018	0.063	0.223	0.06	mg/kg	95% UCL	95% Adjusted Gamma UCL

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Gamma UCL = Computation of UCL of the mean of a Gamma, G(k,θ) distribution (parametric).

TABLE 3.6
EXPOSURE POINT CONCENTRATION SUMMARY
FORMER CHLORINATION BUILDING - UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[c]	Rationale
Former Chlorination Building - Upper Soil	METALS									
	7440-38-2	ARSENIC	mg/kg	6.75	NV	10.40	10.40	mg/kg	Max	Insufficient Data*
	7440-47-3	CHROMIUM	mg/kg	12.10	NV	13.50	13.50	mg/kg	Max	Insufficient Data*
	7439-89-6	IRON	mg/kg	6210	NV	8570	8570	mg/kg	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/kg	257.50	NV	338	338	mg/kg	Max	Insufficient Data*
	7439-97-6	MERCURY	mg/kg	53.13	NV	150	150	mg/kg	Max	Insufficient Data*
	7440-62-2	VANADIUM	mg/kg	10.05	NV	12.40	12.40	mg/kg	Max	Insufficient Data*
	PCB									
		LESS CHLORINATED PCBs[a]	mg/kg	1.10	NV	1.10	1.10	mg/kg	Max	Insufficient Data*
		HIGHLY CHLORINATED PCBs[b]	mg/kg	2.71	NV	5.50	5.50	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.040	NV	0.040	0.04	mg/kg	Max	Insufficient Data*
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	1.24	NV	1.60	1.60	mg/kg	Max	Insufficient Data*
	50-32-8	BENZO(A)PYRENE	mg/kg	1.23	NV	1.50	1.50	mg/kg	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	2.20	NV	2.80	2.80	mg/kg	Max	Insufficient Data*
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	1.10	NV	1.10	1.10	mg/kg	Max	Insufficient Data*
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.31	NV	0.31	0.31	mg/kg	Max	Insufficient Data*
	118-74-1	HEXACHLOROBENZENE	mg/kg	0.75	NV	1.20	1.20	mg/kg	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	0.88	NV	0.88	0.88	mg/kg	Max	Insufficient Data*
	85-01-8	PHENANTHRENE	mg/kg	1.31	NV	1.90	1.90	mg/kg	Max	Insufficient Data*
	VOC									
	120-82-1	1,2,4-TRICHLOROBENZENE	mg/kg	6.94	NV	20	20	mg/kg	Max	Insufficient Data*
	95-50-1	1,2-DICHLOROBENZENE	mg/kg	26.43	NV	78	78	mg/kg	Max	Insufficient Data*
	106-46-7	1,4-DICHLOROBENZENE	mg/kg	6.15	NV	18	18	mg/kg	Max	Insufficient Data*
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.023	0.658	0.252	0.25	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1016,-1221,-1232,-1242 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
c = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.

TABLE 3.7
EXPOSURE POINT CONCENTRATION SUMMARY
FORMER CHLORINATION BUILDING - INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Intermediate Soil (0-20 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[c]	Rationale
Former Chlorination Building - Intermediate Soil	METALS									
	7440-38-2	ARSENIC	mg/kg	6.75	NV	10.40	10.40	mg/kg	Max	Insufficient Data*
	7440-47-3	CHROMIUM	mg/kg	12.10	NV	13.50	13.50	mg/kg	Max	Insufficient Data*
	7439-89-6	IRON	mg/kg	6210	NV	8570	8570	mg/kg	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/kg	257.50	NV	338	338	mg/kg	Max	Insufficient Data*
	7439-97-6	MERCURY	mg/kg	53.13	NV	150	150	mg/kg	Max	Insufficient Data*
	7440-62-2	VANADIUM	mg/kg	10.05	NV	12.40	12.40	mg/kg	Max	Insufficient Data*
	PCB									
		LESS CHLORINATED PCBs[a]	mg/kg	1.10	NV	1.10	1.10	mg/kg	Max	Insufficient Data*
		HIGHLY CHLORINATED PCBs[b]	mg/kg	2.71	NV	5.50	5.50	mg/kg	Max	Insufficient Data*
	PESTICIDES									
	309-00-2	ALDRIN	mg/kg	0.025	NV	0.025	0.03	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.040	NV	0.040	0.04	mg/kg	Max	Insufficient Data*
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	1.24	NV	1.60	1.60	mg/kg	Max	Insufficient Data*
	50-32-8	BENZO(A)PYRENE	mg/kg	1.23	NV	1.50	1.50	mg/kg	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	2.20	NV	2.80	2.80	mg/kg	Max	Insufficient Data*
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	1.10	NV	1.10	1.10	mg/kg	Max	Insufficient Data*
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.31	NV	0.31	0.31	mg/kg	Max	Insufficient Data*
	118-74-1	HEXACHLOROBENZENE	mg/kg	0.75	NV	1.20	1.20	mg/kg	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	0.88	NV	0.88	0.88	mg/kg	Max	Insufficient Data*
	85-01-8	PHENANTHRENE	mg/kg	1.31	NV	1.90	1.90	mg/kg	Max	Insufficient Data*
	VOC									
	120-82-1	1,2,4-TRICHLOROBENZENE	mg/kg	6.94	NV	20	20	mg/kg	Max	Insufficient Data*
	95-50-1	1,2-DICHLOROBENZENE	mg/kg	26.43	NV	78	78	mg/kg	Max	Insufficient Data*
	106-46-7	1,4-DICHLOROBENZENE	mg/kg	6.15	NV	18	18	mg/kg	Max	Insufficient Data*
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.023	0.658	0.25	0.25	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1016,-1221,-1232,-1242 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
c = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.

TABLE 3.8
EXPOSURE POINT CONCENTRATION SUMMARY
ON-SITE DITCHES - SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
On-Site Ditches - Surface Soil	METALS									
	7440-38-2	ARSENIC	mg/kg	39.90	NV	39.90	39.90	mg/kg	Max	Insufficient Data*
	7440-47-3	CHROMIUM	mg/kg	192	NV	192	192	mg/kg	Max	Insufficient Data*
	7440-50-8	COPPER	mg/kg	326	NV	326	326	mg/kg	Max	Insufficient Data*
	7439-89-6	IRON	mg/kg	53900	NV	53900	53900	mg/kg	Max	Insufficient Data*
	7439-92-1	LEAD	mg/kg	692	NV	692	692	mg/kg	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/kg	432	NV	432	432	mg/kg	Max	Insufficient Data*
	7439-97-6	MERCURY	mg/kg	1701	3561	4780	3561	mg/kg	95% UCL	95% Student's-t UCL
	22967-92-6	METHYL MERCURY	mg/kg	0.69	NV	0.69	0.69	mg/kg	Max	Insufficient Data*
	7440-02-0	NICKEL	mg/kg	301	NV	301	301	mg/kg	Max	Insufficient Data*
	7440-62-2	VANADIUM	mg/kg	63.90	NV	63.90	63.90	mg/kg	Max	Insufficient Data*
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	7.44	NV	14	14	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.17	NV	0.17	0.17	mg/kg	Max	Insufficient Data*
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	2.10	NV	2.10	2.10	mg/kg	Max	Insufficient Data*
	50-32-8	BENZO(A)PYRENE	mg/kg	2	NV	2	2	mg/kg	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	3	NV	3	3	mg/kg	Max	Insufficient Data*
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	1.40	NV	1.40	1.40	mg/kg	Max	Insufficient Data*
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.44	NV	0.44	0.44	mg/kg	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	1.20	NV	1.20	1.20	mg/kg	Max	Insufficient Data*
	85-01-8	PHENANTHRENE	mg/kg	2	NV	2	2	mg/kg	Max	Insufficient Data*
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.0039	NV	0.0075	0.01	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Student's-t UCL = Computation method based upon student's t-distribution (parametric).

TABLE 3.9
EXPOSURE POINT CONCENTRATION SUMMARY
ON-SITE DITCHES - UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
On-Site Ditches - Upper Soil	METALS									
	7440-38-2	ARSENIC	mg/kg	39.90	NV	39.90	39.90	mg/kg	Max	Insufficient Data*
	7440-47-3	CHROMIUM	mg/kg	192	NV	192	192	mg/kg	Max	Insufficient Data*
	7440-50-8	COPPER	mg/kg	326	NV	326	326	mg/kg	Max	Insufficient Data*
	7439-89-6	IRON	mg/kg	53900	NV	53900	53900	mg/kg	Max	Insufficient Data*
	7439-92-1	LEAD	mg/kg	692	NV	692	692	mg/kg	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/kg	432	NV	432	432	mg/kg	Max	Insufficient Data*
	7439-97-6	MERCURY	mg/kg	1227	12341	4780	4780	mg/kg	Max	Insufficient Data*
	22967-92-6	METHYL MERCURY	mg/kg	0.69	NV	0.69	0.69	mg/kg	Max	Insufficient Data*
	7440-02-0	NICKEL	mg/kg	301	NV	301	301	mg/kg	Max	Insufficient Data*
	7440-62-2	VANADIUM	mg/kg	63.90	NV	63.90	63.90	mg/kg	Max	Insufficient Data*
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	5.25	9.875	14.00	9.88	mg/kg	95% UCL	95% Student's-t UCL
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.17	NV	0.17	0.17	mg/kg	Max	Insufficient Data*
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	2.10	NV	2.10	2.10	mg/kg	Max	Insufficient Data*
	50-32-8	BENZO(A)PYRENE	mg/kg	2	NV	2	2	mg/kg	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	3	NV	3	3	mg/kg	Max	Insufficient Data*
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	1.40	NV	1.40	1.40	mg/kg	Max	Insufficient Data*
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.44	NV	0.44	0.44	mg/kg	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	1.20	NV	1.20	1.20	mg/kg	Max	Insufficient Data*
	85-01-8	PHENANTHRENE	mg/kg	2	NV	2	2	mg/kg	Max	Insufficient Data*
	VOC									
	87-61-6	1,2,3-TRICHLOROBENZENE	mg/kg	1.10	NV	2.20	2.20	mg/kg	Max	Insufficient Data*
	120-82-1	1,2,4-TRICHLOROBENZENE	mg/kg	2.61	NV	7.50	7.50	mg/kg	Max	Insufficient Data*
	95-50-1	1,2-DICHLOROBENZENE	mg/kg	63.73	NV	190	190	mg/kg	Max	Insufficient Data*
	541-73-1	1,3-DICHLOROBENZENE	mg/kg	25.41	NV	76	76	mg/kg	Max	Insufficient Data*
	106-46-7	1,4-DICHLOROBENZENE	mg/kg	144.18	NV	430	430	mg/kg	Max	Insufficient Data*
	71-43-2	BENZENE	mg/kg	0.12	NV	0.12	0.12	mg/kg	Max	Insufficient Data*
	108-90-7	CHLOROBENZENE	mg/kg	36.10	NV	71	71	mg/kg	Max	Insufficient Data*
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.0039	NV	0.0075	0.01	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Student's-t UCL = Computation method based upon student's t-distribution (parametric).

TABLE 3.10
EXPOSURE POINT CONCENTRATION SUMMARY
ON-SITE DITCHES - INTERMEDIATE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Intermediate Soil (0- 20 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
On-Site Ditches - Intermediate Soil	METALS									
	7440-38-2	ARSENIC	mg/kg	39.90	NV	39.90	39.90	mg/kg	Max	Insufficient Data*
	7440-47-3	CHROMIUM	mg/kg	192	NV	192	192	mg/kg	Max	Insufficient Data*
	7440-50-8	COPPER	mg/kg	326	NV	326	326	mg/kg	Max	Insufficient Data*
	7439-89-6	IRON	mg/kg	53900	NV	53900	53900	mg/kg	Max	Insufficient Data*
	7439-92-1	LEAD	mg/kg	692	NV	692	692	mg/kg	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/kg	432	NV	432	432	mg/kg	Max	Insufficient Data*
	7439-97-6	MERCURY	mg/kg	1227	12341	4780	4780	mg/kg	Max	Insufficient Data*
	22967-92-6	METHYL MERCURY	mg/kg	0.69	NV	0.69	0.69	mg/kg	Max	Insufficient Data*
	7440-02-0	NICKEL	mg/kg	301	NV	301	301	mg/kg	Max	Insufficient Data*
	7440-62-2	VANADIUM	mg/kg	63.90	NV	63.90	63.90	mg/kg	Max	Insufficient Data*
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	5.25	9.88	14.00	9.88	mg/kg	95% UCL	95% Student's-t UCL
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.17	NV	0.17	0.17	mg/kg	Max	Insufficient Data*
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	2.10	NV	2.10	2.10	mg/kg	Max	Insufficient Data*
	50-32-8	BENZO(A)PYRENE	mg/kg	2	NV	2	2	mg/kg	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	3	NV	3	3	mg/kg	Max	Insufficient Data*
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	1.40	NV	1.40	1.40	mg/kg	Max	Insufficient Data*
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.44	NV	0.44	0.44	mg/kg	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	1.20	NV	1.20	1.20	mg/kg	Max	Insufficient Data*
	85-01-8	PHENANTHRENE	mg/kg	2	NV	2	2	mg/kg	Max	Insufficient Data*
	VOC									
	87-61-6	1,2,3-TRICHLOROBENZENE	mg/kg	1.10	NV	2.20	2.20	mg/kg	Max	Insufficient Data*
	120-82-1	1,2,4-TRICHLOROBENZENE	mg/kg	2.61	NV	7.50	7.50	mg/kg	Max	Insufficient Data*
	95-50-1	1,2-DICHLOROBENZENE	mg/kg	63.73	NV	190	190	mg/kg	Max	Insufficient Data*
	541-73-1	1,3-DICHLOROBENZENE	mg/kg	25.41	NV	76	76	mg/kg	Max	Insufficient Data*
	106-46-7	1,4-DICHLOROBENZENE	mg/kg	144.18	NV	430	430	mg/kg	Max	Insufficient Data*
	71-43-2	BENZENE	mg/kg	0.12	NV	0.12	0.12	mg/kg	Max	Insufficient Data*
	108-90-7	CHLOROBENZENE	mg/kg	36.10	NV	71	71	mg/kg	Max	Insufficient Data*
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.0039	NV	0.0075	0.01	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Student's-t UCL = Computation method based upon student's t-distribution (parametric).

TABLE 3.11
EXPOSURE POINT CONCENTRATION SUMMARY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Southwest Off-site/ Outfall 006 Exposure Area - Surface Soil	METALS									
	7429-90-5	ALUMINUM	mg/kg	5615	NV	7770	7770	mg/kg	Max	Insufficient Data*
	7440-38-2	ARSENIC	mg/kg	18.53	NV	27.60	27.60	mg/kg	Max	Insufficient Data*
	7440-39-3	BARIUM	mg/kg	392.25	NV	673	673	mg/kg	Max	Insufficient Data*
	7440-47-3	CHROMIUM	mg/kg	62.05	NV	183	183	mg/kg	Max	Insufficient Data*
	7439-89-6	IRON	mg/kg	14357.50	NV	26400	26400	mg/kg	Max	Insufficient Data*
	7439-92-1	LEAD	mg/kg	210.28	NV	566	566	mg/kg	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/kg	181.25	NV	296	296	mg/kg	Max	Insufficient Data*
	7439-97-6	MERCURY	mg/kg	664.30	1106	1880	1106	mg/kg	95% UCL	95% Student's-t UCL
	7440-62-2	VANADIUM	mg/kg	41.63	NV	106	106	mg/kg	Max	Insufficient Data*
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	13.27	35.09	35	35	mg/kg	Max	Insufficient Data*
	PESTICIDES									
	309-00-2	ALDRIN	mg/kg	0.084	0.11	0.12	0.11	mg/kg	95% UCL	95% KM (t) UCL
	319-86-8	DELTA-BHC	mg/kg	0.0036	NV	0.0036	0.004	mg/kg	Max	Insufficient Data*
	959-98-8	ENDOSULFAN I	mg/kg	0.0032	NV	0.0032	0.003	mg/kg	Max	Insufficient Data*
	76-44-8	HEPTACHLOR	mg/kg	0.062	0.39	0.12	0.12	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.49	NV	0.49	0.49	mg/kg	Max	Insufficient Data*
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	2.21	NV	6.70	6.70	mg/kg	Max	Insufficient Data*
	50-32-8	BENZO(A)PYRENE	mg/kg	2.43	NV	7.80	7.80	mg/kg	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	3.99	NV	13	13	mg/kg	Max	Insufficient Data*
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	2.30	NV	5.80	5.80	mg/kg	Max	Insufficient Data*
	207-08-9	BENZO(K)FLUORANTHENE	mg/kg	1.06	NV	3.30	3.30	mg/kg	Max	Insufficient Data*
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.89	NV	2.40	2.40	mg/kg	Max	Insufficient Data*
	118-74-1	HEXACHLOROBENZENE	mg/kg	2.62	3.72	5.10	3.72	mg/kg	95% UCL	95% KM (t) UCL
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	1.99	NV	5.10	5.10	mg/kg	Max	Insufficient Data*
	85-01-8	PHENANTHRENE	mg/kg	3.23	NV	8.80	8.80	mg/kg	Max	Insufficient Data*
	VOC									
	71-43-2	BENZENE	mg/kg	0.0020	NV	0.0020	0.002	mg/kg	Max	Insufficient Data*
	79-01-6	TRICHLOROETHENE	mg/kg	0.035	0.038	0.070	0.04	mg/kg	95% UCL	95% KM (t) UCL
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.00063	0.00071	0.00070	0.001	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Student's-t UCL = Computation method based upon student's t-distribution (parametric).

TABLE 3.12
EXPOSURE POINT CONCENTRATION SUMMARY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Southwest Off-site/ Outfall 006 Exposure Area - Upper Soil	METALS									
	7429-90-5	ALUMINUM	mg/kg	5615	NV	7770	7770	mg/kg	Max	Insufficient Data*
	7440-38-2	ARSENIC	mg/kg	18.53	NV	27.60	27.60	mg/kg	Max	Insufficient Data*
	7440-39-3	BARIUM	mg/kg	392.25	NV	673	673	mg/kg	Max	Insufficient Data*
	7440-47-3	CHROMIUM	mg/kg	62.05	NV	183	183	mg/kg	Max	Insufficient Data*
	7439-89-6	IRON	mg/kg	14357.50	NV	26400	26400	mg/kg	Max	Insufficient Data*
	7439-92-1	LEAD	mg/kg	210.28	NV	566	566	mg/kg	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/kg	181.25	NV	296	296	mg/kg	Max	Insufficient Data*
	7439-97-6	MERCURY	mg/kg	534.30	2020	1880	1880	mg/kg	Max	Insufficient Data*
	7440-62-2	VANADIUM	mg/kg	41.63	NV	106	106	mg/kg	Max	Insufficient Data*
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	13.27	35.09	35	35	mg/kg	Max	Insufficient Data*
	PESTICIDES									
	309-00-2	ALDRIN	mg/kg	0.084	0.088	0.12	0.09	mg/kg	95% UCL	95% KM (t) UCL
	76-44-8	HEPTACHLOR	mg/kg	0.062	0.272	0.12	0.12	mg/kg	Max	Insufficient Data*
	SVOC									
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	2.21	NV	6.70	6.70	mg/kg	Max	Insufficient Data*
	50-32-8	BENZO(A)PYRENE	mg/kg	2.43	NV	7.80	7.80	mg/kg	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	3.99	NV	13	13	mg/kg	Max	Insufficient Data*
	207-08-9	BENZO(K)FLUORANTHENE	mg/kg	1.06	NV	3.30	3.30	mg/kg	Max	Insufficient Data*
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.89	NV	2.40	2.40	mg/kg	Max	Insufficient Data*
	118-74-1	HEXACHLOROBENZENE	mg/kg	2.07	3.08	5.10	3.08	mg/kg	95% UCL	95% KM (t) UCL
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	1.99	NV	5.10	5.10	mg/kg	Max	Insufficient Data*
	91-20-3	NAPHTHALENE	mg/kg	534.20	5070	3200	3200	mg/kg	Max	Insufficient Data*

TABLE 3.12
EXPOSURE POINT CONCENTRATION SUMMARY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
	VOC									
	95-63-6	1,2,4-TRIMETHYLBENZENE	mg/kg	140	NV	140	140	mg/kg	Max	Insufficient Data*
	108-67-8	1,3,5-TRIMETHYLBENZENE	mg/kg	100	NV	100	100	mg/kg	Max	Insufficient Data*
	106-46-7	1,4-DICHLOROBENZENE	mg/kg	15.55	59.92	76.00	59.92	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	71-43-2	BENZENE	mg/kg	3800	10905	7600	7600	mg/kg	Max	Insufficient Data*
	100-41-4	ETHYLBENZENE	mg/kg	88	NV	88.00	88	mg/kg	Max	Insufficient Data*
	135-98-8	SEC-BUTYLBENZENE	mg/kg	130	NV	130	130	mg/kg	Max	Insufficient Data*
	98-06-6	TERT-BUTYLBENZENE	mg/kg	43	NV	43.00	43	mg/kg	Max	Insufficient Data*
	108-88-3	TOLUENE	mg/kg	1550	4448	3100	3100	mg/kg	Max	Insufficient Data*
	79-01-6	TRICHLOROETHENE	mg/kg	0.029	0.034	0.07	0.034	mg/kg	95% UCL	95% KM (t) UCL
	1330-20-7	XYLENES, TOTAL	mg/kg	850	2695	1700	1700	mg/kg	Max	Insufficient Data*
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.00063	0.00071	0.00070	0.001	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
KM (Chebyshev) UCL = UCL based upon Kaplan-Meier estimates using the Chebyshev inequality (non-parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).
Student's-t UCL = Computation method based upon student's t-distribution (parametric).
Chebyshev UCL or Student's-t UCL for nonparametric distribution based on ProUCL (V. 4.0) recommendation; Gamma UCL for gamma distribution; Nonparametric Bootstrap UCLs introduce some standard error and may not be reproduced precisely.

TABLE 3.13
EXPOSURE POINT CONCENTRATION SUMMARY
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
State Fair Blvd/ Northwest Off-site/ Outfall 004 Exposure Area - Surface Soil	METALS									
	7439-97-6	MERCURY	mg/kg	66.825	NV	160	160	mg/kg	Max	Insufficient Data*
	PCB									
		HIGHLY CHLORINATED[a]	mg/kg	1.05	NV	1.5	1.50	mg/kg	Max	Insufficient Data*
	VOC									
	71-43-2	BENZENE	mg/kg	0.0014	NV	0.0014	0.001	mg/kg	Max	Insufficient Data*
	87-61-6	1,2,3-TRICHLOROBENZENE	mg/kg	0.007	NV	0.012	0.01	mg/kg	Max	Insufficient Data*
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.00049	NV	0.00053	0.001	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.

TABLE 3.14
EXPOSURE POINT CONCENTRATION SUMMARY
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[c]	Rationale
State Fair Blvd/ Northwest Off-site/ Outfall 004 Exposure Area - Surface Soil	METALS									
	7439-97-6	MERCURY	mg/kg	55.86	115	160	115	mg/kg	95% UCL	95% Student's-t UCL
	PCB									
		LESS CHLORINATED PCBs[a]	mg/kg	0.69	NV	0.69	0.69	mg/kg	Max	Insufficient Data*
		HIGHLY CHLORINATED PCBs[b]	mg/kg	1.0375	NV	1.5	1.50	mg/kg	Max	Insufficient Data*
	SVOC									
	118-74-1	HEXACHLOROBENZENE	mg/kg	0.25975	NV	0.73	0.73	mg/kg	Max	Insufficient Data*
	VOC									
	87-61-6	1,2,3-TRICHLOROBENZENE	mg/kg	2.471	17.61	7.4	7.40	mg/kg	Max	Insufficient Data*
	106-46-7	1,4-DICHLOROBENZENE	mg/kg	600	2641	2400	2400	mg/kg	Max	Insufficient Data*
	71-43-2	BENZENE	mg/kg	0.0014	NV	0.0014	0.001	mg/kg	Max	Insufficient Data*
	79-01-6	TRICHLOROETHENE	mg/kg	0.123	1.234	0.57	0.57	mg/kg	Max	Insufficient Data*
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.00049	NV	0.00053	0.001	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Aroclor-1016,-1221,-1232,-1242 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
c = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Student's-t UCL = Computation method based upon student's t-distribution (parametric).

TABLE 3.15
EXPOSURE POINT CONCENTRATION SUMMARY
LAKESHORE AREA - SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Lakeshore Area - Surface Soil	METALS									
	7429-90-5	ALUMINUM	mg/kg	6585	8213	8790	8213	mg/kg	95% UCL	95% Student's-t UCL
	7440-38-2	ARSENIC	mg/kg	8.3	11.06	13.5	11.06	mg/kg	95% UCL	95% Student's-t UCL
	7440-47-3	CHROMIUM	mg/kg	33.25	44.22	56.4	44.22	mg/kg	95% UCL	95% Student's-t UCL
	7439-89-6	IRON	mg/kg	15283	17482	19000	17482	mg/kg	95% UCL	95% Student's-t UCL
	7439-96-5	MANGANESE	mg/kg	359.8	390.8	397	390.80	mg/kg	95% UCL	95% Student's-t UCL
	7439-97-6	MERCURY	mg/kg	0.903	3.054	3.2	3.05	mg/kg	95% UCL	95% Approximate Gamma UCL
	7440-62-2	VANADIUM	mg/kg	17.57	20.19	22.5	20.19	mg/kg	95% UCL	95% Student's-t UCL
	7440-66-6	ZINC	mg/kg	71.45	100.7	125	100.70	mg/kg	95% UCL	95% Student's-t UCL
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	0.713	133.9	3.7	3.70	mg/kg	Max	Insufficient Data*
	PESTICIDES									
	959-98-8	ENDOSULFAN I	mg/kg	0.025	NV	0.025	0.03	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.759	1.38	2.1	1.38	mg/kg	95% UCL	95% KM (t) UCL
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	3.372	16.51	11	11	mg/kg	Max	Insufficient Data*
	50-32-8	BENZO(A)PYRENE	mg/kg	2.794	13.13	8.9	8.90	mg/kg	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	4.367	19.6	12	12	mg/kg	Max	Insufficient Data*
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	1.44	2.363	3.4	2.36	mg/kg	95% UCL	95% KM (t) UCL
	207-08-9	BENZO(K)FLUORANTHENE	mg/kg	1.728	3.016	4.3	3.02	mg/kg	95% UCL	95% KM (t) UCL
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.562	1.92	1.2	1.20	mg/kg	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	1.426	2.406	3.4	2.41	mg/kg	95% UCL	95% KM (t) UCL
	85-01-8	PHENANTHRENE	mg/kg	5.242	68.35	27	27	mg/kg	Max	Insufficient Data*
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.000027	NV	0.000059	0.0001	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Gamma UCL = Computation of UCL of the mean of a Gamma, G(k,θ) distribution (parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).
Student's-t UCL = Computation method based upon student's t-distribution (parametric).

TABLE 3.16
EXPOSURE POINT CONCENTRATION SUMMARY
LAKESHORE AREA - UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Lakeshore Area - Upper Soil	METALS									
	7429-90-5	ALUMINUM	mg/kg	6585	8213	8790	8213	mg/kg	95% UCL	95% Student's-t UCL
	7440-38-2	ARSENIC	mg/kg	8.3	11.06	13.5	11.06	mg/kg	95% UCL	95% Student's-t UCL
	7440-47-3	CHROMIUM	mg/kg	33.25	44.22	56.4	44.22	mg/kg	95% UCL	95% Student's-t UCL
	7439-89-6	IRON	mg/kg	15283	17482	19000	17482	mg/kg	95% UCL	95% Student's-t UCL
	7439-96-5	MANGANESE	mg/kg	359.8	390.8	397	390.80	mg/kg	95% UCL	95% Student's-t UCL
	7439-97-6	MERCURY	mg/kg	0.903	3.054	3.2	3.05	mg/kg	95% UCL	95% Approximate Gamma UCL
	7440-62-2	VANADIUM	mg/kg	17.57	20.19	22.5	20.19	mg/kg	95% UCL	95% Student's-t UCL
	7440-66-6	ZINC	mg/kg	71.45	100.7	125	100.70	mg/kg	95% UCL	95% Student's-t UCL
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	0.713	132.7	3.7	3.70	mg/kg	Max	Insufficient Data*
	PESTICIDES									
	959-98-8	ENDOSULFAN I	mg/kg	0.025	NV	0.025	0.025	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.759	1.38	2.1	1.38	mg/kg	95% UCL	95% KM (t) UCL
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	3.372	16.51	11	11	mg/kg	Max	Insufficient Data*
	50-32-8	BENZO(A)PYRENE	mg/kg	2.794	13.13	8.9	8.90	mg/kg	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	4.367	19.6	12	12	mg/kg	Max	Insufficient Data*
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	1.44	2.363	3.4	2.36	mg/kg	95% UCL	95% KM (t) UCL
	207-08-9	BENZO(K)FLUORANTHENE	mg/kg	1.728	3.016	4.3	3.02	mg/kg	95% UCL	95% KM (t) UCL
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.562	1.92	1.2	1.20	mg/kg	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	1.426	2.406	3.4	2.41	mg/kg	95% UCL	95% KM (t) UCL
	85-01-8	PHENANTHRENE	mg/kg	5.242	68.35	27	27	mg/kg	Max	Insufficient Data*
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.000034	NV	0.000076	0.00008	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Gamma UCL = Computation of UCL of the mean of a Gamma, G(k,θ) distribution (parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).
Student's-t UCL = Computation method based upon student's t-distribution (parametric).

TABLE 3.17
EXPOSURE POINT CONCENTRATION SUMMARY
LAKESHORE AREA - SHALLOW GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Shallow Groundwater (0 - 10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[a]	Rationale
Lakeshore Area - Shallow Groundwater	METALS									
	7440-38-2	ARSENIC	mg/L	0.01705	NV	0.0178	0.02	mg/L	Max	Insufficient Data*
	7440-39-3	BARIUM	mg/L	0.1456	NV	0.325	0.33	mg/L	Max	Insufficient Data*
	7440-41-7	BERYLLIUM	mg/L	0.0283	NV	0.0283	0.03	mg/L	Max	Insufficient Data*
	7440-47-3	CHROMIUM	mg/L	0.016	NV	0.0352	0.04	mg/L	Max	Insufficient Data*
	7439-89-6	IRON	mg/L	2.95	NV	2.95	2.95	mg/L	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/L	0.0949	NV	0.0949	0.09	mg/L	Max	Insufficient Data*
	7439-97-6	MERCURY	mg/L	0.00343	0.00608	0.0089	0.01	mg/L	95% UCL	95% KM (t) UCL
	7440-62-2	VANADIUM	mg/L	0.059	NV	0.0788	0.08	mg/L	Max	Insufficient Data*
	SVOC									
	120-83-2	2,4-DICHLOROPHENOL	ug/L	19.00	NV	23.00	23	ug/L	Max	Insufficient Data*
	95-57-8	2-CHLOROPHENOL	ug/L	33.50	NV	41.00	41	ug/L	Max	Insufficient Data*
	91-57-6	2-METHYLNAPHTHALENE	ug/L	6.00	NV	6.00	6	ug/L	Max	Insufficient Data*
	59-50-7	4-CHLORO-3-METHYLPHENOL	ug/L	3.00	NV	3.00	3	ug/L	Max	Insufficient Data*
	106-44-5	4-METHYLPHENOL	ug/L	37.50	NV	62.00	62	ug/L	Max	Insufficient Data*
	85-01-8	PHENANTHRENE	ug/L	2.00	NV	2.00	2	ug/L	Max	Insufficient Data*
	VOC									
	120-82-1	1,2,4-TRICHLOROBENZENE	ug/L	21	NV	21	21	ug/L	Max	Insufficient Data*
	95-50-1	1,2-DICHLOROBENZENE	ug/L	4750	NV	6600	6600	ug/L	Max	Insufficient Data*
	541-73-1	1,3-DICHLOROBENZENE	ug/L	385	NV	480	480	ug/L	Max	Insufficient Data*
	91-20-3	NAPHTHALENE	ug/L	94.5	NV	140	140	ug/L	Max	Insufficient Data*
	106-46-7	1,4-DICHLOROBENZENE	ug/L	7575	NV	12000	12000	ug/L	Max	Insufficient Data*
	71-43-2	BENZENE	ug/L	17150	NV	30000	30000	ug/L	Max	Insufficient Data*
	75-15-0	CARBON DISULFIDE	ug/L	250	NV	250	250	ug/L	Max	Insufficient Data*
	108-90-7	CHLOROBENZENE	ug/L	19500	NV	25000	25000	ug/L	Max	Insufficient Data*
	108-88-3	TOLUENE	ug/L	23000	NV	27000	27000	ug/L	Max	Insufficient Data*

Footnotes:
a = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing t
95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concer

TABLE 3.18
EXPOSURE POINT CONCENTRATION SUMMARY
TRIBUTARY 5A - SEDIMENT
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Sediment
Exposure Medium: Sediment (0-1 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Tributary 5A - Sediment	METALS									
	7429-90-5	ALUMINUM	mg/kg	4115	8082	11600	8082	mg/kg	95% UCL	95% Approximate Gamma UCL
	7440-36-0	ANTIMONY	mg/kg	18.25	25.64	38.5	25.64	mg/kg	95% UCL	95% KM (t) UCL
	7440-38-2	ARSENIC	mg/kg	23.525	NV	33.6	33.60	mg/kg	Max	Insufficient Data*
	7440-39-3	BARIUM	mg/kg	361.4	928.9	1450	928.90	mg/kg	95% UCL	95% Approximate Gamma UCL
	7440-47-3	CHROMIUM	mg/kg	2750	19739	12400	12400	mg/kg	Max	Insufficient Data*
	7440-48-4	COBALT	mg/kg	963.5	8895	5460	5460	mg/kg	Max	Insufficient Data*
	7440-50-8	COPPER	mg/kg	175	287.5	453	287.50	mg/kg	95% UCL	95% Student's-t UCL
	7439-89-6	IRON	mg/kg	66743	157996	229000	157996	mg/kg	95% UCL	95% Approximate Gamma UCL
	7439-92-1	LEAD	mg/kg	740	5566	4100	4100	mg/kg	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/kg	782.1	1244	1520	1244	mg/kg	95% UCL	95% Student's-t UCL
	7440-02-0	NICKEL	mg/kg	815.95	NV	1710	1710	mg/kg	Max	Insufficient Data*
	7782-49-2	SELENIUM	mg/kg	20.77	23.33	42.5	23.33	mg/kg	95% UCL	95% KM (t) UCL
	7440-62-2	VANADIUM	mg/kg	1713	14278	9670	9670	mg/kg	Max	Insufficient Data*
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	1.182	5.699	5.6	5.60	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.36	0.463	0.51	0.46	mg/kg	95% UCL	95% KM (t) UCL
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	2.014	3.262	6.1	3.26	mg/kg	95% UCL	95% KM (t) UCL
	50-32-8	BENZO(A)PYRENE	mg/kg	1.412	5.509	4.6	4.60	mg/kg	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	3.496	5.737	11	5.74	mg/kg	95% UCL	95% KM (t) UCL
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	1.358	2.253	4.4	2.25	mg/kg	95% UCL	95% KM (t) UCL
	207-08-9	BENZO(K)FLUORANTHENE	mg/kg	1.424	2.274	4.2	2.27	mg/kg	95% UCL	95% KM (t) UCL
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.775	1.2	1.1	1.10	mg/kg	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	1.243	2.091	3.6	2.09	mg/kg	95% UCL	95% KM (t) UCL
	85-01-8	PHENANTHRENE	mg/kg	1.819	4.86	5.5	4.86	mg/kg	95% UCL	95% Approximate Gamma UCL
	VOC									
	71-43-2	BENZENE	mg/kg	16.13	13.01	25	13.01	mg/kg	95% UCL	95% KM (t) UCL
	DIOXIN/FURAN									
		2,3,7,8-TCDD Equivalent	mg/kg	0.000013	NV	0.000027	0.00003	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Gamma UCL = Computation of UCL of the mean of a Gamma, G(k,θ) distribution (parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).
Student's-t UCL = Computation method based upon student's t-distribution (parametric).

TABLE 3.19
EXPOSURE POINT CONCENTRATION SUMMARY
TRIBUTARY 5A - SURFACE WATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[a]	Rationale
Tributary 5A - Surface Water	METALS									
	7440-36-0	ANTIMONY	mg/L	0.0028	0.00277	0.003	0.003	mg/L	95% UCL	95% KM (t) UCL
	7440-38-2	ARSENIC	mg/L	0.00482	0.00461	0.0082	0.005	mg/L	95% UCL	95% KM (t) UCL
	7440-39-3	BARIUM	mg/L	0.0708	0.18	0.317	0.18	mg/L	95% UCL	95% Chebyshev (Mean, Sd) UCL
	7440-47-3	CHROMIUM	mg/L	0.016	0.0331	0.055	0.03	mg/L	95% UCL	95% KM (Chebyshev) UCL
	7440-48-4	COBALT	mg/L	0.0501	0.365	0.36	0.36	mg/L	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/L	0.0575	0.103	0.198	0.10	mg/L	95% UCL	95% Approximate Gamma UCL
	7440-02-0	NICKEL	mg/L	0.171	0.526	0.999	0.53	mg/L	95% UCL	95% KM (Chebyshev) UCL
	7440-62-2	VANADIUM	mg/L	0.0399	0.352	0.352	0.35	mg/L	95% UCL	99% Chebyshev (Mean, Sd) UCL
	PESTICIDES									
	319-86-8	DELTA-BHC	ug/L	0.0054	NV	0.0054	0.01	ug/L	Max	Insufficient Data*
	60-57-1	DIELDRIN	ug/L	0.017	NV	0.017	0.02	ug/L	Max	Insufficient Data*
	SVOC									
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	ug/L	870	NV	870	870	ug/L	Max	Insufficient Data*
	91-20-3	NAPHTHALENE	ug/L	1	NV	1	1	ug/L	Max	Insufficient Data*
	86-30-6	N-NITROSODIPHENYLAMINE	ug/L	70	NV	70	70	ug/L	Max	Insufficient Data*
	87-86-5	PENTACHLOROPHENOL	ug/L	6	NV	6	6	ug/L	Max	Insufficient Data*
	VOC									
	106-46-7	1,4-DICHLOROBENZENE	ug/L	2	NV	2	2	ug/L	Max	Insufficient Data*
	71-43-2	BENZENE	ug/L	40.88	54.11	110	54.11	ug/L	95% UCL	95% KM (t) UCL
	75-27-4	BROMODICHLOROMETHANE	ug/L	1.8	2	2	2	ug/L	95% UCL	95% KM (BCA) UCL
	67-66-3	CHLOROFORM	ug/L	8.3	11.09	16	11.09	ug/L	95% UCL	95% Student's-t UCL

Footnotes:
a = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Chebyshev (Mean, Sd) UCL = (1-α)100% UCL of the mean based upon the chebyshev theorem (using the sample mean and sample standard deviation - non-parametric).
Gamma UCL = Computation of UCL of the mean of a Gamma, G(k,θ) distribution (parametric).
KM (BCA) UCL = UCL based upon Kaplan-Meier Estimates using the bias corrected accelerated percentile bootstrap method. (non-parametric).
KM (Chebyshev) UCL = UCL based upon Kaplan-Meier estimates using the Chebyshev inequality (non-parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).
Student's-t UCL = Computation method based upon student's t-distribution (parametric).
Chebyshev UCL or Student's-t UCL for nonparametric distribution based on ProUCL (V. 4.0) recommendation; Gamma UCL for gamma distribution; Nonparametric Bootstrap UCLs introduce some standard error and may not be reproduced precisely.

TABLE 3.20
EXPOSURE POINT CONCENTRATION SUMMARY
PETROLEUM STORAGE AREA - SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Petroleum Storage Area - Surface Soil	METALS									
	7440-38-2	ARSENIC	mg/kg	36.075	NV	67.6	67.60	mg/kg	Max	Insufficient Data*
	7440-47-3	CHROMIUM	mg/kg	20.35	NV	28	28	mg/kg	Max	Insufficient Data*
	7439-89-6	IRON	mg/kg	24425	NV	28600	28600	mg/kg	Max	Insufficient Data*
	7439-96-5	MANGANESE	mg/kg	370	NV	486	486	mg/kg	Max	Insufficient Data*
	7439-97-6	MERCURY	mg/kg	5.84	NV	14.2	14.20	mg/kg	Max	Insufficient Data*
	7440-62-2	VANADIUM	mg/kg	17.975	NV	20.1	20.10	mg/kg	Max	Insufficient Data*
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	0.390	NV	0.72	0.72	mg/kg	Max	Insufficient Data*
	PESTICIDES									
	319-86-8	DELTA-BHC	mg/kg	0.0012	NV	0.0012	0.001	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.3275	NV	0.69	0.69	mg/kg	Max	Insufficient Data*
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	3.95	NV	7.3	7.30	mg/kg	Max	Insufficient Data*
	50-32-8	BENZO(A)PYRENE	mg/kg	3.8	NV	7	7	mg/kg	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	5.8	NV	10	10	mg/kg	Max	Insufficient Data*
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	3.775	NV	6.7	6.70	mg/kg	Max	Insufficient Data*
	207-08-9	BENZO(K)FLUORANTHENE	mg/kg	1.79	NV	2.8	2.80	mg/kg	Max	Insufficient Data*
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.97	NV	1.7	1.70	mg/kg	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	3.15	NV	6.1	6.10	mg/kg	Max	Insufficient Data*
	85-01-8	PHENANTHRENE	mg/kg	2.825	NV	4.4	4.40	mg/kg	Max	Insufficient Data*
	VOC									
	71-43-2	BENZENE	mg/kg	0.032	NV	0.086	0.09	mg/kg	Max	Insufficient Data*

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.

TABLE 3.21
EXPOSURE POINT CONCENTRATION SUMMARY
PETROLEUM STORAGE AREA - UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Petroleum Storage Area - Upper Soil	METALS									
	7429-90-5	ALUMINUM	mg/kg	6809	9129	15200	9129	mg/kg	95% UCL	95% Student's-t UCL
	7440-38-2	ARSENIC	mg/kg	23.78	38.52	67.6	38.52	mg/kg	95% UCL	95% Student's-t UCL
	7440-47-3	CHROMIUM	mg/kg	16.6	20.62	28	20.62	mg/kg	95% UCL	95% Student's-t UCL
	7439-89-6	IRON	mg/kg	20850	24645	28600	24645	mg/kg	95% UCL	95% Student's-t UCL
	7439-96-5	MANGANESE	mg/kg	394	446.8	486	446.80	mg/kg	95% UCL	95% Student's-t UCL
	7439-97-6	MERCURY	mg/kg	3.164	10.3	14.2	10.30	mg/kg	95% UCL	95% Approximate Gamma UCL
	7440-62-2	VANADIUM	mg/kg	14.74	17.34	20.1	17.34	mg/kg	95% UCL	95% Student's-t UCL
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	0.390	NV	0.72	0.72	mg/kg	Max	Insufficient Data*
	PESTICIDES									
	319-86-8	DELTA-BHC	mg/kg	0.0012	NV	0.0012	0.001	mg/kg	Max	Insufficient Data*
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.278	0.378	0.69	0.38	mg/kg	95% UCL	95% KM (t) UCL
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	2.374	3.993	7.3	3.99	mg/kg	95% UCL	95% Student's-t UCL
	50-32-8	BENZO(A)PYRENE	mg/kg	2.466	3.765	7	3.77	mg/kg	95% UCL	95% KM (t) UCL
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	3.364	5.62	10	5.62	mg/kg	95% UCL	95% Student's-t UCL
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	2.497	3.664	6.7	3.66	mg/kg	95% UCL	95% KM (t) UCL
	207-08-9	BENZO(K)FLUORANTHENE	mg/kg	1.194	1.727	2.8	1.73	mg/kg	95% UCL	95% KM (t) UCL
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.717	0.95	1.7	0.95	mg/kg	95% UCL	95% KM (t) UCL
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	2.041	3.145	6.1	3.15	mg/kg	95% UCL	95% KM (t) UCL
	91-20-3	NAPHTHALENE	mg/kg	8.029	22.43	30	22.43	mg/kg	95% UCL	95% Chebyshev (MVUE) UCL
	85-01-8	PHENANTHRENE	mg/kg	2.19	3.37	4.4	3.37	mg/kg	95% UCL	95% Student's-t UCL
	VOC									
	71-43-2	BENZENE	mg/kg	0.0691	0.102	0.14	0.10	mg/kg	95% UCL	95% KM (t) UCL

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Chebyshev (MVUE) UCL = (1-α) 100% UCL of the Mean of a Lognormal Population Based Upon the Chebyshev Theorem (Using the MVUE of the Mean and its Standard Error - parametric)
Gamma UCL = Computation of UCL of the mean of a Gamma, G(k,θ) distribution (parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).
Student's-t UCL = Computation method based upon student's t-distribution (parametric).

TABLE 3.22
EXPOSURE POINT CONCENTRATION SUMMARY
PETROLEUM STORAGE AREA - SHALLOW GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Shallow Groundwater (0 - 10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[a]	Rationale
Petroleum Storage Area - Shallow Groundwater	METALS									
	7429-90-5	ALUMINUM	mg/L	21.89	26.44	38.3	26.44	mg/L	95% UCL	95% KM (t) UCL
	7440-39-3	BARIUM	mg/L	0.191	0.328	0.477	0.33	mg/L	95% UCL	95% Student's-t UCL
	7440-47-3	CHROMIUM	mg/L	0.0432	0.0513	0.0707	0.05	mg/L	95% UCL	95% KM (t) UCL
	7440-50-8	COPPER	mg/L	0.171	0.179	0.209	0.18	mg/L	95% UCL	95% KM (t) UCL
	7439-89-6	IRON	mg/L	38.4	45.26	58	45.26	mg/L	95% UCL	95% KM (t) UCL
	7439-92-1	LEAD	mg/L	0.0556	0.0717	0.114	0.07	mg/L	95% UCL	95% KM (t) UCL
	7439-96-5	MANGANESE	mg/L	0.918	1.726	2.62	1.73	mg/L	95% UCL	95% Student's-t UCL
	7439-97-6	MERCURY	mg/L	0.0024	0.00244	0.0026	0.002	mg/L	95% UCL	95% KM (t) UCL
	7440-02-0	NICKEL	mg/L	0.0664	0.0691	0.0802	0.07	mg/L	95% UCL	95% KM (t) UCL
	7440-62-2	VANADIUM	mg/L	0.033	0.0594	0.0861	0.06	mg/L	95% UCL	95% Student's-t UCL
	SVOC									
	91-57-6	2-METHYLNAPHTHALENE	ug/L	24	NV	24	24	ug/L	Max	Insufficient Data*
	132-64-9	DIBENZOFURAN	ug/L	2	NV	2	2	ug/L	Max	Insufficient Data*
	91-20-3	NAPHTHALENE	ug/L	120	NV	230	230	ug/L	Max	Insufficient Data*
	85-01-8	PHENANTHRENE	ug/L	6	NV	6	6	ug/L	Max	Insufficient Data*
	VOC									
	71-43-2	BENZENE	ug/L	1373	2893	4400	2893	ug/L	95% UCL	95% Student's-t UCL
	1330-20-7	XYLENES, TOTAL	ug/L	41	NV	41	41	ug/L	Max	Insufficient Data*

Footnotes:
a = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).
Student's-t UCL = Computation method based upon student's t-distribution (parametric).
Chebyshev UCL or Student's-t UCL for nonparametric distribution based on ProUCL (V. 4.0) recommendation; Gamma UCL for gamma distribution; Nonparametric Bootstrap UCLs introduce some standard error and may not be reproduced precisely.

TABLE 3.23
EXPOSURE POINT CONCENTRATION SUMMARY
CHLOROBENZENE HOT-SPOT AREA - SURFACE SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Surface Soil (0-2 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Chlorobenzene Hot-Spot Area - Surface Soil	METALS									
	7440-38-2	ARSENIC	mg/kg	9.657	13.7	18.6	13.70	mg/kg	95% UCL	95% Student's-t UCL
	7440-47-3	CHROMIUM	mg/kg	19.77	26.25	33.9	26.25	mg/kg	95% UCL	95% Student's-t UCL
	7439-89-6	IRON	mg/kg	18180	23490	27700	23490	mg/kg	95% UCL	95% Student's-t UCL
	7439-96-5	MANGANESE	mg/kg	298.1	332.3	353	332.30	mg/kg	95% UCL	95% Student's-t UCL
	7439-97-6	MERCURY	mg/kg	1.496	2.766	3.5	2.77	mg/kg	95% UCL	95% Approximate Gamma UCL
	7440-62-2	VANADIUM	mg/kg	9.957	12.37	16.4	12.37	mg/kg	95% UCL	95% Approximate Gamma UCL
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	23.09	113	120	113	mg/kg	95% UCL	Use 99% Chebyshev (MVUE) UCL
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.243	0.341	0.34	0.34	mg/kg	Max	Insufficient Data*
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	4.319	13.43	17	13.43	mg/kg	95% UCL	95% Approximate Gamma UCL
	50-32-8	BENZO(A)PYRENE	mg/kg	4.149	7.695	14	7.70	mg/kg	95% UCL	95% Student's-t UCL
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	6.436	17.81	22	17.81	mg/kg	95% UCL	95% Approximate Gamma UCL
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	3.261	5.361	8.7	5.36	mg/kg	95% UCL	95% Student's-t UCL
	207-08-9	BENZO(K)FLUORANTHENE	mg/kg	1.923	5.379	6.8	5.38	mg/kg	95% UCL	95% Approximate Gamma UCL
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	1.215	1.807	3	1.81	mg/kg	95% UCL	95% KM (t) UCL
	118-74-1	HEXACHLOROBENZENE	mg/kg	1.903	2.935	5.4	2.94	mg/kg	95% UCL	95% KM (t) UCL
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	2.469	6.23	7.9	6.23	mg/kg	95% UCL	95% Approximate Gamma UCL
	85-01-8	PHENANTHRENE	mg/kg	5.011	25.44	25	25	mg/kg	Max	Insufficient Data*
	VOC									
	120-82-1	1,2,4-TRICHLOROBENZENE	mg/kg	3.737	13.5	17	13.50	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	106-46-7	1,4-DICHLOROBENZENE	mg/kg	1.544	5.937	6.5	5.94	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	71-43-2	BENZENE	mg/kg	0.0045	0.008	0.008	0.01	mg/kg	95% UCL	95% KM (BCA) UCL

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Chebyshev (MVUE) UCL = (1-α) 100% UCL of the Mean of a Lognormal Population Based Upon the Chebyshev Theorem (Using the MVUE of the Mean and its Standard Error - parametric)
Gamma UCL = Computation of UCL of the mean of a Gamma, G(k,θ) distribution (parametric).
KM (BCA) UCL = UCL based upon Kaplan-Meier Estimates using the bias corrected accelerated percentile bootstrap method. (non-parametric).
KM (Chebyshev) UCL = UCL based upon Kaplan-Meier estimates using the Chebyshev inequality (non-parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).
Chebyshev UCL or Student's-t UCL for nonparametric distribution based on ProUCL (V. 4.0) recommendation; Gamma UCL for gamma distribution; Nonparametric Bootstrap UCLs introduce some standard error and may not be reproduced precisely.

TABLE 3.24
EXPOSURE POINT CONCENTRATION SUMMARY
CHLOROBENZENE HOT SPOT AREA - UPPER SOIL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Soil
Exposure Medium: Upper Soil (0-10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[b]	Rationale
Chlorobenzene-Hot Spot Area - Upper Soil	METALS									
	7440-38-2	ARSENIC	mg/kg	7.362	10.22	18.6	10.22	mg/kg	95% UCL	95% Approximate Gamma UCL
	7440-47-3	CHROMIUM	mg/kg	17.75	22.25	33.9	22.25	mg/kg	95% UCL	95% Student's-t UCL
	7439-89-6	IRON	mg/kg	14596	18179	27700	18179	mg/kg	95% UCL	95% Student's-t UCL
	7439-96-5	MANGANESE	mg/kg	345.8	382.3	463	382.30	mg/kg	95% UCL	95% Student's-t UCL
	7439-97-6	MERCURY	mg/kg	1.818	3.676	5.8	3.68	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	7440-62-2	VANADIUM	mg/kg	9.654	11.26	16.4	11.26	mg/kg	95% UCL	95% Student's-t UCL
	PCB									
		HIGHLY CHLORINATED PCBs[a]	mg/kg	15.58	61.65	120	61.65	mg/kg	95% UCL	99% Chebyshev (MVUE) UCL
	SVOC									
	208-96-8	ACENAPHTHYLENE	mg/kg	0.18	0.271	0.34	0.27	mg/kg	95% UCL	95% KM (t) UCL
	56-55-3	BENZO(A)ANTHRACENE	mg/kg	3.839	21.62	17	17	mg/kg	Max	Insufficient Data*
	50-32-8	BENZO(A)PYRENE	mg/kg	3.364	7.183	14	7.18	mg/kg	95% UCL	95% Approximate Gamma UCL
	205-99-2	BENZO(B)FLUORANTHENE	mg/kg	5.076	10.73	22	10.73	mg/kg	95% UCL	95% Approximate Gamma UCL
	191-24-2	BENZO(G,H,I)PERYLENE	mg/kg	2.537	5.488	8.7	5.49	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	207-08-9	BENZO(K)FLUORANTHENE	mg/kg	1.741	5.625	6.8	5.63	mg/kg	95% UCL	97.5% KM (Chebyshev) UCL
	53-70-3	DIBENZO(A,H)ANTHRACENE	mg/kg	0.922	1.962	3	1.96	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	118-74-1	HEXACHLOROBENZENE	mg/kg	4.677	3.657	13	3.66	mg/kg	95% UCL	95% KM (t) UCL
	193-39-5	INDENO(1,2,3-CD)PYRENE	mg/kg	1.978	4.658	7.9	4.66	mg/kg	95% UCL	95% KM (Chebyshev) UCL
	85-01-8	PHENANTHRENE	mg/kg	3.588	16.12	25	16.12	mg/kg	95% UCL	99% Chebyshev (MVUE) UCL
	VOC									
	120-82-1	1,2,4-TRICHLOROBENZENE	mg/kg	377.6	2589	3000	2589	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	95-50-1	1,2-DICHLOROBENZENE	mg/kg	157	1200	1400	1200	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	541-73-1	1,3-DICHLOROBENZENE	mg/kg	31.68	70.32	63	63	mg/kg	Max	Insufficient Data*
	106-46-7	1,4-DICHLOROBENZENE	mg/kg	202	1704	2000	1704	mg/kg	95% UCL	99% KM (Chebyshev) UCL
	71-43-2	BENZENE	mg/kg	0.412	0.537	2.4	0.54	mg/kg	95% UCL	95% KM (t) UCL
	108-90-7	CHLOROBENZENE	mg/kg	6.072	47.92	56	47.92	mg/kg	95% UCL	99% KM (Chebyshev) UCL

Footnotes:
a = Aroclor-1248,-1254, -1260 samples were combined for analysis by ProUCL 4.0 and determination of an EPC.
b = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
Chebyshev (MVUE) UCL = (1-α) 100% UCL of the Mean of a Lognormal Population Based Upon the Chebyshev Theorem (Using the MVUE of the Mean and its Standard Error - parametric)
Gamma UCL = Computation of UCL of the mean of a Gamma, G(k,θ) distribution (parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).
Student's-t UCL = Computation method based upon student's t-distribution (parametric).
Chebyshev UCL or Student's-t UCL for nonparametric distribution based on ProUCL (V. 4.0) recommendation; Gamma UCL for gamma distribution; Nonparametric Bootstrap UCLs introduce some standard error and may not be reproduced precisely.

TABLE 3.25
EXPOSURE POINT CONCENTRATION SUMMARY
CHLOROBENZENE HOT-SPOT AREA - SHALLOW GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Shallow Groundwater (0 - 10 ft)

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[a]	Rationale
Chlorobenzene Hot-Spot Area - Shallow Groundwater	METALS									
	7429-90-5	ALUMINUM	mg/L	23.8	29.14	98	29.14	mg/L	95% UCL	95% KM (BCA) UCL
	7440-38-2	ARSENIC	mg/L	0.0498	0.178	0.261	0.18	mg/L	95% UCL	97.5% KM (Chebyshev) UCL
	7440-39-3	BARIUM	mg/L	0.208	0.444	0.591	0.44	mg/L	95% UCL	95% KM (Chebyshev) UCL
	7440-47-3	CHROMIUM	mg/L	0.397	0.449	2.11	0.45	mg/L	95% UCL	95% KM (t) UCL
	7440-48-4	COBALT	mg/L	0.0365	0.0294	0.0897	0.03	mg/L	95% UCL	95% KM (t) UCL
	7440-50-8	COPPER	mg/L	0.144	0.154	0.505	0.15	mg/L	95% UCL	95% KM (BCA) UCL
	57-12-5	CYANIDE	mg/L	0.425	0.427	0.643	0.43	mg/L	95% UCL	95% KM (t) UCL
	7439-89-6	IRON	mg/L	35.42	86	146	86	mg/L	95% UCL	95% KM (Chebyshev) UCL
	7439-92-1	LEAD	mg/L	0.0992	0.0875	0.258	0.09	mg/L	95% UCL	95% KM (t) UCL
	7439-96-5	MANGANESE	mg/L	0.675	1.703	3.45	1.70	mg/L	95% UCL	95% KM (Chebyshev) UCL
	7439-97-6	MERCURY	mg/L	0.00323	0.00248	0.0092	0.002	mg/L	95% UCL	95% KM (t) UCL
	7440-02-0	NICKEL	mg/L	0.156	0.403	0.996	0.40	mg/L	95% UCL	95% KM (Chebyshev) UCL
	7440-62-2	VANADIUM	mg/L	0.061	0.129	0.223	0.13	mg/L	95% UCL	95% KM (Chebyshev) UCL
	SVOC									
	118-74-1	HEXACHLOROBENZENE	ug/L	2	NV	2	2	ug/L	Max	Insufficient Data*
	91-20-3	NAPHTHALENE	ug/L	3.3	5.377	6.8	5.38	ug/L	95% UCL	95% KM (t) UCL
	85-01-8	PHENANTHRENE	ug/L	2	NV	2	2	ug/L	Max	Insufficient Data*
	VOC									
	87-61-6	1,2,3-TRICHLOROBENZENE	ug/L	150	NV	150	150	ug/L	Max	Insufficient Data*
	120-82-1	1,2,4-TRICHLOROBENZENE	ug/L	162.8	133.3	360	133.30	ug/L	95% UCL	95% KM (t) UCL
	95-50-1	1,2-DICHLOROBENZENE	ug/L	1664	1106	3800	1106	ug/L	95% UCL	95% KM (t) UCL
	541-73-1	1,3-DICHLOROBENZENE	ug/L	81.7	40.98	160	40.98	ug/L	95% UCL	95% KM (t) UCL
	106-46-7	1,4-DICHLOROBENZENE	ug/L	2769	2054	9600	2054	ug/L	95% UCL	95% KM (t) UCL
	71-43-2	BENZENE	ug/L	647.2	3294	5500	3294	ug/L	95% UCL	99% KM (Chebyshev) UCL
	108-90-7	CHLOROBENZENE	ug/L	3885	4014	25000	4014	ug/L	95% UCL	95% KM (t) UCL
	67-66-3	CHLOROFORM	ug/L	1	NV	1	1	ug/L	Max	Insufficient Data*

Footnotes:
a = Max - maximum detected concentration; %UCL - % upper confidence limit.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
KM (BCA) UCL = UCL based upon Kaplan-Meier Estimates using the bias corrected accelerated percentile bootstrap method. (non-parametric).
KM (Chebyshev) UCL = UCL based upon Kaplan-Meier estimates using the Chebyshev inequality (non-parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).

TABLE 3.26
EXPOSURE POINT CONCENTRATION SUMMARY
SITE WIDE - GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Site-Wide Groundwater

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[a]	Rationale
Site Wide - Groundwater	METALS									
	7429-90-5	ALUMINUM	mg/L	29.96	28.92	287	28.92	mg/L	95% UCL	95% KM (BCA) UCL
	7440-38-2	ARSENIC	mg/L	0.0687	0.123	0.956	0.12	mg/L	95% UCL	95% KM (Chebyshev) UCL
	7440-39-3	BARIUM	mg/L	0.472	1.303	10.9	1.30	mg/L	95% UCL	95% KM (Chebyshev) UCL
	7440-41-7	BERYLLIUM	mg/L	0.00814	0.00556	0.031	0.006	mg/L	95% UCL	95% KM (BCA) UCL
	7440-47-3	CHROMIUM	mg/L	0.339	0.382	2.7	0.38	mg/L	95% UCL	95% KM (Chebyshev) UCL
	7440-48-4	COBALT	mg/L	0.0636	0.0288	0.367	0.029	mg/L	95% UCL	95% KM (t) UCL
	7440-50-8	COPPER	mg/L	0.119	0.0816	0.651	0.08	mg/L	95% UCL	95% KM (t) UCL
	57-12-5	CYANIDE	mg/L	0.124	0.092	0.643	0.09	mg/L	95% UCL	95% KM (t) UCL
	7439-89-6	IRON	mg/L	51.98	61.49	621	61.49	mg/L	95% UCL	95% KM (BCA) UCL
	7439-92-1	LEAD	mg/L	0.059	0.05897	0.488	0.06	mg/L	Avg	Average Detected Concentration
	7439-96-5	MANGANESE	mg/L	1.491	2.854	20.4	2.85	mg/L	95% UCL	95% KM (Chebyshev) UCL
	7439-97-6	MERCURY	mg/L	0.0129	0.0202	0.166	0.020	mg/L	95% UCL	95% KM (Chebyshev) UCL
	7440-02-0	NICKEL	mg/L	0.219	0.149	1.73	0.15	mg/L	95% UCL	95% KM (BCA) UCL
	7782-49-2	SELENIUM	mg/L	0.00898	0.00475	0.0218	0.005	mg/L	95% UCL	95% KM (t) UCL
	7440-22-4	SILVER	mg/L	0.0142	0.00575	0.0354	0.006	mg/L	95% UCL	95% KM (t) UCL
	7440-62-2	VANADIUM	mg/L	0.247	0.594	2.63	0.59	mg/L	95% UCL	97.5% KM (Chebyshev) UCL
	7440-66-6	ZINC	mg/L	0.172	0.378	1.94	0.38	mg/L	95% UCL	97.5% KM (Chebyshev) UCL
	SVOC									
	88-06-2	2,4,6-TRICHLOROPHENOL	ug/L	3	NV	3	3	ug/L	Max	Insufficient Data*
	120-83-2	2,4-DICHLOROPHENOL	ug/L	14.2	8.107	23	8.11	ug/L	95% UCL	95% KM (t) UCL
	95-57-8	2-CHLOROPHENOL	ug/L	50.4	26.66	180	26.66	ug/L	95% UCL	95% KM (t) UCL
	91-57-6	2-METHYLNAPHTHALENE	ug/L	7.6	6.623	24	6.62	ug/L	95% UCL	95% KM (t) UCL
	88-75-5	2-NITROPHENOL	ug/L	6	NV	6	6	ug/L	Max	Insufficient Data*
	59-50-7	4-CHLORO-3-METHYLPHENOL	ug/L	3.5	4.355	4	4	ug/L	Max	Insufficient Data*
	106-44-5	4-METHYLPHENOL	ug/L	128.8	88.3	500	88.30	ug/L	95% UCL	95% KM (t) UCL
	100-02-7	4-NITROPHENOL	ug/L	6	NV	6	6	ug/L	Max	Insufficient Data*
	205-99-2	BENZO(B)FLUORANTHENE	ug/L	5	NV	5	5	ug/L	Max	Insufficient Data*
	191-24-2	BENZO(G,H,I)PERYLENE	ug/L	1	NV	1	1	ug/L	Max	Insufficient Data*
	207-08-9	BENZO(K)FLUORANTHENE	ug/L	2	NV	2	2	ug/L	Max	Insufficient Data*
	117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	ug/L	39	NV	39	39	ug/L	Max	Insufficient Data*
	218-01-9	CHRYSENE	ug/L	3	4.706	4	4	ug/L	Max	Insufficient Data*
	132-64-9	DIBENZOFURAN	ug/L	3.5	6.058	5	5	ug/L	Max	Insufficient Data*
	118-74-1	HEXACHLOROBENZENE	ug/L	2	NV	2	2	ug/L	Max	Insufficient Data*
	193-39-5	INDENO(1,2,3-CD)PYRENE	ug/L	2	NV	2	2	ug/L	Max	Insufficient Data*
	91-20-3	NAPHTHALENE	ug/L	42.64	115.2	230	115.20	ug/L	95% UCL	99% KM (Chebyshev) UCL
	85-01-8	PHENANTHRENE	ug/L	14.25	12.29	75	12.29	ug/L	95% UCL	95% KM (BCA) UCL

TABLE 3.26
EXPOSURE POINT CONCENTRATION SUMMARY
SITE WIDE - GROUNDWATER
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario: Current/Future
Medium: Water
Exposure Medium: Site-Wide Groundwater

Exposure Point	CAS Number	Chemical of Potential Concern	Units	Average Detected Concentration	Potential UCL to Use	Maximum Detected Concentration	Exposure Point Concentration			
							Value	Units	Statistic[a]	Rationale
	VOC									
	79-34-5	1,1,2,2-TETRACHLOROETHANE	ug/L	1	NV	1	1	ug/L	Max	Insufficient Data*
	87-61-6	1,2,3-TRICHLOROBENZENE	ug/L	150	NV	150	150	ug/L	Max	Insufficient Data*
	120-82-1	1,2,4-TRICHLOROBENZENE	ug/L	219.7	114.6	1000	114.60	ug/L	95% UCL	95% KM (t) UCL
	95-50-1	1,2-DICHLOROBENZENE	ug/L	3993	2088	29000	2088	ug/L	95% UCL	95% KM (t) UCL
	107-06-2	1,2-DICHLOROETHANE	ug/L	3	NV	3	3	ug/L	Max	Insufficient Data*
	78-87-5	1,2-DICHLOROPROPANE	ug/L	2.5	2.174	3	2.17	ug/L	95% UCL	95% KM (t) UCL
	541-73-1	1,3-DICHLOROBENZENE	ug/L	1079	479.4	9500	479.40	ug/L	95% UCL	95% KM (t) UCL
	106-46-7	1,4-DICHLOROBENZENE	ug/L	9159	5579	72000	5579	ug/L	95% UCL	95% KM (t) UCL
	67-64-1	ACETONE	ug/L	526.4	389.7	2800	389.70	ug/L	95% UCL	95% KM (t) UCL
	71-43-2	BENZENE	ug/L	7591	17494	62000	17494	ug/L	95% UCL	97.5% KM (Chebyshev) UCL
	75-15-0	CARBON DISULFIDE	ug/L	81.57	52.09	250	52.09	ug/L	95% UCL	95% KM (t) UCL
	108-90-7	CHLOROBENZENE	ug/L	10903	16998	87000	16998	ug/L	95% UCL	97.5% KM (Chebyshev) UCL
	67-66-3	CHLOROFORM	ug/L	10.33	8.042	52	8.04	ug/L	95% UCL	95% KM (Chebyshev) UCL
	75-09-2	METHYLENE CHLORIDE	ug/L	393	74.05	1300	74.05	ug/L	95% UCL	95% KM (t) UCL
	127-18-4	TETRACHLOROETHENE	ug/L	4	NV	4	4	ug/L	Max	Insufficient Data*
	108-88-3	TOLUENE	ug/L	12191	14650	80000	14650	ug/L	95% UCL	97.5% KM (Chebyshev) UCL
	1330-20-7	XYLENES, TOTAL	ug/L	14.36	7.157	43	7.16	ug/L	95% UCL	95% KM (t) UCL

Footnotes:
a = Max - maximum detected concentration; %UCL - % upper confidence limit; Avg - average detected concentration.
NV = UCL could not be calculated because there were too few samples or too few detected samples among many non-detected samples
It is possible that in certain instances, the calculated 95% UCL is smaller than the mean detected concentration. This reflects a low detection frequency and non-detect samples largely outnumbering detected samples, causing the 95% UCL recommended by ProUCL v4.0 to be smaller than the mean detected concentration, since it reflects the large number of non-detect samples.
* = ProUCL does not provide 95% UCLs when there is insufficient data, as defined by fewer than 5 samples or fewer than 2 unique detected samples. In these cases, the EPC is obtained by using the maximum detected concentration.
KM (BCA) UCL = UCL based upon Kaplan-Meier Estimates using the bias corrected accelerated percentile bootstrap method. (non-parametric).
KM (Chebyshev) UCL = UCL based upon Kaplan-Meier estimates using the Chebyshev inequality (non-parametric).
KM (t) UCL = UCL based upon Kaplan-Meier estimates using student's t-distribution critical value (non-parametric).

Attachment A
RAGS Table 4 RME Series

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	100	mg/day	USEPA, 2002; Exhibit 1-2	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA, 2004 Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	
Ingestion	Surveillance worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA 2002, Exhibit 1-2, outdoor com./indust. Worker	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	31	days/year	USEPA 2004, Exhibit 3-5, RME for indust. Worker, modified for 1 hr/day	
				ED	Exposure Duration	25	years	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Surveillance worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	31	days/year	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				ED	Exposure Duration	25	years	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"

NYSDEC. 2002. Onondaga Lake Human Health Risk Assessment. Division of Environmental Remediation. Albany, New York.

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USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.2a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 2002, Exhibit 1-2, indoor com./indust. worker	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	188	days/year	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	25	years	USEPA, 2004, Exhibit 3-5	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2004; Exhibit 3-5	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA 2004; Section 3.2.2.3	
				EF	Exposure Frequency	188	days/year	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	25	years	USEPA, 2004, Exhibit 3-5	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
BPJ - Best Professional Judgment
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.2b.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA. 2002; Exhibit 1-2	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Inhalation	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CA	Chemical Concentration in Air	RAGS Table 3 Series	mg/m^3	RAGS Table 3 Series	Chronic Daily Intake (CDI in mg/kg-day) = CA x InR x ET x EF x ED x 1/BW x 1/AT
				InR	Inhalation Rate	3.2	m^3/hour	USEPA, 1997, Table 5-23, Adult, Heavy Activity	
				ET	Exposure Time	8	hours/day	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.2c.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Intermediate Soils (0-20 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Intermediate Soils (0-20 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Intermediate Soils (0-20 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Soil to Skin Adherence Factor	0.9	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.2d. RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Intermediate Groundwater (0-20 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.03	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Intermediate Groundwater (0-20 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CT
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	Where DA_{event} (Organics) =
				EV	Event Frequency	1	event/day	Best Professional Judgment	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1 + 3B + 3B^2}{(1+B)^2} \right) \right]$
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τevent	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) =
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-N	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 presents an incidential ingestion rate of 0.05 L/hr for a swimmer. For a non-simmwer, the RME incidential ingestion rate has been estimated to be lower, a value of 0.03 L.hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.3.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA, 2002; Exhibit 1-2	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA, 2004 Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.3.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	
Ingestion	Surveillance worker	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA 2002, Exhibit 1-2, outdoor com./indust. Worker	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	31	days/year	USEPA 2004, Exhibit 3-5, RME for indust. Worker, modified for 1 hr/day	
				ED	Exposure Duration	25	years	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.3.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Surveillance worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	31	days/year	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				ED	Exposure Duration	25	years	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"

NYSDEC. 2002. Onondaga Lake Human Health Risk Assessment. Division of Environmental Remediation. Albany, New York.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.

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USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.

USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.4a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 2002, Exhibit 1-2, indoor com./indust. worker	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	188	days/year	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	25	years	USEPA, 2004, Exhibit 3-5	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2004; Exhibit 3-5	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA 2004; Section 3.2.2.3	
				EF	Exposure Frequency	188	days/year	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	25	years	USEPA, 2004, Exhibit 3-5	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
BPJ - Best Professional Judgment

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.4b.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA. 2002; Exhibit 1-2	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Inhalation	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CA	Chemical Concentration in Air	RAGS Table 3 Series	mg/m^3	RAGS Table 3 Series	Chronic Daily Intake (CDI in mg/kg-day) = CA x InR x ET x EF x ED x 1/BW x 1/AT
				InR	Inhalation Rate	3.2	m^3/hour	USEPA, 1997, Table 5-23, Adult, Heavy Activity	
				ET	Exposure Time	8	hours/day	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.4c.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Intermediate Soils (0-20 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Intermediate Soils (0-20 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Intermediate Soils (0-20 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Soil to Skin Adherence Factor	0.9	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.4d. RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Intermediate Groundwater (0-20 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.03	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Intermediate Groundwater (0-20 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CT
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	Where DA_{event} (Organics) =
				EV	Event Frequency	1	event/day	Best Professional Judgment	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τ event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) =
									$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-N	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 presents an incidential ingestion rate of 0.05 L/hr for a swimmer. For a non-simmwer, the RME incidential ingestion rate has been estimated to be lower, a value of 0.03 L.hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.5.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA, 2002; Exhibit 1-2	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA, 2004 Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.5.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	
Ingestion	Surveillance worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA 2002, Exhibit 1-2, outdoor com./indust. Worker	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	31	days/year	USEPA 2004, Exhibit 3-5, RME for indust. Worker, modified for 1 hr/day	
				ED	Exposure Duration	25	years	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.5.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Surveillance worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	31	days/year	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				ED	Exposure Duration	25	years	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"

NYSDEC. 2002. Onondaga Lake Human Health Risk Assessment. Division of Environmental Remediation. Albany, New York.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.

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USEPA. 1997. Exposure Factors Handbook - Volume 1 General Factors. USEPA Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fc.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.

USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.6a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 2002, Exhibit 1-2, indoor com./indust. worker	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	188	days/year	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	25	years	USEPA, 2004, Exhibit 3-5	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2004; Exhibit 3-5	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA 2004; Section 3.2.2.3	
				EF	Exposure Frequency	188	days/year	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	25	years	USEPA, 2004, Exhibit 3-5	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
BPJ - Best Professional Judgment

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.6b.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA. 2002; Exhibit 1-2	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Inhalation	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CA	Chemical Concentration in Air	RAGS Table 3 Series	mg/m^3	RAGS Table 3 Series	Chronic Daily Intake (CDI in mg/kg-day) = CA x InR x ET x EF x ED x 1/BW x 1/AT
				InR	Inhalation Rate	3.2	m^3/hour	USEPA, 1997, Table 5-23, Adult, Heavy Activity	
				ET	Exposure Time	8	hours/day	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.6c.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Intermediate Soils (0-20 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Intermediate Soils (0-20 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Intermediate Soils (0-20 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Soil to Skin Adherence Factor	0.9	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.6d. RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Intermediate Groundwater (0-20 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.03	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Intermediate Groundwater (0-20 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CF
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	Where DA_{event} (Organics) =
				EV	Event Frequency	1	event/day	Best Professional Judgment	$If\ t_{event} \le t^*, then\ DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	$If\ t_{event} > t^*, then DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τ event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) =
									$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-N	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 presents an incidential ingestion rate of 0.05 L/hr for a swimmer. For a non-simmwer, the RME incidential ingestion rate has been estimated to be lower, a value of 0.03 L.hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.7.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA, 2002; Exhibit 1-2	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA, 2004 Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.7.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"

NYSDEC. 2002. Onondaga Lake Human Health Risk Assessment. Division of Environmental Remediation. Albany, New York.

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USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.

USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.8a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 2002, Exhibit 1-2, indoor com./indust. worker	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	188	days/year	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	25	years	USEPA, 1991; Attachment B	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2004; Exhibit 3-5	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA 2004; Section 3.2.2.3	
				EF	Exposure Frequency	188	days/year	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	25	years	USEPA, 1991; Attachment B	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
BPJ - Best Professional Judegment
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
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USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.8b.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2002; Exhibit 1-2	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Inhalation	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CA	Chemical Concentration in Air	RAGS Table 3 Series	mg/m^3	RAGS Table 3 Series	Chronic Daily Intake (CDI in mg/kg-day) = CA x InR x ET x EF x ED x 1/BW x 1/AT
				InR	Inhalation Rate	3.2	m^3/hour	USEPA, 1997, Table 5-23, Adult, Heavy Activity	
				ET	Exposure Time	8	hours/day	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
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USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.9a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent age 7 to <16 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA, 2002; Exhibit 1-2	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent age 7 to <16 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA, 2004 Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.9a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	
Ingestion	Transient	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA, 2002; Exhibit 1-2	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	14	days/year	Honeywell, 2008	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Transient	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2	USEPA 2004, Ehibit 3-5, adult resident	
				AF	Soil to Skin Adherence Factor	0.06	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential grounds keeper	
				EF	Exposure Frequency	14	days/year	Honeywell, 2008	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"

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TABLE 4.9b.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Soil to Skin Adherence Factor	0.9	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
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TABLE 4.10a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
LAKESHORE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA, 2002; Exhibit 1-2	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA, 2004 Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.10a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
LAKESHORE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2	USEPA 2004, Exhibit 3-5, adult resident	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	8760	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.

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TABLE 4.10b.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
LAKESHORE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Soil to Skin Adherence Factor	0.9	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

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TABLE 4.10c. RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
LAKESHORE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult	Shallow Groundwater	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
		> 18 years	(0-10 ft)	CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.03	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult	Shallow Groundwater	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
		> 18 years	(0-10 ft)	CF	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	DAevent x EV x ED x EF x SA x 1/BW x 1/AT x CF
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	Where DAevent (Organics) =
				EV	Event Frequency	1	event/day	Best Professional Judgment	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τ event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	Where DAevent (Inorganics) =
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-N	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 presents an incidential ingestion rate of 0.05 L/hr for a swimmer. For a non-simmwer, the RME incidential ingestion rate has been estimated to be lower, a value of 0.03 L.hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
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TABLE 4.11a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.03	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	9	years	USEPA, 1989; Exhibit 6-12	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CF
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	Where DA_{event} (Organics) =
				SA	Skin Surface Area	4250	cm^2	USEPA, 2004 Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	USEPA, 1989; Exhibit 6-13	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	2	hr/event	Honeywell, 2004	
				τ event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) = $DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.03	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	42	days/year	Honeywell, 2008	CW x CFx IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.11a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult > 18 years	Surface Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit Conversion	DA_{event} x CF x EV x ED x EF x SA x 1/BW x 1/AT x CF
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA 2004, Exhibits B-3 & B-4	Where DA_{event} (Organics) =
				SA	Skin Surface Area	5700	cm^2	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EV	Event Frequency	1	event/day	USEPA 2004, Exhibit A-9	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	$\text{If } t_{event} > t^*, \text{then} DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA 2004, Exhibits B-3 & B-4	
				t_{event}	Event Duration	4	hr/event	Best Professional Judgment	
				*t*event	Lag Time Per Event	Chemical Specific	hr/event	USEPA 2004, Exhibits B-3 & B-4	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA 2004, Exhibits B-3 & B-4	Where DA_{event} (Inorganics) =
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA 2004, Exhibits B-3 & B-4	$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	
Ingestion	Utility Worker	Adult > 18 years	Surface Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.03	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.11a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Utility Worker	Adult > 18 years	Surface Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) = DA_{event} x CF x EV x ED x EF x SA x 1/BW x 1/AT x CF
				CF	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	Where DA_{event} (Organics) =
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EV	Event Frequency	1	event/day	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τ event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) =
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-N	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 presents an incidential ingestion rate of 0.05 L/hr for a swimmer. For a non-simmwer, the RME incidential ingestion rate has been estimated to be lower, a value of 0.03 L.hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.

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TABLE 4.11b.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Surface Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Sediment (0-1 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA, 2002; Exhibit 1-2	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Sediment (0-1 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA, 2004 Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Sediment (0-1 ft)	CS	Chemical Concentration in sediment	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for sediment	0.000001	kg/mg	Unit Conversion	
				IR	Ingestion Rate of sediment	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from sediment	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.11b.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Surface Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult	Surface Sediment	CS	Chemical Concentration in sediment	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
		> 18 years	(0-1 ft)	CF	Unit Conversion Factor for sediment	0.000001	kg/mg	Unit Conversion	CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	sediment to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	

Footnotes:

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USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.11c.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Upper Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility	Adult	Upper Sediment	CS	Chemical Concentration in Surface Sediment	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, mg/kg-day) =
	Worker	> 18 years	(0-10ft)	CF	Unit Conversion Factor for Sediment	0.000001	kg/mg	Unit Conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Sediment	330	mg/day	USEPA 2002; Exhibit 1-2	
				FI	Fraction Ingested from Sediment	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility	Adult	Upper Sediment	CS	Chemical Concentration in Surface Sediment	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
	Worker	> 18 years	(0-10ft)	CF	Unit Conversion Factor for Sediment	0.000001	kg/mg	Unit Conversion	CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2/day	USEPA 2002; Exhibit 1-2	
				AF	Sediment to Skin Adherence Factor	0.9	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
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USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
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TABLE 4.12.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA, 2002; Exhibit 1-2	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA, 2004 Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.12.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"

NYSDEC. 2002. Onondaga Lake Human Health Risk Assessment. Division of Environmental Remediation. Albany, New York.

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TABLE 4.13a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 2002, Exhibit 1-2, indoor com./indust. worker	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	188	days/year	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	25	years	USEPA, 1991; Attachment B	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2004; Exhibit 3-5	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA 2004; Section 3.2.2.3	
				EF	Exposure Frequency	188	days/year	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	25	years	USEPA, 1991; Attachment B	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
BPJ - Best Professional Judgment

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.13b.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2002: Exhibit 1-2	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Inhalation	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CA	Chemical Concentration in Air	RAGS Table 3 Series	mg/m^3	RAGS Table 3 Series	Chronic Daily Intake (CDI in mg/kg-day) = CA x InR x ET x EF x ED x 1/BW x 1/AT
				InR	Inhalation Rate	3.2	m^3/hour	USEPA, 1997, Table 5-23, Adult, Heavy Activity	
				ET	Exposure Time	8	hours/day	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.13b.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Surface Sedime	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Sediment	0.000001	kg/mg	Unit Conversion	
				IR	Ingestion Rate of Sediment	330	mg/day	USEPA 2002; Exhibit 1-2	
				FI	Fraction Ingested from Sediment	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Surface Sedime	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Sediment	0.000001	kg/mg	Unit Conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2/day	USEPA 2002; Exhibit 1-2	
				AF	Sediment to Skin Adherence Factor	0.9	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
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USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.13c.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.03	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CF
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	Where DA_{event} (Organics) =
				EV	Event Frequency	1	event/day	Best Professional Judgment	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τ event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) = $DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-N	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Construction Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.03	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.13c.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Construction Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CFw	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CF
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	Where DA_{event} (Organics) =
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	$\text{If } t_{event} > t^*, \text{then} DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				τ event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 (RAGS A) presents an incidental ingestion rate of 0.05 L/hr for a swimmer. For a non-swimmer, the RME incidental ingestion rate has been estimated to be lower, a value of 0.03 L.hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.14.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA, 2002; Exhibit 1-2	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA, 2004 Exhibit 3-5, value half way between child SSA (2,800 cm^2) and adult SSA (5700 cm^2)	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	42	days/year	See Attachment C1 (Honeywell, 2008); Comment 12	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.14.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	42	days/year	Best Professional Judgment	
				ED	Exposure Duration	30	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA 1989, Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"
NYSDEC. 2002. Onondaga Lake Human Health Risk Assessment. Division of Environmental Remediation. Albany, New York.
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1997. Exposure Factors Handbook - Volume 1 General Factors. USEPA Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fc.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.15a.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 2002, Exhibit 1-2, indoor com./indust. worker	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	188	days/year	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	25	years	USEPA, 1991; Attachment B	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2004; Exhibit 3-5	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA 2004; Section 3.2.2.3	
				EF	Exposure Frequency	188	days/year	BPJ, assumes 250 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	25	years	USEPA, 1991; Attachment B	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	9125	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
BPJ - Best Professional Judgment

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.15b.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2002, Exhibit 1-2	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Inhalation	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CA	Chemical Concentration in Air	RAGS Table 3 Series	mg/m^3	RAGS Table 3 Series	Chronic Daily Intake (CDI in mg/kg-day) = CA x InR x ET x EF x ED x 1/BW x 1/AT
				InR	Inhalation Rate	3.2	m^3/hour	USEPA, 1997, Table 5-23, Adult, Heavy Activity	
				ET	Exposure Time	8	hours/day	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.15b.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Surface Sedimer	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Sediment	0.000001	kg/mg	Unit Conversion	
				IR	Ingestion Rate of Sediment	330	mg/day	USEPA 2002; Exhibit 1-2	
				FI	Fraction Ingested from Sediment	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Surface Sedimer	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Sediment	0.000001	kg/mg	Unit Conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2/day	USEPA 2002; Exhibit 1-2	
				AF	Sediment to Skin Adherence Factor	0.9	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 1997. Exposure Factors Handbook - Volume 1 General Factors. USEPA Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fc.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.15c. RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.03	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CF
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	Where DA_{event} (Organics) =
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EV	Event Frequency	1	event/day	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τ event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) = $DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-N	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Construction Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.03	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.15c. RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Construction Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CFw	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CF
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2002; Exhibit 1-2	Where DA_{event} (Organics) =
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{}}$
				ED	Exposure Duration	1	years	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	$\text{If } t_{event} > t^*, \text{then} DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				tevent	Event Duration	8	hr/event	USEPA, 2004; Exhibit 3-2	
				τ event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) = $DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 (RAGS A) presents an incidental ingestion rate of 0.05 L/hr for a swimmer. For a non-swimmer, the RME incidental ingestion rate has been estimated to be lower, a value of 0.03 L.hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
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USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.16.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
HYPOTHETICAL DRINKING WATER SOURCE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: All Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Resident (hypothetical)	Adult	Drinking Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	CW x CF x IR x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Drinkable Water	2	L/day	USEPA, 1991	
				EF	Exposure Frequency	350	days/year	USEPA 2004, Exhibit 3-2	
				ED	Exposure Duration	30	years	USEPA 2004, Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	10950	days	USEPA, 1989; Exhibits 6-11 through 6-16	
		Younger Child	Drinking Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
		Ages < 6		CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	CW x CF x IR x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Drinkable Water	1	L/day	USEPA 2006, Table 4-1	
				EF	Exposure Frequency	350	days/year	USEPA 2004, Exhibit 3-2	
				ED	Exposure Duration	6	years	USEPA 2004, Exhibit 3-2	
				BW	Body Weight	15	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	2190	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005. July 2004.
USEPA. 2006. Child-Specific Exposure Factors Handbook (External Draft). EPA/600/R/-6/096A. September.

TABLE 4.16 RME Supplement A
VALUES USED FOR DAILY INTAKE CALCULATIONS (mutagenic mode of action)
REASONABLE MAXIMUM EXPOSURE - HYPOTHETICAL DRINKING WATER SOURCE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe:	Future
Exposure Areas:	Hypothetical Drinking Water Source
Medium:	Groundwater
Exposure Medium:	All Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	RME Value	Rationale/Reference	Intake Equation/Model Name
Ingestion	Resident	Child	Drinking Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	RAGS Table 3 Series	CDI (mg/kg-day) =
		0 to < 2 years		CF	Unit Conversion Factor for Water	mg/ug	Unit conversion	
				IR-W-Adj (0-<2)	Ingestion Rate of Water, Age-adjusted (0-<2 yrs)	0.22	Calculated (See Report Table 4)	CW x IR-W-Adj (0-<2) x EF x CF x 1/AT
				CF	Unit Conversion Factor for Water	0.001	Unit Conversion	[for child aged 0-<2 years]
				EF	Exposure Frequency	350	USEPA, 2004; Exhibit 3-2	
				AT-C	Averaging Time - Cancer	25550	USEPA 1989, Exhibits 6-11 through 6-16	
		Child	Drinking Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	RAGS Table 3 Series	CDI (mg/kg-day) =
		2 to < 6 years		CF	Unit Conversion Factor for Water	mg/ug	Unit conversion	
				IR-W-Adj (2-<6)	Ingestion Rate of Water, Age-adjusted (2-<6 yrs)	0.37	Calculated (See Report Table 4)	CW x IR-W-Adj (2-<6) x EF x CF x 1/AT
				CF	Unit Conversion Factor for Water	0.001	Unit Conversion	[for child aged 2-<6 years]
				EF	Exposure Frequency	350	USEPA, 2004; Exhibit 3-2	
				AT-C	Averaging Time - Cancer	25550	USEPA 1989, Exhibits 6-11 through 6-16	

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
United States Environmental Protection Agency (USEPA). 2004. Risk Assessment Guidance for Superfund (RAGS), Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005. July 2004.

TABLE 4.16 RME Supplement B
AGE-DEPENDENT ADJUSTMENT FACTOR - EXPOSURE PARAMETERS
HONEYWELL WILLIS AVENUE CHLOROBENZENE SITE - GEDDES, NEW YORK

UNADJUSTED EXPOSURE PARAMETERS					AGE-ADJUSTED EXPOSURE PARAMETERS	
AGE (year)	ED (years)	EV (events/day)	BW [1] (kg)	WATER IR-W [2] (L/day)	AGE GROUP	RME IR-W-Adj (liter-yr/day-kg)
0	1	1	9.1	0.76	0-<2 yrs	0.22
1	1	1	11.3	1.5		
2	1	1	13.3	1.5	2-<6 yrs	0.37
3	1	1	15.3	1.5		
4	1	1	17.4	1.5		
5	1	1	19.7	1.5		
6	1	1	22.6	1.5		
7	1	1	24.9	1.5		
8	1	1	28.1	1.5		
9	1	1	31.5	1.5		
10	1	1	36.3	1.5		
11	1	1	41.1	2		
12	1	1	45.3	2		
13	1	1	50.4	2		
14	1	1	56	2		
15	1	1	58.1	2		
16	1	1	62.6	2		
17	1	1	63.2	2		

Equation: Age-Adjusted Ingestion Rate of Water IR-W-Adj (liter-yr/day-kg)
$\sum$ (ED * IR-W) / BW

Footnotes:
[1] EPA 1997. Exposure Factors Handbook. Tables 7-2 (adults) and 7-3 (children), mean. Values are mean of male and and female. Source: National Center of Health Statistics (NCHS) 1987.
[2] EPA 1997. Exposure Factors Handbook. Table 3-30 - Summary of Recommended Drinking Water Intake Rates. 95th Percentile (90th Percentile was used when 95th Percentile is not listed).

ED = Exposure Duration (years)
EV = Event Frequency (events/day)
BW = Body Weight (kg)
IR-W = Ingestion Rate of Water (L/day)

Attachment A
RAGS Table 4 CT Series

TABLE 4.1.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA 1997, Table 4-23, average, child	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-N	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-C	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA 2004, Ehibit 3-5, value inter. between adult & child	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	USEPA 2004, Exhibit 3-5, CT for indust. Worker	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.1.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	
Ingestion	Surveillance worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997, Table 4-23, adult, average	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	5	days/year	USEPA 2004, Exhibit 3-5, CT for indust. Worker, divided by 48 to account for 10 min/day spent out of vehicle on site	
				ED	Exposure Duration	9	years	USEPA 2004, Exhibit 3-5, CT for indust. Worker	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.1.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Surveillance worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	5	days/year	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				ED	Exposure Duration	9	years	USEPA 2004, Exhibit 3-5, CT for indust. Worker	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 1997. Exposure Factors Handbook - Volume 1 General Factors. USEPA Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fc.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.2a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 2002, Exhibit 1-2, indoor com./indust. worker	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	164	days/year	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	9	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2004; Exhibit 3-5	
				AF	Soil to Skin Adherence Factor	0.02	mg/cm^2	USEPA 2004, Exhibit 3-3 as commercial ground keeper	
				EF	Exposure Frequency	164	days/year	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	9	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
BPJ

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USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.2b.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA. 2002; Exhibit 1-2	
				AF	Soil to Skin Adherence Factor	0.1	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Inhalation	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CA	Chemical Concentration in Air	RAGS Table 3 Series	mg/m^3	RAGS Table 3 Series	Chronic Daily Intake (CDI in mg/kg-day) = CA x InR x ET x EF x ED x 1/BW x 1/AT
				InR	Inhalation Rate	1.6	m^3/hour	USEPA, 1997, Table 5-23, Adult, Moderate Activity	
				ET	Exposure Time	8	hours/day	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1997, Table 7-11	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
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USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.2c.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Intermediate Soils (0-20 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult	Intermediate Soils	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
		> 18 years	(0-20 ft)	CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult	Intermediate Soils	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
		> 18 years	(0-20 ft)	CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.2d. CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PLANT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Intermediate Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Intermediate Groundwater (0-20 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.01	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Intermediate Groundwater (0-20 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CFw	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CT
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-2 & B-3	Where DA_{event} (Organics) =
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				EV	Event Frequency	1	event/day	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1 + 3B + 3B^2}{(1+B)^2} \right) \right]$
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τevent	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the K_P of a compound through the stratum corneum relative to its K_P across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) =
									$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 (RAGS A) presents an incidential ingestion rate of 0.05 L/hr for a swimmer. For a non-simmwer, the RME incidential ingestion rate has been estimated to be lower, a value of 0.03 L/hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.
For the CT scenario, an incidental ingestion rate of 0.01 L/day was used based on the data from USEPA 1989 (swimmer incidental ingestion) and Best Professional Judgment.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.3.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	100	mg/day	USEPA 1997, Table 4-23, average, child	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-N	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-C	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA 2004, Ehibit 3-5, value inter. between adult & child	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	USEPA 2004, Exhibit 3-5, CT for indust. Worker	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.3.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	
Ingestion	Surveillance worker	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997, Table 4-23, adult, average	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	5	days/year	USEPA 2004, Exhibit 3-5, CT for indust. Worker, divided by 48 to account for 10 min/day spent out of vehicle on site	
				ED	Exposure Duration	9	years	USEPA 2004, Exhibit 3-5, CT for indust. Worker	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.3.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Surveillance worker	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	219	days/year	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				ED	Exposure Duration	9	years	USEPA 2004, Exhibit 3-5, CT for indust. Worker	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
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USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
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USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.4a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 2002, Exhibit 1-2, indoor com./indust. worker	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	164	days/year	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	9	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2004; Exhibit 3-5	
				AF	Soil to Skin Adherence Factor	0.02	mg/cm^2	USEPA 2004, Exhibit 3-3 as commercial ground keeper	
				EF	Exposure Frequency	164	days/year	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	9	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
BPJ - Best Professional Judgment

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USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.4b.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA. 2002; Exhibit 1-2	
				AF	Soil to Skin Adherence Factor	0.1	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Inhalation	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CA	Chemical Concentration in Air	RAGS Table 3 Series	mg/m^3	RAGS Table 3 Series	Chronic Daily Intake (CDI in mg/kg-day) = CA x InR x ET x EF x ED x 1/BW x 1/AT
				InR	Inhalation Rate	1.6	m^3/hour	USEPA, 1997, Table 5-23, Adult, Moderate Activity	
				ET	Exposure Time	8	hours/day	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1997, Table 7-11	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
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USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.4c.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Intermediate Soils (0-20 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Intermediate Soils (0-20 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Intermediate Soils (0-20 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.4d. CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
ON-SITE DITCHES
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Intermediate Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Intermediate Groundwater (0-20 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.01	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Intermediate Groundwater (0-20 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CFw	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CF
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-2 & B-3	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	Where DA_{event} (Organics) =
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				ED	Exposure Duration	1	years	USEPA, 1991	
				EV	Event Frequency	1	event/day	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τevent	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the K_P of a compound through the stratum corneum relative to its K_P across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) =
									$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 (RAGS A) presents an incidential ingestion rate of 0.05 L/hr for a swimmer. For a non-simmwer, the RME incidential ingestion rate has been estimated to be lower, a value of 0.03 L/hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.
For the CT scenario, an incidental ingestion rate of 0.01 L/day was used based on the data from USEPA 1989 (swimmer incidental ingestion) and Best Professional Judgment.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.5.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA 1997, Table 4-23, average, child	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-N	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-C	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA 2004, Ehibit 3-5, value inter. between adult & child	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	USEPA 2004, Exhibit 3-5, CT for indust. Worker	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.5.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	
Ingestion	Surveillance worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997, Table 4-23, adult, average	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	5	days/year	USEPA 2004, Exhibit 3-5, CT for indust. Worker, divided by 48 to account for 10 min/day spent out of vehicle on site	
				ED	Exposure Duration	9	years	USEPA 2004, Exhibit 3-5, CT for indust. Worker	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.5.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Surveillance worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				AF	Soil to Skin Adherence Factor	0.3	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	5	days/year	USEPA 2004, Exhibit 3-5, RME for indust. Worker	
				ED	Exposure Duration	9	years	USEPA 2004, Exhibit 3-5, CT for indust. Worker	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
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USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.6a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 2002, Exhibit 1-2, indoor com./indust. worker	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	164	days/year	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	9	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2004; Exhibit 3-5	
				AF	Soil to Skin Adherence Factor	0.02	mg/cm^2	USEPA 2004, Exhibit 3-3 as commercial ground keeper	
				EF	Exposure Frequency	164	days/year	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	9	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
BPJ - Best Professional Judgment

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.6b.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA. 2002; Exhibit 1-2	
				AF	Soil to Skin Adherence Factor	0.1	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Inhalation	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CA	Chemical Concentration in Air	RAGS Table 3 Series	mg/m^3	RAGS Table 3 Series	Chronic Daily Intake (CDI in mg/kg-day) =
				InR	Inhalation Rate	1.6	m^3/hour	USEPA, 1997, Table 5-23, Adult, Moderate Activity	CA x InR x ET x EF x ED x 1/BW x 1/AT
				ET	Exposure Time	8	hours/day	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1997, Table 7-11	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
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USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.6c.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Intermediate Soils (0-20 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Intermediate Soil (0-20 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Intermediate Soils (0-20 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.6d. CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
FORMER CHLORINATION BUILDING
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Intermediate Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Intermediate Groundwater (0-20 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.01	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Intermediate Groundwater (0-20 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CFw	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CF
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-2 & B-3	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	Where DA_{event} (Organics) =
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				ED	Exposure Duration	1	years	USEPA, 1991	
				EV	Event Frequency	1	event/day	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τevent	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the K_P of a compound through the stratum corneum relative to its K_P across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) =
									$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 (RAGS A) presents an incidential ingestion rate of 0.05 L/hr for a swimmer. For a non-simmwer, the RME incidential ingestion rate has been estimated to be lower, a value of 0.03 L/hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.
For the CT scenario, an incidental ingestion rate of 0.01 L/day was used based on the data from USEPA 1989 (swimmer incidental ingestion) and Best Professional Judgment.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.7.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA 1997, Table 4-23, average, child	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA 2004, Ehibit 3-5, value inter. between adult & child	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.7.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"

NYSDEC. 2002. Onondaga Lake Human Health Risk Assessment. Division of Environmental Remediation. Albany, New York.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.

USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.

USEPA. 1997. Exposure Factors Handbook - Volume 1 General Factors. USEPA Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fc.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.

USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.8a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 2002, Exhibit 1-2, indoor com./indust. worker	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	164	days/year	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	9	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Industrial Worker	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2004; Exhibit 3-5	
				AF	Soil to Skin Adherence Factor	0.02	mg/cm^2	USEPA 2004, Exhibit 3-3 as commercial grounds keeper	
				EF	Exposure Frequency	164	days/year	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	9	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
BPJ - Best Professional Judgment

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.8b.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2002; Exhibit 1-2	
				AF	Soil to Skin Adherence Factor	0.1	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Inhalation	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CA	Chemical Concentration in Air	RAGS Table 3 Series	mg/m^3	RAGS Table 3 Series	Chronic Daily Intake (CDI in mg/kg-day) = CA x InR x ET x EF x ED x 1/BW x 1/AT
				InR	Inhalation Rate	1.6	m^3/hour	USEPA, 1997, Table 5-23, Adult, Moderate Activity	
				ET	Exposure Time	8	hours/day	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 1997. Exposure Factors Handbook - Volume 1 General Factors. USEPA Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fc.
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USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.9a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent age 7 to <16 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA 1997, Table 4-23, average, child	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	NYSDEC, 2008b	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent age 7 to <16 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA 2004, Ehibit 3-5, value inter. between adult & child	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	32	days/year	NYSDEC, 2008b	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.9a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	
Ingestion	Transient	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	100	mg/day	USEPA, 2002; Exhibit 1-2	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	2	days/year	NYSDEC, 2004	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Transient	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2	USEPA 2004, Ehibit 3-5, adult resident	
				AF	Soil to Skin Adherence Factor	0.01	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential grounds keeper	
				EF	Exposure Frequency	2	days/year	NYSDEC, 2004	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.

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USEPA. 1997. Exposure Factors Handbook - Volume 1 General Factors. USEPA Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fc.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.

USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.9b.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.10a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
LAKESHORE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	100	mg/day	USEPA 1997, Table 4-23, average, child	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA 2004, Ehibit 3-5, value inter. between adult & child	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.10a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
LAKESHORE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x SA x ABS x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 1997. Exposure Factors Handbook - Volume 1 General Factors. USEPA Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fc.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.10b.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
LAKESHORE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.10c.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
LAKESHORE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.01	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CFw	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DAevent x EV x ED x EF x SA x 1/BW x 1/AT x CF
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	Where DAevent (Organics) =
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				EV	Event Frequency	1	event/day	Best Professional Judgment	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				τevent	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DAevent (Inorganics) =
									$DA_{event} = K_P \times C_W \times t_{event}$
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 (RAGS A) presents an incidential ingestion rate of 0.05 L/hr for a swimmer. For a non-simmwer, the RME incidential ingestion rate has been estimated to be lower, a value of 0.03 L.hr for 1 hr/day, resulting in an ingestion
For the CT scenario, an incidental ingestion rate of 0.01 L/day was used based on the data from USEPA 1989 (swimmer incidental ingestion) and Best Professional Judgment.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.11a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.01	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	CW x CF xIR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	9	years	USEPA, 1989; Exhibit 6-12	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CF
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	
				SA	Skin Surface Area	4250	cm^2	USEPA 2004, Ehibit 3-5, value inter. between adult & child	Where DA_{event} (Organics) =
				EV	Event Frequency	1	event/day	Best Professional Judgment	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	USEPA, 1989; Exhibit 6-13	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	$\text{If } t_{event} > t^*, \text{then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				t_{event}	Event Duration	2	hr/event	Honeywell, 2004	
				*t*event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) = $DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.01	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.11a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult > 18 years	Surface Water	CW	Chemical Concentration in Water	See Table 3	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit Conversion	DA_{event} x CF x EV x ED x EF x SA x 1/BW x 1/AT x CF
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA 2004, Exhibits B-3 & B-4	
				SA	Skin Surface Area	5700	cm^2	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	Where DA_{event} (Organics) =
				EV	Event Frequency	1	event/day	USEPA 2004, Exhibit A-9	$\text{If } t_{event} \le t^*, \text{then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	$\text{If } t_{event} > t^*, \text{then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA 2004, Exhibits B-3 & B-4	
				t_{event}	Event Duration	2	hr/event	Best Professional Judgment	
				τevent	Lag Time Per Event	Chemical Specific	hr/event	USEPA 2004, Exhibits B-3 & B-4	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA 2004, Exhibits B-3 & B-4	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA 2004, Exhibits B-3 & B-4	Where DA_{event} (Inorganics) = $DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	
Ingestion	Utility Worker	Adult > 18 years	Surface Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.01	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.11a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Utility Worker	Adult > 18 years	Surface Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) = DA_{event} x CF x EV x ED x EF x SA x 1/BW x 1/AT x CF
				CF	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	Where DA_{event} (Organics) =
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EV	Event Frequency	1	event/day	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				τ_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τevent	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) =
									$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-N	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 (RAGS A) presents an incidential ingestion rate of 0.05 L/hr for a swimmer. For a non-simmwer, the RME incidential ingestion rate has been estimated to be lower, a value of 0.03 L.hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.
For the CT scenario, an incidental ingestion rate of 0.01 L/day was used based on the data from USEPA 1989 (swimmer incidental ingestion) and Best Professional Judgment.
Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
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USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.11b.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Sediment (0-1 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Sediment	100	mg/day	USEPA 1997, Table 4-23, average, child	
				FI	Fraction Ingested from Sediment	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Sediment (0-1 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA 2004, Ehibit 3-5, value inter. between adult & child	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Trespasser	Adult > 18 years	Surface Sediment (0-1 ft)	CS	Chemical Concentration in Surface Sediment	See Table 3	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Sediment	0.000001	kg/mg	Unit Conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Sediment	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Sediment	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	

TABLE 4.11b.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Trespasser	Adult > 18 years	Surface Sediment (0-1 ft)	CS	Chemical Concentration in Surface Sediment	See Table 3	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Sediment	0.000001	kg/mg	Unit Conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Sediment to Skin Adherence Factor	0.15	mg/cm2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"

NYSDEC. 2002. Onondaga Lake Human Health Risk Assessment. Division of Environmental Remediation. Albany, New York.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.

USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.

USEPA. 1997. Exposure Factors Handbook - Volume 1 General Factors. USEPA Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fc.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.

USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.11c.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
TRIBUTARY 5A
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility	Adult	Upper Sediment	CS	Chemical Concentration in Surface Sediment	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
	Worker	> 18 years	(0-10ft)	CF	Unit Conversion Factor for Sediment	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Sediment	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Sediment	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility	Adult	Upper Sediment	CS	Chemical Concentration in Surface Sediment	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
	Worker	> 18 years	(0-10ft)	CF	Unit Conversion Factor for Sediment	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Sediment to Skin Adherence Factor	0.2	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.12.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	100	mg/day	USEPA 1997, Table 4-23, average, child	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA 2004, Ehibit 3-5, value inter. between adult & child	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.12.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"

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TABLE 4.13a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 2002, Exhibit 1-2, indoor com./indust. worker	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	164	days/year	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	9	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2004; Exhibit 3-5	
				AF	Soil to Skin Adherence Factor	0.02	mg/cm^2	USEPA 2004, Exhibit 3-3 as commercial grounds keeper	
				EF	Exposure Frequency	164	days/year	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	9	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
BPJ - Best Professional Judgment

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
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USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.13b.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2002: Exhibit 1-2	
				AF	Soil to Skin Adherence Factor	0.1	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Inhalation	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CA	Chemical Concentration in Air	RAGS Table 3 Series	mg/m^3	RAGS Table 3 Series	Chronic Daily Intake (CDI in mg/kg-day) = CA x InR x ET x EF x ED x 1/BW x 1/AT
				InR	Inhalation Rate	1.6	m^3/hour	USEPA, 1997, Table 5-23, Adult, Moderate Activity	
				ET	Exposure Time	8	hours/day	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991; Attachment B	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.13b.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 1997. Exposure Factors Handbook - Volume 1 General Factors. USEPA Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fc.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
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TABLE 4.13c.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.01	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CFw	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CF
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	Where DA_{event} (Organics) =
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				ED	Exposure Duration	1	years	USEPA, 1991	
				EV	Event Frequency	1	event/day	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				τ_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τ event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) =
									$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Construction Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.01	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.13c.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
PETROLEUM STORAGE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Construction Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CFw	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	Where DA_{event} (Organics) =
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{}}$
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τ event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) =
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	$DA_{event} = K_P \times C_W \times t_{event}$
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 (RAGS A) presents an incidental ingestion rate of 0.05 L/hr for a swimmer. For a non-swimmer, the RME incidental ingestion rate has been estimated to be lower, a value of 0.03 L.hr for 1 hr/day, resulting in an ingestion
For the CT scenario, an incidental ingestion rate of 0.01 L/day was used based on the data from USEPA 1989 (swimmer incidental ingestion) and Best Professional Judgment.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
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USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.14.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	100	mg/day	USEPA 1997, Table 4-23, average, child	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adolescent Age 7 to <16 Years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	4250	cm^2	USEPA, 1997; Table 6-16, 95th percentile	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3, as residential gardener	
				EF	Exposure Frequency	32	days/year	See Attachment C1 (Honeywell, 2008)	
				ED	Exposure Duration	9	years	NYSDEC, 2004	
				BW	Body Weight	45	kg	USEPA 1997, Table 7-3	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.14.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Trespasser	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 1997; Table 4-23	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	
Dermal	Trespasser	Adult	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	Dermally Absorbed Dose (DAD, mg/kg-day) =
		> 18 years		CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit Conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	5700	cm^2/day	USEPA 2004, Exhibit C-1; NYSDEC 2002, Onondaga Lake HHRA	
				AF	Soil to Skin Adherence Factor	0.15	mg/cm^2	USEPA, 2004; Exhibit 3-3	
				EF	Exposure Frequency	32	days/year	Best Professional Judgment	
				ED	Exposure Duration	9	years	USEPA, 2004; Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA 1989, Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA 1989, Exhibits 6-11 through 6-16	

Footnotes:

Honeywell 2008, Response to NYSDEC's Sept. 22, 2008 "Comments on 'Willis Avenue Chlorobenzene Site HHRA RAGS Tables 1,2, and 4"
NYSDEC. 2002. Onondaga Lake Human Health Risk Assessment. Division of Environmental Remediation. Albany, New York.
NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
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TABLE 4.15a.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Surface Soils (0-2 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				IR	Ingestion Rate of Soil	50	mg/day	USEPA 2002, Exhibit 1-2, indoor com./indust. worker	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	164	days/year	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	9	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Industrial Worker	Adult > 18 years	Surface Soils (0-2 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2004; Exhibit 3-5	
				AF	Soil to Skin Adherence Factor	0.02	mg/cm^2	USEPA 2004, Exhibit 3-3 as commercial grounds keeper	
				EF	Exposure Frequency	164	days/year	BPJ, assumes 219 (USEPA 2004, Exhibit 3-5) working days X 25% snow cover.	
				ED	Exposure Duration	9	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
BPJ - Best Professional Judgment

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.15b.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2002, Exhibit 1-2	
				AF	Soil to Skin Adherence Factor	0.1	mg/cm^2	USEPA, 2004; Exhibit 3-3, as construction worker	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Inhalation	Construction Worker	Adult > 18 years	Upper Soils (0-10 ft)	CA	Chemical Concentration in Air	RAGS Table 3 Series	mg/m^3	RAGS Table 3 Series	Chronic Daily Intake (CDI in mg/kg-day) = CA x InR x ET x EF x ED x 1/BW x 1/AT
				InR	Inhalation Rate	1.6	m^3/hour	USEPA, 1997, Table 5-23, Adult, Moderate Activity	
				ET	Exposure Time	8	hours/day	Best Professional Judgment	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.15b.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Upper Soils (0-10 ft)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	CDI (mg/kg-day) = CS x CF x IR x FI x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				IR	Ingestion Rate of Soil	330	mg/day	USEPA, 2002; Section 5.3.2.	
				FI	Fraction Ingested from Soil	1	unitless	Best Professional Judgment	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Upper Soils (0-10 ft)	CS	Chemical Concentration in Soil	RAGS Table 3 Series	mg/kg	RAGS Table 3 Series	DAD (mg/kg-day) = CS x CF x ABS x SA x AF x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Soil	0.000001	kg/mg	Unit conversion	
				ABS	Dermal Absorption Factor	Chemical Specific	unitless	USEPA, 2004; Exhibit 3-4	
				SA	Skin Surface Area	3300	cm^2	USEPA 2002, Exhibit 1-2, construction worker	
				AF	Soil to Skin Adherence Factor	0.2	mg/cm^2	USEPA, 2004; Exhibit 3-3, as utility worker	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 1997. Exposure Factors Handbook - Volume 1 General Factors. USEPA Office of Research and Development, Washington, D.C. EPA/600/P-95/002Fc.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.15c. CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Utility Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.01	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Dermal	Utility Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CF
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2002; Exhibit 1-2	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				EF	Exposure Frequency	75	days/year	NYSDEC, 2004	
				ED	Exposure Duration	1	years	USEPA, 1991	
				EV	Event Frequency	1	event/day	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	8	hr/event	Best Professional Judgment	
				τ event	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) = $DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	
Ingestion	Construction Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) =
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Water	0.01	L/day	USEPA 1989; Section 6.6.1*	
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	CW x CF x IR x EF x ED x 1/BW x 1/AT
				ED	Exposure Duration	1	years	USEPA, 1991	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

TABLE 4.15c. CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
CHLOROBENZENE HOT-SPOT AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Dermal	Construction Worker	Adult > 18 years	Shallow Groundwater (0-10 ft)	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	DAD (mg/kg-day) = DA_{event} x EV x ED x EF x SA x 1/BW x 1/AT x CF
				CFw	Unit Conversion Factor for Water	0.000001	mg-L/ug-mL	Unit conversion	
				SA	Skin Surface Area for Dermal Absorption	3300	cm^2	USEPA, 2002; Exhibit 1-2	Where DA_{event} (Organics) =
				EF	Exposure Frequency	100	days/year	NYSDEC, 2004	$\text{If } t_{event} \le t^*, \text{ then } DA_{event} = 2FA \times K_P \times C_W \sqrt{\frac{6\tau_{event} \times t_{event}}{\pi}}$
				ED	Exposure Duration	1	years	USEPA, 1991	
				EV	Event Frequency	1	event/day	Best Professional Judgment	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				K_P	Permeability Constant	Chemical Specific	cm/hr	USEPA, 2004; Exhibits B-3 & B-4	$\text{If } t_{event} > t^*, \text{ then } DA_{event} = FA \times K_P \times C_W \left[\frac{t_{event}}{1+B} + 2\tau_{event} \left(\frac{1+3B+3B^2}{(1+B)^2} \right) \right]$
				FA	Fraction Absorbed	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	
				t_{event}	Event Duration	8	hr/event	USEPA, 2004; Exhibit 3-2	
				τevent	Lag Time Per Event	Chemical Specific	hr/event	USEPA, 2004; Exhibit B-3	
				t*	Time to Reach Steady State	Chemical Specific	hr	USEPA, 2004; Exhibit B-3	
				B	Dimensionless ratio of the KP of a compound through the stratum corneum relative to its KP across the viable epidermis (ve)	Chemical Specific	unitless	USEPA, 2004; Exhibit B-3	Where DA_{event} (Inorganics) =
									$DA_{event} = K_P \times C_W \times t_{event}$
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	365	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
* = Section 6.6.1 of USEPA 1989 (RAGS A) presents an incidental ingestion rate of 0.05 L/hr for a swimmer. For a non-swimmer, the RME incidental ingestion rate has been estimated to be lower, a value of 0.03 L.hr for 1 hr/day, resulting in an ingestion rate of 0.03 L/day.
For the CT scenario, an incidental ingestion rate of 0.01 L/day was used based on the data from USEPA 1989 (swimmer incidental ingestion) and Best Professional Judgment.

NYSDEC. 2004. Electronic mail from Richard Mustico of the NYSDEC to Al Labuz of Honeywell. Regarding comments to the 2002 Revision of the Willis Avenue Chlorobenzene Site HHRA report. New York State Department of Environmental Conservation. July 19, 2004.
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Solid Waste and Emergency Response. OSWER Directive 9355.4-24.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Interim. EPA/540/R/99/005. July 2004.

TABLE 4.16.CT
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
HYPOTHETICAL DRINKING WATER SOURCE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rational/Reference	Intake Equation/Model Name
Ingestion	Resident (hypothetical)	Adult > 18 years	Drinking Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	Chronic Daily Intake (CDI, in mg/kg-day) = CW x CF x IR x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Water	0.001	mg/ug	Unit conversion	
				IR	Ingestion Rate of Drinkable Water	2	L/day	USEPA, 1991	
				EF	Exposure Frequency	350	days/year	USEPA 2004, Exhibit 3-2	
				ED	Exposure Duration	9	years	USEPA 2004, Exhibit 3-2	
				BW	Body Weight	70	kg	USEPA, 1991; Section 2.2	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	3285	days	USEPA, 1989; Exhibits 6-11 through 6-16	
		Younger Child Ages < 6	Drinking Water	CW	Chemical Concentration in Water	RAGS Table 3 Series	ug/L	RAGS Table 3 Series	CDI (mg/kg-day) = CW x CF x IR x EF x ED x 1/BW x 1/AT
				CF	Unit Conversion Factor for Water	0.001	mg-L/ug-mL	Unit conversion	
				IR	Ingestion Rate of Drinkable Water	1	L/day	USEPA 2006, Table 4-1	
				EF	Exposure Frequency	350	days/year	USEPA 2004, Exhibit 3-2	
				ED	Exposure Duration	6	years	USEPA 2004, Exhibit 3-2	
				BW	Body Weight	15	kg	USEPA 1991, Section 6.0 Summary Table	
				AT-C	Averaging Time - Cancer	25550	days	USEPA, 1989; Exhibits 6-11 through 6-16	
				AT-NC	Averaging Time - Non-Cancer	2190	days	USEPA, 1989; Exhibits 6-11 through 6-16	

Footnotes:
United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
USEPA. 1991. Risk Assessment Guidance for Superfund Volume 1, Human Health Supplemental Guidance Standard Default Exposure Factors. OSWER Directive 9285.6-03. March 25, 1991.
USEPA. 2004. Risk Assessment Guidance for Superfund (RAGS), Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005. July 2004.
USEPA. 2006. Child-Specific Exposure Factors Handbook (External Draft). EPA/600/R/-6/096A. September.

TABLE 4.16 CT Supplement A
VALUES USED FOR DAILY INTAKE CALCULATIONS (mutagenic mode of action)
REASONABLE MAXIMUM EXPOSURE - HYPOTHETICAL DRINKING WATER SOURCE AREA
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe:	Future
Exposure Areas:	Hypothetical Drinking Water Source Area
Medium:	Groundwater
Exposure Medium:	All Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Units	CT Value	Rationale/Reference	Intake Equation/Model Name
Ingestion	Resident	Child	Drinking Water	CW	Chemical Concentration in Water	µg/L	See Table 3	RAGS Table 3 Series	CDI (mg/kg-day) =
		0 to < 2 years		IR-W-Adj (0-<2)	Ingestion Rate of Water, Age-adjusted (0-<2 yrs)	L-yr/day-kg	0.22	Calculated (See Report Table 4)	CW x IR-W-Adj (0-<2) x EF x CF x 1/AT
				CF	Unit Conversion Factor for Water	mg/mg	0.001	Unit Conversion	[for child aged 0-<2 years]
				EF	Exposure Frequency	days/year	350	USEPA, 2004; Exhibit 3-2	
				AT-C	Averaging Time - Cancer	days	25550	USEPA 1989, Exhibits 6-11 through 6-16	
		Child	Drinking Water	CW	Chemical Concentration in Water	µg/L	See Table 3	RAGS Table 3 Series	CDI (mg/kg-day) =
		2 to < 6 years		IR-W-Adj (2-<6)	Ingestion Rate of Water, Age-adjusted (2-<6 yrs)	L-yr/day-kg	0.37	Calculated (See Report Table 4)	CW x IR-W-Adj (2-<6) x EF x CF x 1/AT
				CF	Unit Conversion Factor for Water	mg/mg	0.001	Unit Conversion	[for child aged 2-<6 years]
				EF	Exposure Frequency	days/year	350	USEPA, 2004; Exhibit 3-2	
				AT-C	Averaging Time - Cancer	days	25550	USEPA 1989, Exhibits 6-11 through 6-16	

Footnotes:

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1, Human Health Evaluation Manual (Part A). Interim Final. EPA/540/1089/002.
United States Environmental Protection Agency (USEPA). 2004. Risk Assessment Guidance for Superfund (RAGS), Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment) Final. EPA/540/R/99/005. July 2004.

TABLE 4.16 CT Supplement B
AGE-DEPENDENT ADJUSTMENT FACTOR - EXPOSURE PARAMETERS
HONEYWELL WILLIS AVENUE CHLOROBENZENE SITE - GEDDES, NEW YORK

UNADJUSTED EXPOSURE PARAMETERS					AGE-ADJUSTED EXPOSURE PARAMETERS		
AGE (year)	ED (years)	EV (events/day)	BW [1] (kg)	WATER IR-W [2] (L/day)	AGE GROUP	RME IR-W-Adj (liter-yr/day-kg)	CT IR-W-Adj (liter-yr/day-kg)
0	1	1	9.1	0.76	0-<2 yrs	0.22	0.22
1	1	1	11.3	1.5			
2	1	1	13.3	1.5	2-<6 yrs	0.37	0.37
3	1	1	15.3	1.5			
4	1	1	17.4	1.5			
5	1	1	19.7	1.5			
6	1	1	22.6	1.5			
7	1	1	24.9	1.5			
8	1	1	28.1	1.5			
9	1	1	31.5	1.5			
10	1	1	36.3	1.5			
11	1	1	41.1	2			
12	1	1	45.3	2			
13	1	1	50.4	2			
14	1	1	56	2			
15	1	1	58.1	2			
16	1	1	62.6	2			
17	1	1	63.2	2			

Equation: Age-Adjusted Ingestion Rate of Water

IR-W-Adj (liter-yr/day-kg)
$\sum$ (ED * IR-W) / BW

Footnotes:
[1] EPA 1997. Exposure Factors Handbook. Tables 7-2 (adults) and 7-3 (children), mean. Values are mean of male and and female. Source: National Center of Health Statistics (NCHS) 1987.
[2] EPA 1997. Exposure Factors Handbook. Table 3-30 - Summary of Recommended Drinking Water Intake Rates. 95th Percentile (90th Percentile was used when 95th Percentile is not listed).

ED = Exposure Duration (years)
EV = Event Frequency (events/day)
BW = Body Weight (kg)
IR-W = Ingestion Rate of Water (L/day)

Attachment A
RAGS Table 5 Series

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (unitless) (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)/Critical Effect(s) (3)	Combined Uncertainty/Modifying Factors		RfD:Target Organ(s)	
		Value	Units		Value	Units		(Uncertainty)	(Modifying)	Source(s)	Date(s) (MM/DD/YYYY)
DIOXINS											
2,3,7,8-TCDD Equivalent	Chronic	1.0E-09	mg/kg-day	7.0E-01	1.0E-09	mg/kg-day	Developmental effects	9.0E+01	1.0E+00	ATSDR (STSC)	12/1/1998
METALS											
ALUMINUM	Chronic	1.0E+00	mg/kg-day	1.0E+00	1.0E+00	mg/kg-day	Neurotoxicity	1.0E+02	1.0E+00	PPRTV	10/23/2006
ANTIMONY	Chronic	4.0E-04	mg/kg-day	1.5E-01	6.0E-05	mg/kg-day	Longevity (M); Blood glucose (E); Cholesterol (E)	1.0E+03	1.0E+00	IRIS	2/1/2008
ARSENIC	Chronic	3.0E-04	mg/kg-day	9.5E-01	3.0E-04	mg/kg-day	Hyperpigmentation (In); Vascular (V); PNS (N)	3.0E+00	1.0E+00	IRIS	2/1/2008
BARIUM	Chronic	2.0E-01	mg/kg-day	7.0E-02	1.4E-02	mg/kg-day	Humans - none observed (O); Rats - Kidney (R)	3.0E+00	1.0E+00	IRIS	2/1/2008
BERYLLIUM	Chronic	2.0E-03	mg/kg-day	7.0E-03	1.4E-05	mg/kg-day	Small intestinal lesions	3.0E+02	1.0E+00	IRIS	2/1/2008
CADMIUM	Chronic	1.0E-03	mg/kg-day	2.5E-02	2.5E-05	mg/kg-day	Renal (R); Significant Proteinuria	1.0E+01	1.0E+00	IRIS	2/1/2008
CHROMIUM[a]	Chronic	3.0E-03	mg/kg-day	2.5E-02	7.5E-05	mg/kg-day	None Reported (O)	3.0E+02	3.0E+00	IRIS (chromium VI as surrogate)	2/1/2008
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	Chronic	4.0E-02	mg/kg-day	1.0E+00	4.0E-02	mg/kg-day	Gastrointestinal effects	1.0E+00	1.0E+00	HEAST (STSC)	6/19/1997
CYANIDE	Chronic	2.0E-02	mg/kg-day	1.0E+00	2.0E-02	mg/kg-day	Weight loss, thyroid effects, myelin degeneration	1.0E+02	5.0E+00	IRIS	2/1/2008
IRON	Chronic	7.0E-01	mg/kg-day	1.0E+00	7.0E-01	mg/kg-day	Gastrointestinal effects	2.0E+00	1.0E+00	PPRTV	9/11/2006
LEAD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	Chronic	1.4E-01	mg/kg-day	4.0E-02	5.6E-03	mg/kg-day	CNS (N)	1.0E+00	1.0E+00	IRIS	2/1/2008
MERCURY	Chronic	3.0E-04	mg/kg-day	7.0E-02	2.1E-05	mg/kg-day	Autoimmune effects	1.0E+03	1.0E+00	IRIS (mercuric chloride)	5/1/1995
METHYL MERCURY	Chronic	1.0E-04	mg/kg-day	1.0E+00	1.0E-04	mg/kg-day	Developmental neuropsychological impairment (N)	1.0E+01	1.0E+00	IRIS	7/7/2001
NICKEL	Chronic	2.0E-02	mg/kg-day	4.0E-02	8.0E-04	mg/kg-day	Decreased body and organ weight (W)	3.0E+02	1.0E+00	IRIS	2/1/2008
SELENIUM	Chronic	5.0E-03	mg/kg-day	8.0E-01	5.0E-03	mg/kg-day	Clinical selenosis	3.0E+00	1.0E+00	IRIS	2/1/2008
SILVER	Chronic	5.0E-03	mg/kg-day	4.0E-02	2.0E-04	mg/kg-day	Argyria (In)	3.0E+00	1.0E+00	IRIS	2/1/2008
VANADIUM	Chronic	9.0E-03	mg/kg-day	2.6E-02	2.3E-04	mg/kg-day	Decreased hair cystine	1.0E+02	1.0E+00	IRIS (Vanadium pentoxide as surrogate)	2/1/2008
ZINC	Chronic	3.0E-01	mg/kg-day	1.0E+00	3.0E-01	mg/kg-day	Decreased ESOD (B)	3.0E+00	1.0E+00	IRIS	2/1/2008
PCBs											
LESS CHLORINATED[b]	Chronic	7.0E-05	mg/kg-day	9.6E-01	7.0E-05	mg/kg-day	Reduced birth weights (W)	1.0E+02	1.0E+00	IRIS	2/1/2008
HIGHLY CHLORINATED[c]	Chronic	2.0E-05	mg/kg-day	9.6E-01	2.0E-05	mg/kg-day	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	3.0E+02	1.0E+00	IRIS	2/1/2008
PESTICIDES											
ALDRIN	Chronic	3.0E-05	mg/kg-day	1.0E+00	3.0E-05	mg/kg-day	Liver toxicity (H)	1.0E+03	1.0E+00	IRIS	2/1/2008
DELTA-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIELDRIN	Chronic	5.0E-05	mg/kg-day	1.0E+00	5.0E-05	mg/kg-day	Hepatic (H)	1.0E+02	1.0E+00	IRIS	2/1/2008
ENDOSULFAN I	Chronic	6.0E-03	mg/kg-day	1.0E+00	6.0E-03	mg/kg-day	Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	1.0E+02	1.0E+00	IRIS (Endosulfan as surrogate)	2/1/2008
HEPTACHLOR	Chronic	5.0E-04	mg/kg-day	1.0E+00	5.0E-04	mg/kg-day	Liver weight increase	3.0E+02	1.0E+00	IRIS	1/16/2008

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (unitless) (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)/Critical Effect(s) (3)	Combined Uncertainty/Modifying Factors		RfD:Target Organ(s)	
		Value	Units		Value	Units		(Uncertainty)	(Modifying)	Source(s)	Date(s) (MM/DD/YYYY)
SVOCs											
2,4,6-TRICHLOROPHENOL	Chronic	1.0E-03	mg/kg-day	1.0E+00	1.0E-03	mg/kg-day	No adverse effects observed (O)	3.0E+03	1.0E+00	PPRTV	2/21/2007
2,4-DICHLOROPHENOL	Chronic	3.0E-03	mg/kg-day	1.0E+00	3.0E-03	mg/kg-day	Decreased delayed hypersensitivity response (O)	1.0E+02	1.0E+00	IRIS	2/1/2008
2-CHLOROPHENOL	Chronic	5.0E-03	mg/kg-day	1.0E+00	5.0E-03	mg/kg-day	Reproductive efforts	1.0E+03	1.0E+00	IRIS	2/1/2008
2-METHYLNAPHTHALENE	Chronic	4.0E-03	mg/kg-day	1.0E+00	4.0E-03	mg/kg-day	Pulmonary alveolar proteinosis	1.0E+03	1.0E+00	IRIS	2/1/2008
2-NITROPHENOL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	Chronic	3.0E-02	mg/kg-day	1.0E+00	3.0E-02	mg/kg-day	Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.0E+03	1.0E+00	IRIS (Pyrene used as surrogate)	2/1/2008
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	Chronic	2.0E-02	mg/kg-day	1.0E+00	2.0E-02	mg/kg-day	Increased relative liver weight (H)	1.0E+03	1.0E+00	IRIS	2/1/2008
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZOFURAN	Chronic	1.0E-03	mg/kg-day	1.0E+00	1.0E-03	mg/kg-day	Reduced length and organ weight. Excess abdominal fat (O).	1.0E+04	1.0E+00	PPRTV	6/11/2007
HEXACHLOROBENZENE	Chronic	8.0E-04	mg/kg-day	1.0E+00	8.0E-04	mg/kg-day	Hepatic (H)	1.0E+02	1.0E+00	IRIS	2/1/2008
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	Chronic	2.0E-02	mg/kg-day	8.9E-01	2.0E-02	mg/kg-day	Decreased body weight (W)	3.0E+03	1.0E+00	IRIS	2/1/2008
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	Chronic	3.0E-02	mg/kg-day	7.6E-01	3.0E-02	mg/kg-day	Liver (H) and kidney (R) pathology	1.0E+02	1.0E+00	IRIS	2/1/2008
PHENANTHRENE*	Chronic	3.0E-02	mg/kg-day	1.0E+00	3.0E-02	mg/kg-day	Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.0E+03	1.0E+00	IRIS (Pyrene used as surrogate)	2/1/2008
VOCs											
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	Chronic	1.0E-02	mg/kg-day	1.0E+00	1.0E-02	mg/kg-day	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.0E+03	1.0E+00	IRIS	2/1/2008
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	Chronic	9.0E-02	mg/kg-day	1.0E+00	9.0E-02	mg/kg-day	No adverse effects observed (O)	1.0E+03	1.0E+00	IRIS	2/1/2008
1,2-DICHLOROETHANE	Chronic	2.0E-02	mg/kg-day	NA	NA	NA	Cardiac arrhythmia, bronchitis, central nervous system depression, and injury to the liver, kidneys, and gastrointestinal tract	3.0E+03	1.0E+00	PPRTV	10/31/2002
1,2-DICHLOROPROPANE	Chronic	9.0E-02	mg/kg-day	1.0E+00	9.0E-02	mg/kg-day	Liver (H)	1.0E+03	1.0E+00	ATSDR (STSC)	12/1/1989
1,3,5-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	Chronic	7.0E-02	mg/kg-day	1.0E+00	7.0E-02	mg/kg-day	Liver	1.0E+02	1.0E+00	ATSDR (STSC)	7/1/2006
ACETONE	Chronic	9.0E-01	mg/kg-day	1.0E+00	9.0E-01	mg/kg-day	Nephropathy	1.0E+03	1.0E+00	IRIS	2/1/2008
BENZENE	Chronic	4.0E-03	mg/kg-day	1.0E+00	4.0E-03	mg/kg-day	Reduced lymphocyte count	3.0E+02	1.0E+00	IRIS	2/1/2008
BROMODICHLOROMETHANE	Chronic	2.0E-02	mg/kg-day	1.0E+00	2.0E-02	mg/kg-day	Renal cytomegaly (R)	1.0E+03	1.0E+00	IRIS	2/1/2008
CARBON DISULFIDE	Chronic	1.0E-01	mg/kg-day	1.0E+00	1.0E-01	mg/kg-day	Fetal toxicity/malformations	1.0E+02	1.0E+00	IRIS	2/1/2008
CHLOROBENZENE	Chronic	2.0E-02	mg/kg-day	1.0E+00	2.0E-02	mg/kg-day	Histopathologic changes in liver	1.0E+03	1.0E+00	IRIS	2/1/2008
CHLOROFORM	Chronic	1.0E-02	mg/kg-day	1.0E+00	1.0E-02	mg/kg-day	Moderate/marked fatty cyst formation in the liver and elevated SGPT	1.0E+03	1.0E+00	IRIS	2/1/2008
ETHYLBENZENE	Chronic	1.0E-01	mg/kg-day	1.0E+00	1.0E-01	mg/kg-day	Liver (H) and kidney (R) toxicity	1.0E+03	1.0E+00	IRIS	2/1/2008
METHYLENE CHLORIDE	Chronic	6.0E-02	mg/kg-day	1.0E+00	6.0E-02	mg/kg-day	Liver toxicity (H)	1.0E+02	1.0E+00	IRIS	2/1/2008
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	Chronic	1.0E-02	mg/kg-day	1.0E+00	1.0E-02	mg/kg-day	Hepatotoxicity in mice (H), weight gain in rats	1.0E+03	1.0E+00	IRIS	2/1/2008

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (unitless) (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)/Critical Effect(s) (3)	Combined Uncertainty/Modifying Factors		RfD:Target Organ(s)	
		Value	Units		Value	Units		(Uncertainty)	(Modifying)	Source(s)	Date(s) (MM/DD/YYYY)
TOLUENE	Chronic	8.0E-02	mg/kg-day	1.0E+00	8.0E-02	mg/kg-day	Increased kidney weight (R)	3.0E+03	1.0E+00	IRIS	2/1/2008
TRICHLOROETHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
XYLENES, TOTAL	Chronic	2.0E-01	mg/kg-day	1.0E+00	2.0E-01	mg/kg-day	Decreased body weight (W), increased mortality (M)	1.0E+03	1.0E+00	IRIS	2/1/2008

Notes:

(1) Oral Absorption Efficiency from Exhibit 4-1 of USEPA (2004) RAGS Part E. For constituents not listed in Exhibit 4-1, an absorption efficiency of 1 is assumed. For constituents with absorption efficiencies in Exhibit 4-1, the highest value is reported.

(2) For Oral Absorption Efficiency for Dermal < 0.5, Absorbed RfD for Dermal = Oral RfD * Oral Absorption Efficiency for Dermal; otherwise, Absorbed RfD for Dermal = Oral RfD (USEPA 2004 RAGS Part E, Exhibit 4-1).

(3) Codes for Effects Endpoints: B - Hematological/Blood effect; E - Endocrine system effect; GI - Gastrointestinal system; H - Hepatic/Liver effect; I - Immune system effect; In - Integumentary/Skin effect; M - Mortality/Death/Longevity; N - Nervous system effect O - Other effect (e.g., hyperactivity, none reported); OC - Ocular effect; R - Renal/Kidney effect; T - Teratogenic effect; V - Vascular system effect; W - Decreased body weight.

* = For non-carcinogenic PAHs, the proposed surrogate benzo(a)pyrene was applied to estimate Oral Reference Dose (see USEPA 1993) Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089).

a = Because chromium was not speciated, the RfC for chromium VI was utilized.

b = Less chlorinated includes Aroclors 1221, 1232, 1016, and 1242. RfD values for Aroclor-1016 (CAS# 126741120) utilized.

c = Hightly Chlorinated includes Aroclors 1248, 1254, 1260 [and higher if reported]. RfD values for Aroclor-1254 (CAS# 11097691) utilized.

NA - Not available

Sources:

Tier 1 - IRIS - United States Environmental Protection Agency (USEPA) Integrated Risk Information System (Available at: http://www.epa.gov/iris).

Tier 2 - PPRTV - USEPA Provisional Peer Reviewed Toxicity Values from the Office of Research and Development/National Center for Environmental Assessment/Superfund Health Risk Technical Support Center (STSC).

Tier 3 - Tox values approved by Superfund Technical Support Center. ATSDR - Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs, Available at: http://www.atsdr.cdc.gov/mrls/index.html); CALEPA - California Environmental Protection Agency toxicity criteria database (Available at: http://www.oehha.ca.gov/risk/chemicalDB//index.asp); HEAST - USEPA Health Effects Assessment Summary Tables from the USEPA STSC; NCEA - National Center for Environmental Assessment;USEPA (2003). Memo from Southerland. OSWER Directive 9285.7-75. USEPA (1993) Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089).

STSC - Indicates that the associated value was provided for this assessment by the Superfund Technical Support Center.

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD (1)		Primary Target Organ(s) (2)	Combined Uncertainty/Modifying Factors		RfC : Target Organ(s)	
		Value	Units	Value	Units		(Uncertainty)	(Modifying)	Source(s)	Date(s) (MM/DD/YYYY)
DIOXINS										
2,3,7,8-TCDD Equivalent	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
METALS										
ALUMINUM	Chronic	5.0E-03	mg/m^3	1.4E-03	mg/kg-day	Psychomotor and cognitive impairments	3.0E+02	1.0E+00	PPRTV	10/23/2006
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	Chronic	5.0E-05	mg/m^3	1.4E-05	mg/kg-day	Development, cardiovascular, nervous system	NA	NA	CalEPA (STSC)	2/4/2008
BARIUM	Chronic	5.0E-04	mg/m^3	1.4E-04	mg/kg-day	Renal toxicity	NA	NA	HEAST (STSC)	6/17/1905
BERYLLIUM	Chronic	2.0E-05	mg/m^3	5.7E-06	mg/kg-day	Beryllium sensitization and progression to chronic beryllium disease	1.0E+01	1.0E+00	IRIS	2/4/2008
CADMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM[a]	Chronic	1.0E-04	mg/m^3	2.9E-05	mg/kg-day	Respiratory (P)	3.0E+02	1.0E+00	IRIS (Chromium VI particulates as surrogate)	2/4/2008
COBALT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CYANIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
IRON	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
MANGANESE	Chronic	5.0E-05	mg/m^3	1.4E-05	mg/kg-day	Neurobehavioral changes (N, O)	1.0E+03	1.0E+00	IRIS	2/4/2008
MERCURY	Chronic	3.0E-04	mg/m^3	8.6E-05	mg/kg-day	PNS (N); CNS (N)	3.0E+01	1.0E+00	IRIS	2/4/2008
METHYL MERCURY[b]	Chronic	3.0E-04	mg/m^3	8.6E-05	mg/kg-day	PNS (N); CNS (N)	3.0E+01	1.0E+00	IRIS	2/4/2008
NICKEL	Chronic	9.0E-05	mg/m^3	2.6E-05	mg/kg-day	Respiratory (P)	3.0E+01	1.0E+00	ATSDR (ATSC)	9/1/2005
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PCBs										
LESS CHLORINATED[c]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HIGHLY CHLORINATED[d]	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PESTICIDES										
ALDRIN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DELTA-BHC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIELDRIN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ENDOSULFAN I	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEPTACHLOR	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SVOCs										
2,4,6-TRICHLOROPHENOL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-NITROPHENOL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(A)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD (1)		Primary Target Organ(s) (2)	Combined Uncertainty/Modifying Factors		RfC : Target Organ(s)	
		Value	Units	Value	Units		(Uncertainty)	(Modifying)	Source(s)	Date(s) (MM/DD/YYYY)
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHRYSENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIBENZOFURAN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEXACHLOROBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
HEXACHLOROBUTADIENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NAPHTHALENE	Chronic	3.0E-03	mg/m^3	8.6E-04	mg/kg-day	Nasal/respiratory (P)	3.0E+03	1.0E+00	IRIS	2/4/2008
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
PHENANTHRENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
VOCs										
1,1,2,2-TETRACHLOROETHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-TRIMETHYLBENZENE	Chronic	7.0E-03	mg/m^3	2.0E-03	mg/kg-day	Hematological and pulmonary	3.0E+03	1.0E+00	PPRTV	6/11/2007
1,2-DICHLOROBENZENE	Chronic	1.4E-01	mg/m^3	4.0E-02	mg/kg-day	NA	NA	NA	HEAST (STSC)	6/19/1905
1,2-DICHLOROETHANE	Chronic	2.4E+00	mg/m^3	6.9E-01	mg/kg-day	Hepatic effects	9.0E+01	1.0E+00	ATSDR (STSC)	9/1/2001
1,2-DICHLOROPROPANE	Chronic	4.0E-03	mg/m^3	1.1E-03	mg/kg-day	Nasal	3.0E+02	1.0E+00	IRIS	2/4/2008
1,3,5-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,4-DICHLOROBENZENE	Chronic	8.0E-01	mg/m^3	2.3E-01	mg/kg-day	Liver	1.0E+02	1.0E+00	IRIS	2/4/2008
ACETONE	Chronic	3.1E+00	mg/m^3	8.6E+00	mg/kg-day	Neurological effects	1.0E+02	1.0E+00	ATSDR (STSC)	5/1/1994
BENZENE	Chronic	3.0E-02	mg/m^3	8.6E-03	mg/kg-day	Decreased lymphocyte count	3.0E+02	1.0E+00	IRIS	2/4/2008
BROMODICHLOROMETHANE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CARBON DISULFIDE	Chronic	7.0E-01	mg/m^3	2.0E-01	mg/kg-day	Peripheral nervous system dysfunction	3.0E+01	1.0E+00	IRIS	2/4/2008
CHLOROBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHLOROFORM	Chronic	9.8E-02	mg/m^3	2.8E-02	mg/kg-day	Hepatic effects	1.0E+02	1.0E+00	ATSDR (STSC)	9/1/1997
ETHYLBENZENE	Chronic	1.0E+00	mg/m^3	2.9E-01	mg/kg-day	Developmental toxicity	3.0E+02	1.0E+00	IRIS	2/4/2008
METHYLENE CHLORIDE	Chronic	1.0E+00	mg/m^3	3.0E-01	mg/kg-day	Hepatic effects	3.0E+01	1.0E+00	ATSDR (STSC)	6/29/1905
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	Chronic	2.7E-01	mg/m^3	7.6E-02	mg/kg-day	Neurological effects	1.0E+02	1.0E+00	ATSDR (STSC)	9/1/2007

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD (1)		Primary Target Organ(s) (2)	Combined Uncertainty/Modifying Factors		RfC : Target Organ(s)	
		Value	Units	Value	Units		(Uncertainty)	(Modifying)	Source(s)	Date(s) (MM/DD/YYYY)
TOLUENE	Chronic	5.0E+00	mg/m^3	1.4E+00	mg/kg-day	Neurological effects	1.0E+01	1.0E+00	IRIS	2/4/2008
TRICHLOROETHENE	Chronic	4.0E-02	mg/m3	1.1E-02	mg/kg-day	Neurotoxicity, immunotoxicity, developmental toxicity, liver toxicity, kidney toxicity, endocrine effects	3.0E+03	1.0E+00	NCEA (STSC)	11/1/2001
XYLENES, TOTAL	Chronic	1.0E-01	mg/m^3	2.9E-02	mg/kg-day	Impaired motor coordination (decreased rotarod performance)	3.0E+02	1.0E+00	IRIS	2/4/2008

Notes:

(1) Extrapolated RfD = Inhalation RfC / (70 kg / 20 m^3); USEPA (1989) RAGS Part A.

(2) Codes for Effects Endpoints: B - Hematological/Blood effect; E - Endocrine system effect; GI - Gastrointestinal system; H - Hepatic/Liver effect; I - Immune system effect; In - Integumentary/Skin effect; M - Mortality/Death/Longevity; N - Nervous system effect; O - Other effect (e.g., hyperactivity, none reported); OC - Ocular effect; R - Renal/Kidney effect; T - Teratogenic effect; V - Vascular system effect; W - Decreased body weight.

a = Because chromium was not speciated, RfC and RfD values for chromium VI were utilized.

b = RfC and RfD_i for elemental mercury were used because the corresponding values for methyl mercury were unavailable.

c = Less chlorinated includes Aroclors 1221, 1232, 1016, and 1242. RfD values for Aroclor-1016 (CAS# 126741120) utilized.

d = Hightly Chlorinated includes Aroclors 1248, 1254, 1260 [and higher if reported]. RfD values for Aroclor-1254 (CAS# 11097691) utilized.

NA - Not available.

Sources:

Tier 1 - IRIS - United States Environmental Protection Agency (USEPA) Integrated Risk Information System (Available at: http://www.epa.gov/iris).

Tier 2 - PPRTV - USEPA Provisional Peer Reviewed Toxicity Values from the Office of Research and Development/National Center for Environmental Assessment/Superfund Health Risk Technical Support Center (STSC).

Tier 3 - Tox values approved by Superfund Technical Support Center. ATSDR - Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs, Available at: http://www.atsdr.cdc.gov/mrls/index.html); CALEPA - California Environmental Protection Agency toxicity criteria database (Available at: http://www.oehha.ca.gov/risk/chemicalDB//index.asp); HEAST - USEPA Health Effects Assessment Summary Tables from the USEPA STSC; NCEA - National Center for Environmental Assessment;USEPA (2003). Memo from Southerland. OSWER Directive 9285.7-75. USEPA (1993) Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089).

STSC - Indicates that the associated value was provided for this assessment by the Superfund Technical Support Center.

Attachment A
RAGS Table 6 Series

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (Unitless) (1)	Absorbed Cancer Slope Factor for Dermal (2)		Weight of Evidence/ Cancer Guideline Description (3)	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
DIOXINS								
2,3,7,8-TCDD Equivalent	1.5E+05	$(mg/kg\text{-}day)^{-1}$	7.0E-01	1.5E+05	$(mg/kg\text{-}day)^{-1}$	B2	HEAST (STSC)	1997
METALS								
ALUMINUM	NA	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA	NA
ARSENIC	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.5E-01	1.5E+00	$(mg/kg\text{-}day)^{-1}$	A	IRIS	2/4/2008
BARIUM	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
BERYLLIUM	NA	NA	NA	NA	NA	B1	IRIS	2/4/2008
CADMIUM	NA	NA	NA	NA	NA	B1	IRIS	2/4/2008
CHROMIUM	NA	NA	NA	NA	NA	A	IRIS (Chromium VI as surrogate)	2/4/2008
COBALT	NA	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
CYANIDE	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
IRON	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	B2	IRIS	4/29/2008
MANGANESE	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
MERCURY	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
METHYL MERCURY	NA	NA	NA	NA	NA	C	IRIS	2/4/2008
NICKEL	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
SILVER	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
VANADIUM	NA	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA	NA
PCBs								
LESS CHLORINATED[a]	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.6E-01	2.0E+00	$(mg/kg\text{-}day)^{-1}$	No IRIS eval., used upper bound PCBs (B2)	IRIS	2/4/2008
HIGHLY CHLORINATED[b]	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.6E-01	2.0E+00	$(mg/kg\text{-}day)^{-1}$	No IRIS eval., used upper bound PCBs (B2)	IRIS	2/4/2008
PESTICIDES								
ALDRIN	1.7E+01	$(mg/kg\text{-}day)^{-1}$	1.0E+00	1.7E+01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/4/2008
DELTA-BHC	6.3E+00	$(mg/kg\text{-}day)^{-1}$	1.0E+00	6.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/4/2008
DIELDRIN	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.0E+00	1.6E+01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/4/2008
ENDOSULFAN I	NA	NA	NA	NA	NA	NA	NA	NA
HEPTACHLOR	4.5E+00	$(mg/kg\text{-}day)^{-1}$	1.0E+00	4.5E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	1/17/2008
SVOCs								
2,4,6-TRICHLOROPHENOL	1.1E-02	$(mg/kg\text{-}day)^{-1}$	7.0E-01	1.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/4/2008
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL						NA		
4-METHYLPHENOL	NA	NA	NA	NA	NA	C	IRIS	2/4/2008
4-NITROPHENOL	NA	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
BENZO(A)ANTHRACENE*	7.3E-01	$(mg/kg\text{-}day)^{-1}$	8.9E-01	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	USEPA 1993 (STSC)	6/1/2003
BENZO(A)PYRENE*	7.3E+00	$(mg/kg\text{-}day)^{-1}$	8.9E-01	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/4/2008
BENZO(B)FLUORANTHENE*	7.3E-01	$(mg/kg\text{-}day)^{-1}$	8.9E-01	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	USEPA 1993 (STSC)	6/1/2003

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (Unitless) (1)	Absorbed Cancer Slope Factor for Dermal (2)		Weight of Evidence/ Cancer Guideline Description (3)	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
BENZO(K)FLUORANTHENE*	7.3E-02	$(mg/kg\text{-}day)^{-1}$	8.9E-01	7.3E-02	$(mg/kg\text{-}day)^{-1}$	B2	USEPA 1993 (STSC)	6/1/2003
BIS(2-ETHYLHEXYL)PHTHALATE	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.0E+00	1.4E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/4/2008
CHRYSENE*	7.3E-03	$(mg/kg\text{-}day)^{-1}$	8.9E-01	7.3E-03	$(mg/kg\text{-}day)^{-1}$	B2	USEPA 1993 (STSC)	6/1/2003
DIBENZO(A,H)ANTHRACENE*	7.3E+00	$(mg/kg\text{-}day)^{-1}$	8.9E-01	7.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	USEPA 1993 (STSC)	6/1/2003
DIBENZOFURAN	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
HEXACHLOROBENZENE	1.6E+00	$(mg/kg\text{-}day)^{-1}$	1.0E+00	1.6E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/4/2008
HEXACHLOROBUTADIENE	7.8E-02	$(mg/kg\text{-}day)^{-1}$	1.0E+00	7.8E-02	$(mg/kg\text{-}day)^{-1}$	C	IRIS	2/4/2008
INDENO(1,2,3-CD)PYRENE*	7.3E-01	$(mg/kg\text{-}day)^{-1}$	8.9E-01	7.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	USEPA 1993 (STSC)	6/1/2003
NAPHTHALENE	NA	NA	NA	NA	NA	C	IRIS	2/4/2008
N-NITROSODIPHENYLAMINE	4.9E-03	$(mg/kg\text{-}day)^{-1}$	1.0E+00	4.9E-03	$(mg/kg\text{-}day)^{-1}$	B2	PPRTV	10/26/2007
PENTACHLOROPHENOL	1.2E-01	$(mg/kg\text{-}day)^{-1}$	7.6E-01	1.2E-01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/4/2008
PHENANTHRENE	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
VOC								
1,1,2,2-TETRACHLOROETHANE	2.0E-01	$(mg/kg\text{-}day)^{-1}$	1.0E+00	2.0E-01	$(mg/kg\text{-}day)^{-1}$	C	IRIS	2/4/2008
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	3.6E-03	$(mg/kg\text{-}day)^{-1}$	1.0E+00	3.6E-03	$(mg/kg\text{-}day)^{-1}$	D	CalEPA (STSC)	4/29/2008
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
1,2-DICHLOROETHANE	9.1E-02	$(mg/kg\text{-}day)^{-1}$	1.0E+00	9.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/4/2008
1,2-DICHLOROPROPANE	3.6E-02	$(mg/kg\text{-}day)^{-1}$	1.0E+00	3.6E-02	$(mg/kg\text{-}day)^{-1}$	NA	CalEPA (STSC)	4/29/2008
1,3,5-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
1,4-DICHLOROBENZENE	5.4E-03	$(mg/kg\text{-}day)^{-1}$	1.0E+00	5.4E-03	$(mg/kg\text{-}day)^{-1}$	B2	CalEPA (STSC)	4/29/2008
ACETONE	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
BENZENE	5.5E-02	$(mg/kg\text{-}day)^{-1}$	1.0E+00	5.5E-02	$(mg/kg\text{-}day)^{-1}$	A	IRIS	2/4/2008
BROMODICHLOROMETHANE	6.2E-02	$(mg/kg\text{-}day)^{-1}$	1.0E+00	6.2E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/4/2008
CARBON DISULFIDE	NA	NA	NA	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
CHLOROFORM[c]	NA	NA	NA	NA	NA	B2	IRIS	2/4/2008
ETHYLBENZENE	NA	NA	NA	NA	NA	D	IRIS	2/4/2008
METHYLENE CHLORIDE	7.5E-03	$(mg/kg\text{-}day)^{-1}$	1.0E+00	7.5E-03	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/4/2008
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	5.4E-01	$(mg/kg\text{-}day)^{-1}$	1.0E+00	5.4E-01	$(mg/kg\text{-}day)^{-1}$	B2	USEPA 2003 (STSC)	6/1/2003

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (Unitless) (1)	Absorbed Cancer Slope Factor for Dermal (2)		Weight of Evidence/ Cancer Guideline Description (3)	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
TOLUENE	NA	NA	NA	NA	NA	NA	NA	NA
TRICHLOROETHENE	4.0E-01	$(mg/kg\text{-}day)^{-1}$	1.0E+00	4.0E-01	$(mg/kg\text{-}day)^{-1}$	A2	NCEA (STSC)	1/1/2001
XYLENES, TOTAL	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

(1) Oral Absorption Efficiency from Exhibit 4-1 of USEPA (2004) RAGS Part E. For constituents not listed in Exhibit 4-1, an absorption efficiency of 1 is assumed. For constituents with a range of absorption efficiencies in Exhibit 4-1, the highest value is reported.

(2) For Oral Absorption Efficiency for Dermal < 0.5, Absorbed Cancer Slope Factor for Dermal = Oral Cancer Slope Factor / Oral Absorption Efficiency for Dermal; otherwise, Absorbed Cancer Slope Factor for Dermal = Oral Cancer Slope Factor (USEPA 2004 RAGS Part E, Exhibit 4-1).

(3) Codes for Weight of Evidence: A - Human Carcinogen; B - Probable Human Carcinogen; C - Possible Human Carcinogen; D - Not Classifiable as to Human Carcinogenicity; E - Evidence of Non-Carcinogenicity in Humans.

* = For carcinogenic PAHs, relative potency approach with respect to benzo(a)pyrene applied to estimate Oral Cancer Slope Factor (see USEPA 1993 Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089).

a = Less chlorinated includes Aroclors 1221, 1232, 1016, and 1242. RfD values for Aroclor-1016 (CAS# 126741120) utilized.

b = Highly Chlorinated includes Aroclors 1248, 1254, 1260 [and higher if reported]. RfD values for Aroclor-1254 (CAS# 11097691) utilized.

c = Because the non-cancer oral reference dose as presented in IRIS is considered protective of oral carcinogenic exposure, oral carcinogenicity for chloroform is not assessed herein.

NA - Not available

Sources:

Tier 1 - IRIS - United States Environmental Protection Agency (USEPA) Integrated Risk Information System (Available at: http://www.epa.gov/iris).

Tier 2 - PPRTV - USEPA Provisional Peer Reviewed Toxicity Values from the Office of Research and Development/National Center for Environmental Assessment/Superfund Health Risk Technical Support Center (STSC).

Tier 3 - Tox values approved by Superfund Technical Support Center. ATSDR - Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs, Available at: http://www.atsdr.cdc.gov/mrls/index.html); CALEPA - California Environmental Protection Agency toxicity criteria database (Available at: http://www.oehha.ca.gov/risk/chemicalDB//index.asp); HEAST - USEPA Health Effects Assessment Summary Tables from the USEPA STSC; NCEA - National Center for Environmental Assessment;USEPA (2003). Memo from Southerland. OSWER Directive 9285.7-75. USEPA (1993) Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089).

STSC - Indicates that the associated value was provided for this assessment by the Superfund Technical Support Center.

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Chemical of Potential Concern	Inhalation Unit Risk		Inhalation Cancer Slope Factor (1)		Weight of Evidence/ Cancer Guideline Description (2)	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
DIOXIN							
2,3,7,8-TCDD Equivalent	NA	NA	NA	NA	NA	NA	NA
METALS							
ALUMINUM	NA	NA	NA	NA	NA	NA	NA
ANTIMONY	NA	NA	NA	NA	NA	NA	NA
ARSENIC	4.3E+00	$(mg/m^3)^{-1}$	1.5E+01	$(mg/kg\text{-}day)^{-1}$	A	IRIS	2/5/2008
BARIUM	NA	NA	NA	NA	D	IRIS	4/29/2008
BERYLLIUM	NA	NA	NA	NA	D	IRIS	2/5/2008
CADMIUM	1.8E+00	$(mg/m^3)^{-1}$	6.3E+00	$(mg/kg\text{-}day)^{-1}$	B1	IRIS	2/5/2008
CHROMIUM[a]	1.2E+01	$(mg/m^3)^{-1}$	4.2E+01	$(mg/kg\text{-}day)^{-1}$	A (Chromium VI used as surrogate)	IRIS	2/5/2008
COBALT	NA	NA	NA	NA	NA	NA	NA
COPPER	NA	NA	NA	NA	D	IRIS	2/5/2008
CYANIDE	NA	NA	NA	NA	D	IRIS	2/5/2008
IRON	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	B2 (IRIS): The agent is possibly carcinogenic to humans	IRIS	11/1/1993
MANGANESE	NA	NA	NA	NA	D	IRIS	2/5/2008
MERCURY	NA	NA	NA	NA	D	IRIS	2/5/2008
METHYL MERCURY	NA	NA	NA	NA	C	IRIS	2/4/2008
NICKEL	2.6E-01	$(mg/m^3)^{-1}$	9.1E-01	$(mg/kg\text{-}day)^{-1}$	A	CalEPA (STSC)	4/29/2008
SELENIUM	NA	NA	NA	NA	D	IRIS	2/5/2008
SILVER	NA	NA	NA	NA	D	IRIS	2/5/2008
VANADIUM	NA	NA	NA	NA	NA	NA	NA
ZINC	NA	NA	NA	NA	NA	NA	NA
PCBs							
LESS CHLORINATED[b]	1.0E-01	$(mg/m^3)^{-1}$	2.0E+00	$(mg/kg\text{-}day)^{-1}$	No IRIS eval., used upper bound PCBs	IRIS	2/5/2008
HIGHLY CHLORINATED[c]	1.0E-01	$(mg/m^3)^{-1}$	2.0E+00	$(mg/kg\text{-}day)^{-1}$	No IRIS eval., used upper bound PCBs	IRIS	2/5/2008
PESTICIDES							
ALDRIN	4.9E+00	$(mg/m^3)^{-1}$	1.7E+01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/5/2008
DELTA-BHC	1.8E+00	$(mg/m^3)^{-1}$	6.3E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/5/2008
DIELDRIN	4.6E+00	$(mg/m^3)^{-1}$	1.6E+01	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/5/2008
ENDOSULFAN I	NA	NA	NA	NA	NA	NA	NA
HEPTACHLOR	1.3E+00	$(mg/m^3)^{-1}$	4.5E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	1/23/2008
SVOC							
2,4,6-TRICHLOROPHENOL	3.1E-03	$(mg/m^3)^{-1}$	1.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/5/2008
2,4-DICHLOROPHENOL	NA	NA	NA	NA	NA	NA	NA
2-CHLOROPHENOL	NA	NA	NA	NA	NA	NA	NA
2-METHYLNAPHTHALENE	NA	NA	NA	NA	NA	NA	NA
2-NITROPHENOL	NA	NA	NA	NA	NA	NA	NA
4-CHLORO-3-METHYLPHENOL	NA	NA	NA	NA	NA	NA	NA
4-METHYLPHENOL	NA	NA	NA	NA	C	IRIS	2/5/2008
4-NITROPHENOL	NA	NA	NA	NA	NA	NA	NA
ACENAPHTHYLENE	NA	NA	NA	NA	D	IRIS	2/5/2008
BENZO(A)ANTHRACENE	NA	NA	NA	NA	B2	IRIS	3/1/1994

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Chemical of Potential Concern	Inhalation Unit Risk		Inhalation Cancer Slope Factor (1)		Weight of Evidence/ Cancer Guideline Description (2)	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
BENZO(A)PYRENE	NA	NA	NA	NA	B2	IRIS	7/1/1992
BENZO(B)FLUORANTHENE	NA	NA	NA	NA	B2	IRIS	3/1/1994
BENZO(G,H,I)PERYLENE	NA	NA	NA	NA	D	IRIS	2/5/2008
BENZO(K)FLUORANTHENE	NA	NA	NA	NA	B2	IRIS	3/1/1994
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	NA	B2	IRIS	2/5/2008
CHRYSENE	NA	NA	NA	NA	B2	NA	3/1/1994
DIBENZO(A,H)ANTHRACENE	NA	NA	NA	NA	B2	IRIS	3/1/1994
DIBENZOFURAN	NA	NA	NA	NA	D	IRIS	2/5/2008
HEXACHLOROBENZENE	4.6E-01	$(mg/m^3)^{-1}$	1.6E+00	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/5/2008
HEXACHLOROBUTADIENE	2.2E-02	$(mg/m^3)^{-1}$	7.7E-02	$(mg/kg\text{-}day)^{-1}$	C	IRIS	2/5/2008
INDENO(1,2,3-CD)PYRENE	NA	NA	NA	NA	B2	IRIS	3/1/1994
NAPHTHALENE	3.4E-02	$(mg/m^3)^{-1}$	1.2E-01	$(mg/kg\text{-}day)^{-1}$	C	CalEPA (STSC)	4/29/2008
N-NITROSODIPHENYLAMINE	NA	NA	NA	NA	NA	NA	NA
PENTACHLOROPHENOL	4.6E-03	$(mg/m^3)^{-1}$	1.6E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/5/2008
PHENANTHRENE	NA	NA	NA	NA	D	IRIS	2/5/2008
VOC							
1,1,2,2-TETRACHLOROETHANE	5.8E-02	$(mg/m^3)^{-1}$	2.0E-01	$(mg/kg\text{-}day)^{-1}$	C	IRIS	2/5/2008
1,2,3-TRICHLOROBENZENE	NA	NA	NA	NA	NA	NA	NA
1,2,4-TRICHLOROBENZENE	NA	NA	NA	NA	D	IRIS	2/5/2008
1,2,4-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA	NA
1,2-DICHLOROBENZENE	NA	NA	NA	NA	D	IRIS	2/5/2008
1,2-DICHLOROETHANE	2.6E-02	$(mg/m^3)^{-1}$	9.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/5/2008
1,2-DICHLOROPROPANE	1.0E-02	$(mg/m^3)^{-1}$	3.6E-02	$(mg/kg\text{-}day)^{-1}$	NA	CalEPA (STSC)	4/29/2008
1,3,5-TRIMETHYLBENZENE	NA	NA	NA	NA	NA	NA	NA
1,3-DICHLOROBENZENE	NA	NA	NA	NA	D	IRIS	2/5/2008
1,4-DICHLOROBENZENE	1.1E-02	$(mg/m^3)^{-1}$	4.0E-02	$(mg/kg\text{-}day)^{-1}$	B2	CalEPA (STSC)	4/29/2008
ACETONE	NA	NA	NA	NA	D	IRIS	2/5/2008
BENZENE	7.8E-03	$(mg/m^3)^{-1}$	2.7E-02	$(mg/kg\text{-}day)^{-1}$	A	IRIS	2/5/2008
BROMODICHLOROMETHANE	3.7E-02	$(mg/m^3)^{-1}$	1.3E-01	$(mg/kg\text{-}day)^{-1}$	B2	CalEPA (STSC)	4/29/2008
CARBON DISULFIDE	NA	NA	NA	NA	NA	NA	NA
CHLOROBENZENE	NA	NA	NA	NA	D	IRIS	2/5/2008
CHLOROFORM	2.3E-02	$(mg/m^3)^{-1}$	8.1E-02	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/5/2008
ETHYLBENZENE	NA	NA	NA	NA	D	IRIS	2/5/2008
METHYLENE CHLORIDE	4.7E-04	$(mg/m^3)^{-1}$	1.7E-03	$(mg/kg\text{-}day)^{-1}$	B2	IRIS	2/5/2008
SEC-BUTYLBENZENE	NA	NA	NA	NA	NA	NA	NA
TERT-BUTYLBENZENE	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	5.9E-06	$(mg/m^3)^{-1}$	2.1E-05	$(mg/kg\text{-}day)^{-1}$	B2	USEPA 2003 (STSC)	6/12/2003

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Chemical of Potential Concern	Inhalation Unit Risk		Inhalation Cancer Slope Factor (1)		Weight of Evidence/ Cancer Guideline Description (2)	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
TOLUENE	NA	NA	NA	NA	NA	NA	NA
TRICHLOROETHENE	1.1E-01	$(mg/m^3)^{-1}$	4.0E-01	$(mg/kg\text{-}day)^{-1}$	A2	NCEA (STSC)	1/1/2001
XYLENES, TOTAL	NA	NA	NA	NA	NA	NA	NA

Notes:

(1) Inhalation Cancer Slope Factor = Inhalation Unit Risk * (70 kg / 20 m^3); USEPA (1989) RAGS Part A.
efficiencies in Exhibit 4-1, the highest value is reported.

(2) Codes for Weight of Evidence: A - Human Carcinogen; B - Probable Human Carcinogen; C - Possible Human Carcinogen; D - Not Classifiable as to Human Carcinogenicity;
E - Evidence of Non-Carcinogenicity in Humans.

a = Because chromium was not speciated, the inhalation unit risk value for chromium VI was utilized

b = Less chlorinated includes Aroclors 1221, 1232, 1016, and 1242. RfD values for Aroclor-1016 (CAS# 126741120) utilized.

c = Highly chlorinated includes Aroclors 1248, 1254, 1260 [and higher if reported]. RfD values for Aroclor-1254 (CAS# 11097691) utilized.

NA - Not available

Sources:

Tier 1 - IRIS - United States Environmental Protection Agency (USEPA) Integrated Risk Information System (Available at: http://www.epa.gov/iris).

Tier 2 - PPRTV - USEPA Provisional Peer Reviewed Toxicity Values from the Office of Research and Development/National Center for Environmental Assessment/Superfund Health Risk Technical Support Center.

Tier 3 - Tox values approved by Superfund Technical Support Center. ATSDR - Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs, Available at: http://www.atsdr.cdc.gov/mrls/index.html);
CALEPA - California Environmental Protection Agency toxicity criteria database (Available at: http://www.oehha.ca.gov/risk/chemicalDB//index.asp); HEAST - USEPA Health Effects Assessment Summary Tables from the USEPA STSC;
NCEA - National Center for Environmental Assessment;USEPA (2003). Memo from Southerland. OSWER Directive 9285.7-75. USEPA (1993) Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons, EPA/600/R-93/089).

STSC - Indicates that the associated value was provided for this assessment by the Superfund Technical Support Center.

Attachment A
RAGS Table 7 RME Series

TABLE 7.1a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Dermal	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	8.46E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-06	6.58E-11	mg/kg-day	1.00E-09	mg/kg-day	7E-02
				ALUMINUM	8.34E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.63E+01	mg/kg	3.31E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-07	2.57E-06	mg/kg-day	3.00E-04	mg/kg-day	9E-03
				BARIUM	3.36E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.88E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.27E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.47E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	9.52E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.69E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	2.25E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	1.82E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-07	1.41E-06	mg/kg-day	2.00E-05	mg/kg-day	7E-02
				DELTA-BHC	1.90E+00	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg		mg/kg-day	1.60E+01	1/(mg/kg-day)			mg/kg-day	5.00E-05	mg/kg-day	
				ACENAPHTHYLENE	2.09E-01	mg/kg	1.14E-08	mg/kg-day		1/(mg/kg-day)		8.86E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	3.84E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-05	4.92E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	5.31E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	5.66E-07	mg/kg-day		1/(mg/kg-day)		4.40E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-08	2.41E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-06	9.57E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	2.99E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	5E-07	2.33E-06	mg/kg-day	8.00E-04	mg/kg-day	3E-03
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	7.55E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	6E-09	5.87E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	4.34E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	8.03E-07	mg/kg-day		1/(mg/kg-day)		6.24E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	6.03E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	1.39E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**2E-05**					**1E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	2.21E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-06	1.72E-10	mg/kg-day	1.00E-09	mg/kg-day	2E-01
				ALUMINUM	8.34E+03	mg/kg	2.74E-04	mg/kg-day		1/(mg/kg-day)		2.13E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				ARSENIC	2.63E+01	mg/kg	8.65E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	6.73E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				BARIUM	3.36E+02	mg/kg	1.10E-05	mg/kg-day		1/(mg/kg-day)		8.59E-05	mg/kg-day	2.00E-01	mg/kg-day	4E-04
				CHROMIUM	1.88E+01	mg/kg	6.19E-07	mg/kg-day		1/(mg/kg-day)		4.81E-06	mg/kg-day	3.00E-03	mg/kg-day	2E-03
				IRON	2.27E+04	mg/kg	7.48E-04	mg/kg-day		1/(mg/kg-day)		5.82E-03	mg/kg-day	7.00E-01	mg/kg-day	8E-03
				MANGANESE	3.47E+02	mg/kg	1.14E-05	mg/kg-day		1/(mg/kg-day)		8.88E-05	mg/kg-day	1.40E-01	mg/kg-day	6E-04
				MERCURY	9.52E+02	mg/kg	3.13E-05	mg/kg-day		1/(mg/kg-day)		2.43E-04	mg/kg-day	3.00E-04	mg/kg-day	8E-01
				NICKEL	3.69E+03	mg/kg	1.21E-04	mg/kg-day		1/(mg/kg-day)		9.43E-04	mg/kg-day	2.00E-02	mg/kg-day	5E-02
				VANADIUM	2.25E+01	mg/kg	7.39E-07	mg/kg-day		1/(mg/kg-day)		5.75E-06	mg/kg-day	9.00E-03	mg/kg-day	6E-04
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	1.02E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	7.93E-07	mg/kg-day	2.00E-05	mg/kg-day	4E-02
				DELTA-BHC	1.90E+00	mg/kg	6.25E-08	mg/kg-day	6.30E+00	1/(mg/kg-day)	4E-07	4.86E-07	mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg	1.22E-07	mg/kg-day	1.60E+01	1/(mg/kg-day)	2E-06	9.46E-07	mg/kg-day	5.00E-05	mg/kg-day	2E-02
				ACENAPHTHYLENE	2.09E-01	mg/kg	6.87E-09	mg/kg-day		1/(mg/kg-day)		5.34E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-07	2.32E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	8E-06	2.97E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	9E-07	3.20E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	3.42E-07	mg/kg-day		1/(mg/kg-day)		2.66E-06	mg/kg-day	3.00E-02	mg/kg-day	9E-05
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-08	1.46E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-06	5.78E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	2.34E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	4E-07	1.82E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	5.92E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	5E-09	4.60E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-07	2.62E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	4.84E-07	mg/kg-day		1/(mg/kg-day)		3.77E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg	1.37E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	5E-10	1.07E-06	mg/kg-day	1.00E-02	mg/kg-day	1E-04

TABLE 7.1a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Ingestion	1,2-DICHLOROBENZENE	3.90E+02	mg/kg	1.28E-05	mg/kg-day		1/(mg/kg-day)		9.98E-05	mg/kg-day	9.00E-02	mg/kg-day	1E-03
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg	2.76E-07	mg/kg-day		1/(mg/kg-day)		2.15E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg	8.02E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	4E-07	6.23E-04	mg/kg-day	7.00E-02	mg/kg-day	9E-03
				BENZENE	6.03E-03	mg/kg	1.98E-10	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-11	1.54E-09	mg/kg-day	4.00E-03	mg/kg-day	4E-07
				CHLOROBENZENE	1.39E+02	mg/kg	4.56E-06	mg/kg-day		1/(mg/kg-day)		3.55E-05	mg/kg-day	2.00E-02	mg/kg-day	2E-03
			Exp. Route Total								**2E-05**					**1E+00**
		Exp. Point Total									**4E-05**					**1E+00**
	Exp. Medium Total										**4E-05**					**1E+00**
											4E-05					**1E+00**
										Total of Receptor Risks Across All Media	**4E-05**			Total of Receptor Hazards Across All Media		**1E+00**

Notes:
(a) See Table 7.1 RME Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1b RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	On-Site Ditches
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	On-Site Ditches	Dermal	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	9.48E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-05	7.37E-10	mg/kg-day	1.00E-09	mg/kg-day	7E-01
				ARSENIC	3.99E+01	mg/kg	5.02E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-07	3.90E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				CHROMIUM	1.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COPPER	3.26E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	5.39E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	6.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.56E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				METHYL MERCURY	6.86E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-04	mg/kg-day	
				NICKEL	3.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	6.39E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	8.22E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	6.39E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	9.26E-09	mg/kg-day		1/(mg/kg-day)		7.21E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	8.90E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-06	8.48E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-07	1.27E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	7.63E-08	mg/kg-day		1/(mg/kg-day)		5.93E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-07	1.86E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-07	5.09E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	1.09E-07	mg/kg-day		1/(mg/kg-day)		8.48E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
			Exp. Route Total								**2E-05**					**1E+00**
			Ingestion	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	2.48E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-05	1.93E-09	mg/kg-day	1.00E-09	mg/kg-day	2E+00
				ARSENIC	3.99E+01	mg/kg	1.31E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	1.02E-05	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				CHROMIUM	1.92E+02	mg/kg	6.31E-06	mg/kg-day		1/(mg/kg-day)		4.91E-05	mg/kg-day	3.00E-03	mg/kg-day	2E-02
				COPPER	3.26E+02	mg/kg	1.07E-05	mg/kg-day		1/(mg/kg-day)		8.34E-05	mg/kg-day	4.00E-02	mg/kg-day	2E-03
				IRON	5.39E+04	mg/kg	1.77E-03	mg/kg-day		1/(mg/kg-day)		1.38E-02	mg/kg-day	7.00E-01	mg/kg-day	2E-02
				LEAD	6.92E+02	mg/kg	2.28E-05	mg/kg-day		1/(mg/kg-day)		1.77E-04	mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg	1.42E-05	mg/kg-day		1/(mg/kg-day)		1.10E-04	mg/kg-day	1.40E-01	mg/kg-day	8E-04
				MERCURY	3.56E+03	mg/kg	1.17E-04	mg/kg-day		1/(mg/kg-day)		9.11E-04	mg/kg-day	3.00E-04	mg/kg-day	3E+00
				METHYL MERCURY	6.86E-01	mg/kg	2.26E-08	mg/kg-day		1/(mg/kg-day)		1.75E-07	mg/kg-day	1.00E-04	mg/kg-day	2E-03
				NICKEL	3.01E+02	mg/kg	9.90E-06	mg/kg-day		1/(mg/kg-day)		7.70E-05	mg/kg-day	2.00E-02	mg/kg-day	4E-03
				VANADIUM	6.39E+01	mg/kg	2.10E-06	mg/kg-day		1/(mg/kg-day)		1.63E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	4.60E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	9E-07	3.58E-06	mg/kg-day	2.00E-05	mg/kg-day	2E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	5.59E-09	mg/kg-day		1/(mg/kg-day)		4.35E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	5.37E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	5.11E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	7.67E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	4.60E-08	mg/kg-day		1/(mg/kg-day)		3.58E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	1.13E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	9E-08	3.07E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	6.58E-08	mg/kg-day		1/(mg/kg-day)		5.11E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
			Exp. Route Total								**4E-05**					**5E+00**
		Exp. Point Total									**6E-05**					**6E+00**
	Exp. Medium Total										**6E-05**					**6E+00**
Medium Total											**6E-05**					**6E+00**
										Total of Receptor Risks Across All Media	**6E-05**				Total of Receptor Hazards Across All Media	**6E+00**

Notes:
(a) See Table 7.1 RME Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1c RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Former Chlorination Building
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	Dermal	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	7.88E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-04	6.13E-09	mg/kg-day	1.00E-09	mg/kg-day	6E+00
				ARSENIC	1.04E+01	mg/kg	1.31E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	1.02E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				CHROMIUM	1.35E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	8.57E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.38E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	8.20E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	3.23E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	6E-07	2.51E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ACENAPHTHYLENE	4.00E-02	mg/kg	2.18E-09	mg/kg-day		1/(mg/kg-day)		1.70E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	6.78E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-06	6.36E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	1.19E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	5.99E-08	mg/kg-day		1/(mg/kg-day)		4.66E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-07	1.31E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-07	3.73E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	1.04E-07	mg/kg-day		1/(mg/kg-day)		8.05E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
			Exp. Route Total								**1E-04**					**6E+00**
			Ingestion	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	2.06E-09	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-04	1.60E-08	mg/kg-day	1.00E-09	mg/kg-day	2E+01
				ARSENIC	1.04E+01	mg/kg	3.42E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-07	2.66E-06	mg/kg-day	3.00E-04	mg/kg-day	9E-03
				CHROMIUM	1.35E+01	mg/kg	4.44E-07	mg/kg-day		1/(mg/kg-day)		3.45E-06	mg/kg-day	3.00E-03	mg/kg-day	1E-03
				IRON	8.57E+03	mg/kg	2.82E-04	mg/kg-day		1/(mg/kg-day)		2.19E-03	mg/kg-day	7.00E-01	mg/kg-day	3E-03
				MANGANESE	3.38E+02	mg/kg	1.11E-05	mg/kg-day		1/(mg/kg-day)		8.64E-05	mg/kg-day	1.40E-01	mg/kg-day	6E-04
				MERCURY	8.20E+00	mg/kg	2.70E-07	mg/kg-day		1/(mg/kg-day)		2.10E-06	mg/kg-day	3.00E-04	mg/kg-day	7E-03
				VANADIUM	1.24E+01	mg/kg	4.08E-07	mg/kg-day		1/(mg/kg-day)		3.17E-06	mg/kg-day	9.00E-03	mg/kg-day	4E-04
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	1.81E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-07	1.41E-06	mg/kg-day	2.00E-05	mg/kg-day	7E-02
				ACENAPHTHYLENE	4.00E-02	mg/kg	1.32E-09	mg/kg-day		1/(mg/kg-day)		1.02E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-07	4.09E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	3.84E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	7.16E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	3.62E-08	mg/kg-day		1/(mg/kg-day)		2.81E-07	mg/kg-day	3.00E-02	mg/kg-day	9E-06
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	7.93E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-08	2.25E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	6.25E-08	mg/kg-day		1/(mg/kg-day)		4.86E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg	6.58E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-09	5.11E-06	mg/kg-day	1.00E-02	mg/kg-day	5E-04
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg	2.56E-06	mg/kg-day		1/(mg/kg-day)		1.99E-05	mg/kg-day	9.00E-02	mg/kg-day	2E-04
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg	5.92E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	3E-09	4.60E-06	mg/kg-day	7.00E-02	mg/kg-day	7E-05
			Exp. Route Total								**3E-04**					**2E+01**
		Exp. Point Total									**4E-04**					**2E+01**
	Exp. Medium Total										**4E-04**					**2E+01**
Medium Total											**4E-04**					**2E+01**
									Total of Receptor Risks Across All Media		**4E-04**			Total of Receptor Hazards Across All Media		**2E+01**

Notes:
(a) See Table 7.1 RME Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1d RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	8.75E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-06	6.81E-11	mg/kg-day	1.00E-09	mg/kg-day	7E-02
				ALUMINUM	7.77E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.76E+01	mg/kg	3.47E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-07	2.70E-06	mg/kg-day	3.00E-04	mg/kg-day	9E-03
				BARIUM	6.73E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.83E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.64E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	5.66E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.11E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.06E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	2.05E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-06	1.60E-05	mg/kg-day	2.00E-05	mg/kg-day	8E-01
				ALDRIN	1.08E-01	mg/kg		mg/kg-day	1.70E+01	1/(mg/kg-day)			mg/kg-day	3.00E-05	mg/kg-day	
				DELTA-BHC	3.60E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ENDOSULFAN I	3.20E-03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-03	mg/kg-day	
				HEPTACHLOR	1.20E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.00E-04	mg/kg-day	
				ACENAPHTHYLENE	4.90E-01	mg/kg	2.67E-08	mg/kg-day		1/(mg/kg-day)		2.08E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	8E-07	2.84E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	9E-06	3.31E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-06	5.51E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.80E+00	mg/kg	3.16E-07	mg/kg-day		1/(mg/kg-day)		2.46E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-08	1.40E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-06	1.02E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.72E+00	mg/kg	1.56E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-07	1.21E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-07	2.16E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	8.80E+00	mg/kg	4.80E-07	mg/kg-day		1/(mg/kg-day)		3.73E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZENE	2.00E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				TRICHLOROETHENE	3.79E-02	mg/kg		mg/kg-day	4.00E-01	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
			Exp. Route Total								**2E-05**					**9E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	2.29E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-06	1.78E-10	mg/kg-day	1.00E-09	mg/kg-day	2E-01
				ALUMINUM	7.77E+03	mg/kg	2.55E-04	mg/kg-day		1/(mg/kg-day)		1.99E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				ARSENIC	2.76E+01	mg/kg	9.07E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	7.06E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				BARIUM	6.73E+02	mg/kg	2.21E-05	mg/kg-day		1/(mg/kg-day)		1.72E-04	mg/kg-day	2.00E-01	mg/kg-day	9E-04
				CHROMIUM	1.83E+02	mg/kg	6.02E-06	mg/kg-day		1/(mg/kg-day)		4.68E-05	mg/kg-day	3.00E-03	mg/kg-day	2E-02
				IRON	2.64E+04	mg/kg	8.68E-04	mg/kg-day		1/(mg/kg-day)		6.75E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				LEAD	5.66E+02	mg/kg	1.86E-05	mg/kg-day		1/(mg/kg-day)		1.45E-04	mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg	9.73E-06	mg/kg-day		1/(mg/kg-day)		7.57E-05	mg/kg-day	1.40E-01	mg/kg-day	5E-04
				MERCURY	1.11E+03	mg/kg	3.64E-05	mg/kg-day		1/(mg/kg-day)		2.83E-04	mg/kg-day	3.00E-04	mg/kg-day	9E-01
				VANADIUM	1.06E+02	mg/kg	3.48E-06	mg/kg-day		1/(mg/kg-day)		2.71E-05	mg/kg-day	9.00E-03	mg/kg-day	3E-03
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	1.15E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	8.95E-06	mg/kg-day	2.00E-05	mg/kg-day	4E-01
				ALDRIN	1.08E-01	mg/kg	3.55E-09	mg/kg-day	1.70E+01	1/(mg/kg-day)	6E-08	2.76E-08	mg/kg-day	3.00E-05	mg/kg-day	9E-04
				DELTA-BHC	3.60E-03	mg/kg	1.18E-10	mg/kg-day	6.30E+00	1/(mg/kg-day)	7E-10	9.21E-10	mg/kg-day		mg/kg-day	
				ENDOSULFAN I	3.20E-03	mg/kg	1.05E-10	mg/kg-day		1/(mg/kg-day)		8.18E-10	mg/kg-day	6.00E-03	mg/kg-day	1E-07
				HEPTACHLOR	1.20E-01	mg/kg	3.95E-09	mg/kg-day	4.50E+00	1/(mg/kg-day)	2E-08	3.07E-08	mg/kg-day	5.00E-04	mg/kg-day	6E-05
				ACENAPHTHYLENE	4.90E-01	mg/kg	1.61E-08	mg/kg-day		1/(mg/kg-day)		1.25E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-07	1.71E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-06	1.99E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	9E-07	3.32E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.80E+00	mg/kg	1.91E-07	mg/kg-day		1/(mg/kg-day)		1.48E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-08	8.44E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-06	6.14E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.72E+00	mg/kg	1.22E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-07	9.51E-07	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-07	1.30E-06	mg/kg-day		mg/kg-day	

TABLE 7.1d RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Ingestion	PHENANTHRENE	8.80E+00	mg/kg	2.89E-07	mg/kg-day		1/(mg/kg-day)		2.25E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				BENZENE	2.00E-03	mg/kg	6.58E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	4E-12	5.11E-10	mg/kg-day	4.00E-03	mg/kg-day	1E-07
				TRICHLOROETHENE	3.79E-02	mg/kg	1.25E-09	mg/kg-day	4.00E-01	1/(mg/kg-day)	5E-10	9.69E-09	mg/kg-day		mg/kg-day	
			Exp. Route Total								**2E-05**					**2E+00**
		Exp. Point Total									**4E-05**					**3E+00**
	Exp. Medium Total										**4E-05**					**3E+00**
Medium Total											**4E-05**					**3E+00**
										Total of Receptor Risks Across All Media	**4E-05**				Total of Receptor Hazards Across All Media	**3E+00**

Notes:
(a) See Table 7.1 RME Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1e RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
STATE FAIR BLVD/NORTHWEST OFFSITE/OUTFALL 004 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	State Fair Blvd/Northwest Offsite/ Outfall 004 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	6.64E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-06	5.16E-11	mg/kg-day	1.00E-09	mg/kg-day	5E-02
				MERCURY	1.60E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	8.80E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	6.85E-07	mg/kg-day	2.00E-05	mg/kg-day	3E-02
				1,2,3-TRICHLOROBENZENE	1.20E-02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				BENZENE	1.40E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**1E-06**					**9E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	1.74E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-06	1.35E-10	mg/kg-day	1.00E-09	mg/kg-day	1E-01
				MERCURY	1.60E+02	mg/kg	5.26E-06	mg/kg-day		1/(mg/kg-day)		4.09E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	4.93E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-07	3.84E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				1,2,3-TRICHLOROBENZENE	1.20E-02	mg/kg	3.95E-10	mg/kg-day		1/(mg/kg-day)		3.07E-09	mg/kg-day		mg/kg-day	
				BENZENE	1.40E-03	mg/kg	4.60E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-12	3.58E-10	mg/kg-day	4.00E-03	mg/kg-day	9E-08
			Exp. Route Total								**3E-06**					**3E-01**
		Exp. Point Total									**4E-06**					**4E-01**
	Exp. Medium Total										**4E-06**					**4E-01**
Medium Total											**4E-06**					**4E-01**
									Total of Receptor Risks Across All Media		**4E-06**			Total of Receptor Hazards Across All Media		**4E-01**

Notes:
(a) See Table 7.1 RME Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1f RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
LAKESHORE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Lakeshore Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Lakeshore Area	Dermal	2,3,7,8-TCDD Equivalent	5.90E-05	mg/kg	7.42E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-07	5.77E-12	mg/kg-day	1.00E-09	mg/kg-day	6E-03
				ALUMINUM	8.21E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	1.11E+01	mg/kg	1.39E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	1.08E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				CHROMIUM	4.42E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	1.75E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.91E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.05E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	2.02E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				ZINC	1.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	3.00E-01	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.70E+00	mg/kg	2.17E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-07	1.69E-06	mg/kg-day	2.00E-05	mg/kg-day	8E-02
				ENDOSULFAN I	2.50E-02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-03	mg/kg-day	
				ACENAPHTHYLENE	1.38E+00	mg/kg	7.52E-08	mg/kg-day		1/(mg/kg-day)		5.85E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.10E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	4.66E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	8.90E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-05	3.77E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	5.09E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.36E+00	mg/kg	1.29E-07	mg/kg-day		1/(mg/kg-day)		1.00E-06	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-08	1.28E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	5.09E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	1.02E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.70E+01	mg/kg	1.47E-06	mg/kg-day		1/(mg/kg-day)		1.14E-05	mg/kg-day	3.00E-02	mg/kg-day	4E-04
			Exp. Route Total								**2E-05**					**9E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	5.90E-05	mg/kg	1.94E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-07	1.51E-11	mg/kg-day	1.00E-09	mg/kg-day	2E-02
				ALUMINUM	8.21E+03	mg/kg	2.70E-04	mg/kg-day		1/(mg/kg-day)		2.10E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				ARSENIC	1.11E+01	mg/kg	3.64E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-07	2.83E-06	mg/kg-day	3.00E-04	mg/kg-day	9E-03
				CHROMIUM	4.42E+01	mg/kg	1.45E-06	mg/kg-day		1/(mg/kg-day)		1.13E-05	mg/kg-day	3.00E-03	mg/kg-day	4E-03
				IRON	1.75E+04	mg/kg	5.75E-04	mg/kg-day		1/(mg/kg-day)		4.47E-03	mg/kg-day	7.00E-01	mg/kg-day	6E-03
				MANGANESE	3.91E+02	mg/kg	1.28E-05	mg/kg-day		1/(mg/kg-day)		9.99E-05	mg/kg-day	1.40E-01	mg/kg-day	7E-04
				MERCURY	3.05E+00	mg/kg	1.00E-07	mg/kg-day		1/(mg/kg-day)		7.81E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				VANADIUM	2.02E+01	mg/kg	6.64E-07	mg/kg-day		1/(mg/kg-day)		5.16E-06	mg/kg-day	9.00E-03	mg/kg-day	6E-04
				ZINC	1.01E+02	mg/kg	3.31E-06	mg/kg-day		1/(mg/kg-day)		2.57E-05	mg/kg-day	3.00E-01	mg/kg-day	9E-05
				HIGHLY CHLORINATED PCBs	3.70E+00	mg/kg	1.22E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	9.46E-07	mg/kg-day	2.00E-05	mg/kg-day	5E-02
				ENDOSULFAN I	2.50E-02	mg/kg	8.22E-10	mg/kg-day		1/(mg/kg-day)		6.39E-09	mg/kg-day	6.00E-03	mg/kg-day	1E-06
				ACENAPHTHYLENE	1.38E+00	mg/kg	4.54E-08	mg/kg-day		1/(mg/kg-day)		3.53E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.10E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	8E-07	2.81E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	8.90E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-06	2.28E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	9E-07	3.07E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.36E+00	mg/kg	7.77E-08	mg/kg-day		1/(mg/kg-day)		6.04E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-08	7.71E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	9E-07	3.07E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	6.15E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.70E+01	mg/kg	8.88E-07	mg/kg-day		1/(mg/kg-day)		6.90E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
			Exp. Route Total								**1E-05**					**9E-02**
		Exp. Point Total									**3E-05**					**2E-01**
	Exp. Medium Total										**3E-05**					**2E-01**
Medium Total											**3E-05**					**2E-01**
										Total of Receptor Risks Across All Media	**3E-05**			Total of Receptor Hazards Across All Media		**2E-01**

Notes:
(a) See Table 7.1 RME Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1g RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Petroleum Storage Area	Dermal	ARSENIC	6.76E+01	mg/kg	8.50E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	6.61E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				CHROMIUM	2.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.86E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	4.86E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.42E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	2.01E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	4.23E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	8E-08	3.29E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				DELTA-BHC	1.20E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	6.90E-01	mg/kg	3.76E-08	mg/kg-day		1/(mg/kg-day)		2.92E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	7.30E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	9E-07	3.09E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.00E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	8E-06	2.97E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	4.24E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	6.70E+00	mg/kg	3.65E-07	mg/kg-day		1/(mg/kg-day)		2.84E-06	mg/kg-day	3.00E-02	mg/kg-day	9E-05
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-08	1.19E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-06	7.21E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-07	2.59E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.40E+00	mg/kg	2.40E-07	mg/kg-day		1/(mg/kg-day)		1.86E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				BENZENE	8.60E-02	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**1E-05**					**4E-02**
			Ingestion	ARSENIC	6.76E+01	mg/kg	2.22E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-06	1.73E-05	mg/kg-day	3.00E-04	mg/kg-day	6E-02
				CHROMIUM	2.80E+01	mg/kg	9.21E-07	mg/kg-day		1/(mg/kg-day)		7.16E-06	mg/kg-day	3.00E-03	mg/kg-day	2E-03
				IRON	2.86E+04	mg/kg	9.40E-04	mg/kg-day		1/(mg/kg-day)		7.31E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				MANGANESE	4.86E+02	mg/kg	1.60E-05	mg/kg-day		1/(mg/kg-day)		1.24E-04	mg/kg-day	1.40E-01	mg/kg-day	9E-04
				MERCURY	1.42E+01	mg/kg	4.67E-07	mg/kg-day		1/(mg/kg-day)		3.63E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				VANADIUM	2.01E+01	mg/kg	6.61E-07	mg/kg-day		1/(mg/kg-day)		5.14E-06	mg/kg-day	9.00E-03	mg/kg-day	6E-04
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	2.37E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-08	1.84E-07	mg/kg-day	2.00E-05	mg/kg-day	9E-03
				DELTA-BHC	1.20E-03	mg/kg	3.95E-11	mg/kg-day	6.30E+00	1/(mg/kg-day)	2E-10	3.07E-10	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	6.90E-01	mg/kg	2.27E-08	mg/kg-day		1/(mg/kg-day)		1.76E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	7.30E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-07	1.87E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.00E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-06	1.79E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-07	2.56E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	6.70E+00	mg/kg	2.20E-07	mg/kg-day		1/(mg/kg-day)		1.71E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-08	7.16E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	4.35E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-07	1.56E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.40E+00	mg/kg	1.45E-07	mg/kg-day		1/(mg/kg-day)		1.13E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
				BENZENE	8.60E-02	mg/kg	2.83E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-10	2.20E-08	mg/kg-day	4.00E-03	mg/kg-day	5E-06
			Exp. Route Total								**1E-05**					**9E-02**
		Exp. Point Total									**3E-05**					**1E-01**
	Exp. Medium Total										**3E-05**					**1E-01**
Medium Total											**3E-05**					**1E-01**
										Total of Receptor Risks Across All Media	**3E-05**				Total of Receptor Hazards Across All Media	**1E-01**

Notes:
(a) See Table 7.1 RME Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1h RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area	Dermal	ARSENIC	1.37E+01	mg/kg	1.72E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-07	1.34E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				CHROMIUM	2.63E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.35E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	2.77E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.13E+02	mg/kg	6.63E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-05	5.16E-05	mg/kg-day	2.00E-05	mg/kg-day	3E+00
				ACENAPHTHYLENE	3.40E-01	mg/kg	1.85E-08	mg/kg-day		1/(mg/kg-day)		1.44E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.34E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-06	5.69E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	9E-06	3.26E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-06	7.55E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.36E+00	mg/kg	2.92E-07	mg/kg-day		1/(mg/kg-day)		2.27E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-08	2.28E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-06	7.66E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.94E+00	mg/kg	1.23E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-07	9.57E-07	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-07	2.64E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.50E+01	mg/kg	1.36E-06	mg/kg-day		1/(mg/kg-day)		1.06E-05	mg/kg-day	3.00E-02	mg/kg-day	4E-04
				1,2,4-TRICHLOROBENZENE	1.35E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	5.94E+00	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	8.00E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**3E-05**					**3E+00**
			Ingestion	ARSENIC	1.37E+01	mg/kg	4.50E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-07	3.50E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				CHROMIUM	2.63E+01	mg/kg	8.63E-07	mg/kg-day		1/(mg/kg-day)		6.71E-06	mg/kg-day	3.00E-03	mg/kg-day	2E-03
				IRON	2.35E+04	mg/kg	7.72E-04	mg/kg-day		1/(mg/kg-day)		6.01E-03	mg/kg-day	7.00E-01	mg/kg-day	9E-03
				MANGANESE	3.32E+02	mg/kg	1.09E-05	mg/kg-day		1/(mg/kg-day)		8.50E-05	mg/kg-day	1.40E-01	mg/kg-day	6E-04
				MERCURY	2.77E+00	mg/kg	9.09E-08	mg/kg-day		1/(mg/kg-day)		7.07E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				VANADIUM	1.24E+01	mg/kg	4.07E-07	mg/kg-day		1/(mg/kg-day)		3.16E-06	mg/kg-day	9.00E-03	mg/kg-day	4E-04
				HIGHLY CHLORINATED PCBs	1.13E+02	mg/kg	3.72E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	7E-06	2.89E-05	mg/kg-day	2.00E-05	mg/kg-day	1E+00
				ACENAPHTHYLENE	3.40E-01	mg/kg	1.12E-08	mg/kg-day		1/(mg/kg-day)		8.69E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.34E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	3.43E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-06	1.97E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	4.55E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.36E+00	mg/kg	1.76E-07	mg/kg-day		1/(mg/kg-day)		1.37E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-08	1.38E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	4.62E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.94E+00	mg/kg	9.65E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-07	7.51E-07	mg/kg-day	8.00E-04	mg/kg-day	9E-04
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-07	1.59E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.50E+01	mg/kg	8.22E-07	mg/kg-day		1/(mg/kg-day)		6.39E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				1,2,4-TRICHLOROBENZENE	1.35E+01	mg/kg	4.44E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-09	3.45E-06	mg/kg-day	1.00E-02	mg/kg-day	3E-04
				1,4-DICHLOROBENZENE	5.94E+00	mg/kg	1.95E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-09	1.52E-06	mg/kg-day	7.00E-02	mg/kg-day	2E-05
				BENZENE	8.00E-03	mg/kg	2.63E-10	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-11	2.05E-09	mg/kg-day	4.00E-03	mg/kg-day	5E-07
			Exp. Route Total								**2E-05**					**1E+00**
		Exp. Point Total									**5E-05**					**4E+00**
	Exp. Medium Total										**5E-05**					**4E+00**
Medium Total											**5E-05**					**4E+00**
										Total of Receptor Risks Across All Media	**5E-05**			Total of Receptor Hazards Across All Media		**4E+00**

Notes:
(a) See Table 7.1 RME Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1i RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment (0-1 ft bgs)	Tributary 5A	Dermal	2,3,7,8-TCDD Equivalent	2.66E-05	mg/kg	3.35E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-08	2.60E-12	mg/kg-day	1.00E-09	mg/kg-day	3E-03
				ALUMINUM	8.08E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ANTIMONY	2.56E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-05	mg/kg-day	
				ARSENIC	3.36E+01	mg/kg	4.23E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	6E-07	3.29E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				BARIUM	9.29E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.24E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COBALT	5.46E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				COPPER	2.88E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	1.58E+05	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	4.10E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	1.24E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				NICKEL	1.71E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				SELENIUM	2.33E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.00E-03	mg/kg-day	
				VANADIUM	9.67E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.60E+00	mg/kg	3.29E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	7E-07	2.56E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ACENAPHTHYLENE	4.63E-01	mg/kg	2.52E-08	mg/kg-day		1/(mg/kg-day)		1.96E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.26E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-07	1.38E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	4.60E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-06	1.95E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-07	2.43E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.25E+00	mg/kg	1.23E-07	mg/kg-day		1/(mg/kg-day)		9.55E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-08	9.64E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	4.66E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	8.86E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.86E+00	mg/kg	2.65E-07	mg/kg-day		1/(mg/kg-day)		2.06E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05
				BENZENE	1.30E+01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**9E-06**					**1E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	2.66E-05	mg/kg	8.75E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-07	6.80E-12	mg/kg-day	1.00E-09	mg/kg-day	7E-03
				ALUMINUM	8.08E+03	mg/kg	2.66E-04	mg/kg-day		1/(mg/kg-day)		2.07E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				ANTIMONY	2.56E+01	mg/kg	8.43E-07	mg/kg-day		1/(mg/kg-day)		6.56E-06	mg/kg-day	4.00E-04	mg/kg-day	2E-02
				ARSENIC	3.36E+01	mg/kg	1.10E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	8.59E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				BARIUM	9.29E+02	mg/kg	3.05E-05	mg/kg-day		1/(mg/kg-day)		2.38E-04	mg/kg-day	2.00E-01	mg/kg-day	1E-03
				CHROMIUM	1.24E+04	mg/kg	4.08E-04	mg/kg-day		1/(mg/kg-day)		3.17E-03	mg/kg-day	3.00E-03	mg/kg-day	1E+00
				COBALT	5.46E+03	mg/kg	1.80E-04	mg/kg-day		1/(mg/kg-day)		1.40E-03	mg/kg-day		mg/kg-day	
				COPPER	2.88E+02	mg/kg	9.45E-06	mg/kg-day		1/(mg/kg-day)		7.35E-05	mg/kg-day	4.00E-02	mg/kg-day	2E-03
				IRON	1.58E+05	mg/kg	5.19E-03	mg/kg-day		1/(mg/kg-day)		4.04E-02	mg/kg-day	7.00E-01	mg/kg-day	6E-02
				LEAD	4.10E+03	mg/kg	1.35E-04	mg/kg-day		1/(mg/kg-day)		1.05E-03	mg/kg-day		mg/kg-day	
				MANGANESE	1.24E+03	mg/kg	4.09E-05	mg/kg-day		1/(mg/kg-day)		3.18E-04	mg/kg-day	1.40E-01	mg/kg-day	2E-03
				NICKEL	1.71E+03	mg/kg	5.62E-05	mg/kg-day		1/(mg/kg-day)		4.37E-04	mg/kg-day	2.00E-02	mg/kg-day	2E-02
				SELENIUM	2.33E+01	mg/kg	7.67E-07	mg/kg-day		1/(mg/kg-day)		5.97E-06	mg/kg-day	5.00E-03	mg/kg-day	1E-03
				VANADIUM	9.67E+03	mg/kg	3.18E-04	mg/kg-day		1/(mg/kg-day)		2.47E-03	mg/kg-day	9.00E-03	mg/kg-day	3E-01
				HIGHLY CHLORINATED PCBs	5.60E+00	mg/kg	1.84E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-07	1.43E-06	mg/kg-day	2.00E-05	mg/kg-day	7E-02
				ACENAPHTHYLENE	4.63E-01	mg/kg	1.52E-08	mg/kg-day		1/(mg/kg-day)		1.18E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.26E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	8.34E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	4.60E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-06	1.18E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-07	1.47E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.25E+00	mg/kg	7.41E-08	mg/kg-day		1/(mg/kg-day)		5.76E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-08	5.81E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	8E-07	2.81E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	5.35E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.86E+00	mg/kg	1.60E-07	mg/kg-day		1/(mg/kg-day)		1.24E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
				BENZENE	1.30E+01	mg/kg	4.27E-07	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-08	3.32E-06	mg/kg-day	4.00E-03	mg/kg-day	8E-04
			Exp. Route Total								**7E-06**					**2E+00**
		Exp. Point Total									**2E-05**					**2E+00**
	Exp. Medium Total										**2E-05**					**2E+00**
Medium Total											**2E-05**					**2E+00**

TABLE 7.1i RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Water	Surface Water	Tributary 5A	Dermal	ANTIMONY	2.77E+00	ug/L	7.74E-09	mg/kg-day		1/(mg/kg-day)		6.02E-08	mg/kg-day	6.00E-05	mg/kg-day	1E-03
				ARSENIC	4.61E+00	ug/L	1.29E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-08	1.00E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-04
				BARIUM	1.80E+02	ug/L	5.03E-07	mg/kg-day		1/(mg/kg-day)		3.91E-06	mg/kg-day	1.40E-02	mg/kg-day	3E-04
				CHROMIUM	3.31E+01	ug/L	1.85E-07	mg/kg-day		1/(mg/kg-day)		1.44E-06	mg/kg-day	7.50E-05	mg/kg-day	2E-02
				COBALT	3.60E+02	ug/L	4.02E-07	mg/kg-day		1/(mg/kg-day)		3.13E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.03E+02	ug/L	2.88E-07	mg/kg-day		1/(mg/kg-day)		2.24E-06	mg/kg-day	5.60E-03	mg/kg-day	4E-04
				NICKEL	5.26E+02	ug/L	2.94E-07	mg/kg-day		1/(mg/kg-day)		2.29E-06	mg/kg-day	8.00E-04	mg/kg-day	3E-03
				VANADIUM	3.52E+02	ug/L	9.84E-07	mg/kg-day		1/(mg/kg-day)		7.65E-06	mg/kg-day	2.34E-04	mg/kg-day	3E-02
				DELTA-BHC	5.40E-03	ug/L		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	1.70E-02	ug/L	3.41E-09	mg/kg-day	1.60E+01	1/(mg/kg-day)	5E-08	2.65E-08	mg/kg-day	5.00E-05	mg/kg-day	5E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	8.70E+02	ug/L	3.88E-04	mg/kg-day	1.40E-02	1/(mg/kg-day)	5E-06	3.02E-03	mg/kg-day	2.00E-02	mg/kg-day	2E-01
				NAPHTHALENE	1.00E+00	ug/L	1.97E-07	mg/kg-day		1/(mg/kg-day)		1.53E-06	mg/kg-day	2.00E-02	mg/kg-day	8E-05
				N-NITROSODIPHENYLAMINE	7.00E+01	ug/L	8.80E-06	mg/kg-day	4.90E-03	1/(mg/kg-day)	4E-08	6.85E-05	mg/kg-day		mg/kg-day	
				PENTACHLOROPHENOL	6.00E+00	ug/L	2.10E-05	mg/kg-day	1.20E-01	1/(mg/kg-day)	3E-06	1.63E-04	mg/kg-day	3.00E-02	mg/kg-day	5E-03
				1,4-DICHLOROBENZENE	2.00E+00	ug/L	3.95E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-09	3.07E-06	mg/kg-day	7.00E-02	mg/kg-day	4E-05
				BENZENE	5.41E+01	ug/L	2.78E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-07	2.17E-05	mg/kg-day	4.00E-03	mg/kg-day	5E-03
				BROMODICHLOROMETHANE	2.00E+00	ug/L	4.71E-08	mg/kg-day	6.20E-02	1/(mg/kg-day)	3E-09	3.67E-07	mg/kg-day	2.00E-02	mg/kg-day	2E-05
				CHLOROFORM	1.11E+01	ug/L	3.16E-07	mg/kg-day		1/(mg/kg-day)		2.46E-06	mg/kg-day	1.00E-02	mg/kg-day	2E-04
			Exp. Route Total								**8E-06**					**2E-01**
			Ingestion	ANTIMONY	2.77E+00	ug/L	2.73E-08	mg/kg-day		1/(mg/kg-day)		2.12E-07	mg/kg-day	4.00E-04	mg/kg-day	5E-04
				ARSENIC	4.61E+00	ug/L	4.55E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-08	3.54E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				BARIUM	1.80E+02	ug/L	1.78E-06	mg/kg-day		1/(mg/kg-day)		1.38E-05	mg/kg-day	2.00E-01	mg/kg-day	7E-05
				CHROMIUM	3.31E+01	ug/L	3.26E-07	mg/kg-day		1/(mg/kg-day)		2.54E-06	mg/kg-day	3.00E-03	mg/kg-day	8E-04
				COBALT	3.60E+02	ug/L	3.55E-06	mg/kg-day		1/(mg/kg-day)		2.76E-05	mg/kg-day		mg/kg-day	
				MANGANESE	1.03E+02	ug/L	1.02E-06	mg/kg-day		1/(mg/kg-day)		7.90E-06	mg/kg-day	1.40E-01	mg/kg-day	6E-05
				NICKEL	5.26E+02	ug/L	5.19E-06	mg/kg-day		1/(mg/kg-day)		4.04E-05	mg/kg-day	2.00E-02	mg/kg-day	2E-03
				VANADIUM	3.52E+02	ug/L	3.47E-06	mg/kg-day		1/(mg/kg-day)		2.70E-05	mg/kg-day	9.00E-03	mg/kg-day	3E-03
				DELTA-BHC	5.40E-03	ug/L	5.33E-11	mg/kg-day	6.30E+00	1/(mg/kg-day)	3E-10	4.14E-10	mg/kg-day		mg/kg-day	
				DIELDRIN	1.70E-02	ug/L	1.68E-10	mg/kg-day	1.60E+01	1/(mg/kg-day)	3E-09	1.30E-09	mg/kg-day	5.00E-05	mg/kg-day	3E-05
				BIS(2-ETHYLHEXYL)PHTHALATE	8.70E+02	ug/L	8.58E-06	mg/kg-day	1.40E-02	1/(mg/kg-day)	1E-07	6.67E-05	mg/kg-day	2.00E-02	mg/kg-day	3E-03
				NAPHTHALENE	1.00E+00	ug/L	9.86E-09	mg/kg-day		1/(mg/kg-day)		7.67E-08	mg/kg-day	2.00E-02	mg/kg-day	4E-06
				N-NITROSODIPHENYLAMINE	7.00E+01	ug/L	6.90E-07	mg/kg-day	4.90E-03	1/(mg/kg-day)	3E-09	5.37E-06	mg/kg-day		mg/kg-day	
				PENTACHLOROPHENOL	6.00E+00	ug/L	5.92E-08	mg/kg-day	1.20E-01	1/(mg/kg-day)	7E-09	4.60E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				1,4-DICHLOROBENZENE	2.00E+00	ug/L	1.97E-08	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-10	1.53E-07	mg/kg-day	7.00E-02	mg/kg-day	2E-06
				BENZENE	5.41E+01	ug/L	5.34E-07	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-08	4.15E-06	mg/kg-day	4.00E-03	mg/kg-day	1E-03
				BROMODICHLOROMETHANE	2.00E+00	ug/L	1.97E-08	mg/kg-day	6.20E-02	1/(mg/kg-day)	1E-09	1.53E-07	mg/kg-day	2.00E-02	mg/kg-day	8E-06
				CHLOROFORM	1.11E+01	ug/L	1.09E-07	mg/kg-day		1/(mg/kg-day)		8.51E-07	mg/kg-day	1.00E-02	mg/kg-day	9E-05
			Exp. Route Total								**2E-07**					**1E-02**
		Exp. Point Total									**8E-06**					**2E-01**
	Exp. Medium Total										**8E-06**					**2E-01**
Medium Total											**8E-06**					**2E-01**
									Total of Receptor Risks Across All Media		**3E-05**			Total of Receptor Hazards Across All Media		**2E+00**

Notes:
(a) See Table 7.1 RME Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1 RME Supplement A
CALCULATION OF CHEMICAL CANCER RISKS FOR COPC WITH A MUTAGENIC MODE OF ACTION
REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake (1)		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
							7-16 yrs		7-16 yrs (ADAF=3)		
Soil	Surface Soil (0-2 ft bgs)	Plant Area	Ingestion	BENZO(A)ANTHRACENE	9.1E+00	mg/kg	3.0E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	7E-07
				BENZO(A)PYRENE	1.2E+01	mg/kg	3.8E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	8E-06
				BENZO(B)FLUORANTHENE	1.3E+01	mg/kg	4.1E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	9E-07
				BENZO(K)FLUORANTHENE	5.7E+00	mg/kg	1.9E-07	mg/kg/day	2.2E-01	1/(mg/kg-day)	4E-08
				DIBENZO(A,H)ANTHRACENE	2.3E+00	mg/kg	7.4E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	2E-06
				INDENO(1,2,3-CD)PYRENE	1.0E+01	mg/kg	3.4E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	7E-07
			Dermal	BENZO(A)ANTHRACENE	9.1E+00	mg/kg	4.9E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	1E-06
				BENZO(A)PYRENE	1.2E+01	mg/kg	6.3E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	1E-05
				BENZO(B)FLUORANTHENE	1.3E+01	mg/kg	6.8E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	1E-06
				BENZO(K)FLUORANTHENE	5.7E+00	mg/kg	3.1E-07	mg/kg/day	2.2E-01	1/(mg/kg-day)	7E-08
				DIBENZO(A,H)ANTHRACENE	2.3E+00	mg/kg	1.2E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	3E-06
				INDENO(1,2,3-CD)PYRENE	1.0E+01	mg/kg	5.6E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	1E-06
		On-Site Ditches	Ingestion	BENZO(A)ANTHRACENE	2.1E+00	mg/kg	6.9E-08	mg/kg/day	2.2E+00	1/(mg/kg-day)	2E-07
				BENZO(A)PYRENE	2.0E+00	mg/kg	6.6E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	1E-06
				BENZO(B)FLUORANTHENE	3.0E+00	mg/kg	9.9E-08	mg/kg/day	2.2E+00	1/(mg/kg-day)	2E-07
				DIBENZO(A,H)ANTHRACENE	4.4E-01	mg/kg	1.4E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	3E-07
				INDENO(1,2,3-CD)PYRENE	1.2E+00	mg/kg	3.9E-08	mg/kg/day	2.2E+00	1/(mg/kg-day)	9E-08
			Dermal	BENZO(A)ANTHRACENE	2.1E+00	mg/kg	1.1E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	3E-07
				BENZO(A)PYRENE	2.0E+00	mg/kg	1.1E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	2E-06
				BENZO(B)FLUORANTHENE	3.0E+00	mg/kg	1.6E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	4E-07
				DIBENZO(A,H)ANTHRACENE	4.4E-01	mg/kg	2.4E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	5E-07
				INDENO(1,2,3-CD)PYRENE	1.2E+00	mg/kg	6.5E-08	mg/kg/day	2.2E+00	1/(mg/kg-day)	1E-07
		Former Chlorination Building	Ingestion	BENZO(A)ANTHRACENE	1.6E+00	mg/kg	5.3E-08	mg/kg/day	2.2E+00	1/(mg/kg-day)	1E-07
				BENZO(A)PYRENE	1.5E+00	mg/kg	4.9E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	1E-06
				BENZO(B)FLUORANTHENE	2.8E+00	mg/kg	9.2E-08	mg/kg/day	2.2E+00	1/(mg/kg-day)	2E-07
				DIBENZO(A,H)ANTHRACENE	3.1E-01	mg/kg	1.0E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	2E-07
				INDENO(1,2,3-CD)PYRENE	8.8E-01	mg/kg	2.9E-08	mg/kg/day	2.2E+00	1/(mg/kg-day)	6E-08
			Dermal	BENZO(A)ANTHRACENE	1.6E+00	mg/kg	8.7E-08	mg/kg/day	2.2E+00	1/(mg/kg-day)	2E-07
				BENZO(A)PYRENE	1.5E+00	mg/kg	8.2E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	2E-06
				BENZO(B)FLUORANTHENE	2.8E+00	mg/kg	1.5E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	3E-07
				DIBENZO(A,H)ANTHRACENE	3.1E-01	mg/kg	1.7E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	4E-07
				INDENO(1,2,3-CD)PYRENE	8.8E-01	mg/kg	4.8E-08	mg/kg/day	2.2E+00	1/(mg/kg-day)	1E-07
		Southwest Off-Site/ Outfall 006 Exposure Area	Ingestion	BENZO(A)ANTHRACENE	6.7E+00	mg/kg	2.2E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	5E-07
				BENZO(A)PYRENE	7.8E+00	mg/kg	2.6E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	6E-06
				BENZO(B)FLUORANTHENE	1.3E+01	mg/kg	4.3E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	9E-07
				BENZO(K)FLUORANTHENE	3.3E+00	mg/kg	1.1E-07	mg/kg/day	2.2E-01	1/(mg/kg-day)	2E-08
				DIBENZO(A,H)ANTHRACENE	2.4E+00	mg/kg	7.9E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	2E-06
				INDENO(1,2,3-CD)PYRENE	5.1E+00	mg/kg	1.7E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	4E-07

TABLE 7.1 RME Supplement A
CALCULATION OF CHEMICAL CANCER RISKS FOR COPC WITH A MUTAGENIC MODE OF ACTION
REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake (1)		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
							7-16 yrs		7-16 yrs (ADAF=3)		
	Surface Soil (0-2 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	Dermal	BENZO(A)ANTHRACENE	6.7E+00	mg/kg	3.7E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	8E-07
				BENZO(A)PYRENE	7.8E+00	mg/kg	4.3E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	9E-06
				BENZO(B)FLUORANTHENE	1.3E+01	mg/kg	7.1E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	2E-06
				BENZO(K)FLUORANTHENE	3.3E+00	mg/kg	1.8E-07	mg/kg/day	2.2E-01	1/(mg/kg-day)	4E-08
				DIBENZO(A,H)ANTHRACENE	2.4E+00	mg/kg	1.3E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	3E-06
				INDENO(1,2,3-CD)PYRENE	5.1E+00	mg/kg	2.8E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	6E-07
		Lakeshore Area	Ingestion	BENZO(A)ANTHRACENE	1.1E+01	mg/kg	3.6E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	8E-07
				BENZO(A)PYRENE	8.9E+00	mg/kg	2.9E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	6E-06
				BENZO(B)FLUORANTHENE	1.2E+01	mg/kg	3.9E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	9E-07
				BENZO(K)FLUORANTHENE	3.0E+00	mg/kg	9.9E-08	mg/kg/day	2.2E-01	1/(mg/kg-day)	2E-08
				DIBENZO(A,H)ANTHRACENE	1.2E+00	mg/kg	3.9E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	9E-07
				INDENO(1,2,3-CD)PYRENE	2.4E+00	mg/kg	7.9E-08	mg/kg/day	2.2E+00	1/(mg/kg-day)	2E-07
			Dermal	BENZO(A)ANTHRACENE	1.1E+01	mg/kg	6.0E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	1E-06
				BENZO(A)PYRENE	8.9E+00	mg/kg	4.8E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	1E-05
				BENZO(B)FLUORANTHENE	1.2E+01	mg/kg	6.5E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	1E-06
				BENZO(K)FLUORANTHENE	3.0E+00	mg/kg	1.6E-07	mg/kg/day	2.2E-01	1/(mg/kg-day)	4E-08
				DIBENZO(A,H)ANTHRACENE	1.2E+00	mg/kg	6.5E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	1E-06
				INDENO(1,2,3-CD)PYRENE	2.4E+00	mg/kg	1.3E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	3E-07
		Petroleum Storage Area	Ingestion	BENZO(A)ANTHRACENE	7.3E+00	mg/kg	2.4E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	5E-07
				BENZO(A)PYRENE	7.0E+00	mg/kg	2.3E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	5E-06
				BENZO(B)FLUORANTHENE	1.0E+01	mg/kg	3.3E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	7E-07
				BENZO(K)FLUORANTHENE	2.8E+00	mg/kg	9.2E-08	mg/kg/day	2.2E-01	1/(mg/kg-day)	2E-08
				DIBENZO(A,H)ANTHRACENE	1.7E+00	mg/kg	5.6E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	1E-06
				INDENO(1,2,3-CD)PYRENE	6.1E+00	mg/kg	2.0E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	4E-07
			Dermal	BENZO(A)ANTHRACENE	7.3E+00	mg/kg	4.0E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	9E-07
				BENZO(A)PYRENE	7.0E+00	mg/kg	3.8E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	8E-06
				BENZO(B)FLUORANTHENE	1.0E+01	mg/kg	5.4E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	1E-06
				BENZO(K)FLUORANTHENE	2.8E+00	mg/kg	1.5E-07	mg/kg/day	2.2E-01	1/(mg/kg-day)	3E-08
				DIBENZO(A,H)ANTHRACENE	1.7E+00	mg/kg	9.3E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	2E-06
				INDENO(1,2,3-CD)PYRENE	6.1E+00	mg/kg	3.3E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	7E-07
		Chlorobenzene Hot-Spot Area	Ingestion	BENZO(A)ANTHRACENE	1.3E+01	mg/kg	4.4E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	1E-06
				BENZO(A)PYRENE	7.7E+00	mg/kg	2.5E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	6E-06
				BENZO(B)FLUORANTHENE	1.8E+01	mg/kg	5.9E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	1E-06
				BENZO(K)FLUORANTHENE	5.4E+00	mg/kg	1.8E-07	mg/kg/day	2.2E-01	1/(mg/kg-day)	4E-08
				DIBENZO(A,H)ANTHRACENE	1.8E+00	mg/kg	5.9E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	1E-06
				INDENO(1,2,3-CD)PYRENE	6.2E+00	mg/kg	2.0E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	4E-07

TABLE 7.1 RME Supplement A
CALCULATION OF CHEMICAL CANCER RISKS FOR COPC WITH A MUTAGENIC MODE OF ACTION
REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake (1)		CSF/Unit Risk		
					Value	Units	Value	Units	Value	Units	Cancer Risk
							7-16 yrs		7-16 yrs (ADAF=3)		
Soil	Surface Soil (0-2 ft bgs)	Chlorobenzene Hot-Spot Area	Dermal	BENZO(A)ANTHRACENE	1.3E+01	mg/kg	7.3E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	2E-06
				BENZO(A)PYRENE	7.7E+00	mg/kg	4.2E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	9E-06
				BENZO(B)FLUORANTHENE	1.8E+01	mg/kg	9.7E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	2E-06
				BENZO(K)FLUORANTHENE	5.4E+00	mg/kg	2.9E-07	mg/kg/day	2.2E-01	1/(mg/kg-day)	6E-08
				DIBENZO(A,H)ANTHRACENE	1.8E+00	mg/kg	9.8E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	2E-06
				INDENO(1,2,3-CD)PYRENE	6.2E+00	mg/kg	3.4E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	7E-07
Sediment	Sediment (0-1 ft)	Tributary 5A	Ingestion	BENZO(A)ANTHRACENE	3.3E+00	mg/kg	1.1E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	2E-07
				BENZO(A)PYRENE	4.6E+00	mg/kg	1.5E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	3E-06
				BENZO(B)FLUORANTHENE	5.7E+00	mg/kg	1.9E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	4E-07
				BENZO(K)FLUORANTHENE	2.3E+00	mg/kg	7.5E-08	mg/kg/day	2.2E-01	1/(mg/kg-day)	2E-08
				DIBENZO(A,H)ANTHRACENE	1.1E+00	mg/kg	3.6E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	8E-07
				INDENO(1,2,3-CD)PYRENE	2.1E+00	mg/kg	6.9E-08	mg/kg/day	2.2E+00	1/(mg/kg-day)	2E-07
			Dermal	BENZO(A)ANTHRACENE	3.3E+00	mg/kg	1.8E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	4E-07
				BENZO(A)PYRENE	4.6E+00	mg/kg	2.5E-07	mg/kg/day	2.2E+01	1/(mg/kg-day)	5E-06
				BENZO(B)FLUORANTHENE	5.7E+00	mg/kg	3.1E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	7E-07
				BENZO(K)FLUORANTHENE	2.3E+00	mg/kg	1.2E-07	mg/kg/day	2.2E-01	1/(mg/kg-day)	3E-08
				DIBENZO(A,H)ANTHRACENE	1.1E+00	mg/kg	6.0E-08	mg/kg/day	2.2E+01	1/(mg/kg-day)	1E-06
				INDENO(1,2,3-CD)PYRENE	2.1E+00	mg/kg	1.1E-07	mg/kg/day	2.2E+00	1/(mg/kg-day)	2E-07

(1) - Intake equations derived from Table 4 Series.

TABLE 7.2a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Dermal	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	2.43E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-06	5.67E-11	mg/kg-day	1.00E-09	mg/kg-day	6E-02
				ALUMINUM	8.34E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.63E+01	mg/kg	9.51E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	2.22E-06	mg/kg-day	3.00E-04	mg/kg-day	7E-03
				BARIUM	3.36E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.88E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.27E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.47E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	9.52E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.69E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	2.25E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	5.23E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-06	1.22E-06	mg/kg-day	2.00E-05	mg/kg-day	6E-02
				DELTA-BHC	1.90E+00	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg		mg/kg-day	1.60E+01	1/(mg/kg-day)			mg/kg-day	5.00E-05	mg/kg-day	
				ACENAPHTHYLENE	2.09E-01	mg/kg	3.27E-08	mg/kg-day		1/(mg/kg-day)		7.64E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	1.42E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	3.31E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	1.82E-06	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-05	4.24E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	1.96E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	4.58E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	1.63E-06	mg/kg-day		1/(mg/kg-day)		3.80E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	8.92E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	7E-08	2.08E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	3.54E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-06	8.25E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	8.59E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-06	2.00E-06	mg/kg-day	8.00E-04	mg/kg-day	3E-03
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	2.17E-07	mg/kg-day	7.80E-02	1/(mg/kg-day)	2E-08	5.06E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	1.60E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	3.74E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	2.31E-06	mg/kg-day		1/(mg/kg-day)		5.38E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	6.03E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	1.39E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**3E-05**					**1E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	2.37E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-06	5.53E-11	mg/kg-day	1.00E-09	mg/kg-day	6E-02
				ALUMINUM	8.34E+03	mg/kg	2.94E-04	mg/kg-day		1/(mg/kg-day)		6.86E-04	mg/kg-day	1.00E+00	mg/kg-day	7E-04
				ARSENIC	2.63E+01	mg/kg	9.27E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	2.16E-06	mg/kg-day	3.00E-04	mg/kg-day	7E-03
				BARIUM	3.36E+02	mg/kg	1.18E-05	mg/kg-day		1/(mg/kg-day)		2.76E-05	mg/kg-day	2.00E-01	mg/kg-day	1E-04
				CHROMIUM	1.88E+01	mg/kg	6.63E-07	mg/kg-day		1/(mg/kg-day)		1.55E-06	mg/kg-day	3.00E-03	mg/kg-day	5E-04
				IRON	2.27E+04	mg/kg	8.01E-04	mg/kg-day		1/(mg/kg-day)		1.87E-03	mg/kg-day	7.00E-01	mg/kg-day	3E-03
				MANGANESE	3.47E+02	mg/kg	1.22E-05	mg/kg-day		1/(mg/kg-day)		2.85E-05	mg/kg-day	1.40E-01	mg/kg-day	2E-04
				MERCURY	9.52E+02	mg/kg	3.35E-05	mg/kg-day		1/(mg/kg-day)		7.83E-05	mg/kg-day	3.00E-04	mg/kg-day	3E-01
				NICKEL	3.69E+03	mg/kg	1.30E-04	mg/kg-day		1/(mg/kg-day)		3.03E-04	mg/kg-day	2.00E-02	mg/kg-day	2E-02
				VANADIUM	2.25E+01	mg/kg	7.92E-07	mg/kg-day		1/(mg/kg-day)		1.85E-06	mg/kg-day	9.00E-03	mg/kg-day	2E-04
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	1.09E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	2.55E-07	mg/kg-day	2.00E-05	mg/kg-day	1E-02
				DELTA-BHC	1.90E+00	mg/kg	6.69E-08	mg/kg-day	6.30E+00	1/(mg/kg-day)	4E-07	1.56E-07	mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg	1.30E-07	mg/kg-day	1.60E+01	1/(mg/kg-day)	2E-06	3.04E-07	mg/kg-day	5.00E-05	mg/kg-day	6E-03
				ACENAPHTHYLENE	2.09E-01	mg/kg	7.36E-09	mg/kg-day		1/(mg/kg-day)		1.72E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	3.19E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	7.45E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	4.09E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-06	9.53E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	4.41E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	1.03E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	3.66E-07	mg/kg-day		1/(mg/kg-day)		8.54E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	2.01E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	1E-08	4.68E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	7.96E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	6E-07	1.86E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	2.51E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	4E-07	5.86E-07	mg/kg-day	8.00E-04	mg/kg-day	7E-04
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	6.34E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	5E-09	1.48E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	3.60E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	8.41E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	5.19E-07	mg/kg-day		1/(mg/kg-day)		1.21E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05

TABLE 7.2a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Ingestion	1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg	1.47E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	5E-10	3.43E-07	mg/kg-day	1.00E-02	mg/kg-day	3E-05
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg	1.37E-05	mg/kg-day		1/(mg/kg-day)		3.21E-05	mg/kg-day	9.00E-02	mg/kg-day	4E-04
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg	2.96E-07	mg/kg-day		1/(mg/kg-day)		6.90E-07	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg	8.59E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	5E-07	2.00E-04	mg/kg-day	7.00E-02	mg/kg-day	3E-03
				BENZENE	6.03E-03	mg/kg	2.12E-10	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-11	4.96E-10	mg/kg-day	4.00E-03	mg/kg-day	1E-07
				CHLOROBENZENE	1.39E+02	mg/kg	4.89E-06	mg/kg-day		1/(mg/kg-day)		1.14E-05	mg/kg-day	2.00E-02	mg/kg-day	6E-04
			Exp. Route Total								**1E-05**					**4E-01**
		Exp. Point Total									**4E-05**					**5E-01**
	Exp. Medium Total										**4E-05**					**5E-01**
Medium Total											**4E-05**					**5E-01**
									Total of Receptor Risks Across All Media		**4E-05**	Total of Receptor Hazards Across All Media				**5E-01**

TABLE 7.2b RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	On-Site Ditches	Dermal	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	2.72E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-05	6.36E-10	mg/kg-day	1.00E-09	mg/kg-day	6E-01
				ARSENIC	3.99E+01	mg/kg	1.44E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	3.36E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				CHROMIUM	1.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COPPER	3.26E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	5.39E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	6.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.56E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				METHYL MERCURY	6.86E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-04	mg/kg-day	
				NICKEL	3.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	6.39E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	2.36E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-06	5.51E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	2.66E-08	mg/kg-day		1/(mg/kg-day)		6.21E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	3.29E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	7.67E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	3.13E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	7.31E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	4.70E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	1.10E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	2.19E-07	mg/kg-day		1/(mg/kg-day)		5.12E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	6.89E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	1.61E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	1.88E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	4.39E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	3.13E-07	mg/kg-day		1/(mg/kg-day)		7.31E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
			Exp. Route Total								**5E-05**					**9E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	2.66E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-05	6.20E-10	mg/kg-day	1.00E-09	mg/kg-day	6E-01
				ARSENIC	3.99E+01	mg/kg	1.41E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	3.28E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				CHROMIUM	1.92E+02	mg/kg	6.76E-06	mg/kg-day		1/(mg/kg-day)		1.58E-05	mg/kg-day	3.00E-03	mg/kg-day	5E-03
				COPPER	3.26E+02	mg/kg	1.15E-05	mg/kg-day		1/(mg/kg-day)		2.68E-05	mg/kg-day	4.00E-02	mg/kg-day	7E-04
				IRON	5.39E+04	mg/kg	1.90E-03	mg/kg-day		1/(mg/kg-day)		4.43E-03	mg/kg-day	7.00E-01	mg/kg-day	6E-03
				LEAD	6.92E+02	mg/kg	2.44E-05	mg/kg-day		1/(mg/kg-day)		5.69E-05	mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg	1.52E-05	mg/kg-day		1/(mg/kg-day)		3.55E-05	mg/kg-day	1.40E-01	mg/kg-day	3E-04
				MERCURY	3.56E+03	mg/kg	1.25E-04	mg/kg-day		1/(mg/kg-day)		2.93E-04	mg/kg-day	3.00E-04	mg/kg-day	1E+00
				METHYL MERCURY	6.86E-01	mg/kg	2.42E-08	mg/kg-day		1/(mg/kg-day)		5.64E-08	mg/kg-day	1.00E-04	mg/kg-day	6E-04
				NICKEL	3.01E+02	mg/kg	1.06E-05	mg/kg-day		1/(mg/kg-day)		2.47E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				VANADIUM	6.39E+01	mg/kg	2.25E-06	mg/kg-day		1/(mg/kg-day)		5.25E-06	mg/kg-day	9.00E-03	mg/kg-day	6E-04
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	4.93E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-06	1.15E-06	mg/kg-day	2.00E-05	mg/kg-day	6E-02
				ACENAPHTHYLENE	1.70E-01	mg/kg	5.99E-09	mg/kg-day		1/(mg/kg-day)		1.40E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	7.40E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	1.73E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	7.05E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	1.64E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	1.06E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-08	2.47E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	4.93E-08	mg/kg-day		1/(mg/kg-day)		1.15E-07	mg/kg-day	3.00E-02	mg/kg-day	4E-06
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	1.55E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	3.62E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	4.23E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	9.86E-08	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	7.05E-08	mg/kg-day		1/(mg/kg-day)		1.64E-07	mg/kg-day	3.00E-02	mg/kg-day	5E-06
			Exp. Route Total								**4E-05**					**2E+00**
		Exp. Point Total									**9E-05**					**3E+00**
	Exp. Medium Total										**9E-05**					**3E+00**
Medium Total											**9E-05**					**3E+00**
										Total of Receptor Risks Across All Media	**9E-05**			Total of Receptor Hazards Across All Media		**3E+00**

TABLE 7.2c RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	Dermal	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	2.26E-09	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-04	5.28E-09	mg/kg-day	1.00E-09	mg/kg-day	5E+00
				ARSENIC	1.04E+01	mg/kg	3.76E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	6E-07	8.77E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				CHROMIUM	1.35E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	8.57E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.38E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	8.20E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	9.28E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	2.16E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ACENAPHTHYLENE	4.00E-02	mg/kg	6.26E-09	mg/kg-day		1/(mg/kg-day)		1.46E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	2.51E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	5.85E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	2.35E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	5.48E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	4.39E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	1.02E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	1.72E-07	mg/kg-day		1/(mg/kg-day)		4.02E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	4.85E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	1.13E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	1.38E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	3.22E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	2.98E-07	mg/kg-day		1/(mg/kg-day)		6.94E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
			Exp. Route Total								**3E-04**					**5E+00**
			Ingestion	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	2.21E-09	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-04	5.15E-09	mg/kg-day	1.00E-09	mg/kg-day	5E+00
				ARSENIC	1.04E+01	mg/kg	3.66E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-07	8.55E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				CHROMIUM	1.35E+01	mg/kg	4.76E-07	mg/kg-day		1/(mg/kg-day)		1.11E-06	mg/kg-day	3.00E-03	mg/kg-day	4E-04
				IRON	8.57E+03	mg/kg	3.02E-04	mg/kg-day		1/(mg/kg-day)		7.04E-04	mg/kg-day	7.00E-01	mg/kg-day	1E-03
				MANGANESE	3.38E+02	mg/kg	1.19E-05	mg/kg-day		1/(mg/kg-day)		2.78E-05	mg/kg-day	1.40E-01	mg/kg-day	2E-04
				MERCURY	8.20E+00	mg/kg	2.89E-07	mg/kg-day		1/(mg/kg-day)		6.74E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				VANADIUM	1.24E+01	mg/kg	4.37E-07	mg/kg-day		1/(mg/kg-day)		1.02E-06	mg/kg-day	9.00E-03	mg/kg-day	1E-04
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	1.94E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-07	4.52E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				ACENAPHTHYLENE	4.00E-02	mg/kg	1.41E-09	mg/kg-day		1/(mg/kg-day)		3.29E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	5.64E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	1.32E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	5.28E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	1.23E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	9.86E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	2.30E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	3.87E-08	mg/kg-day		1/(mg/kg-day)		9.04E-08	mg/kg-day	3.00E-02	mg/kg-day	3E-06
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	1.09E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	8E-08	2.55E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	3.10E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	7.23E-08	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	6.69E-08	mg/kg-day		1/(mg/kg-day)		1.56E-07	mg/kg-day	3.00E-02	mg/kg-day	5E-06
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg	7.05E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	3E-09	1.64E-06	mg/kg-day	1.00E-02	mg/kg-day	2E-04
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg	2.75E-06	mg/kg-day		1/(mg/kg-day)		6.41E-06	mg/kg-day	9.00E-02	mg/kg-day	7E-05
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg	6.34E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	3E-09	1.48E-06	mg/kg-day	7.00E-02	mg/kg-day	2E-05
			Exp. Route Total								**3E-04**					**5E+00**
		Exp. Point Total									**7E-04**					**1E+01**
	Exp. Medium Total										**7E-04**					**1E+01**
Medium Total											**7E-04**					**1E+01**
									Total of Receptor Risks Across All Media		**7E-04**			Total of Receptor Hazards Across All Media		**1E+01**

TABLE 7.2d RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	2.52E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-06	5.87E-11	mg/kg-day	1.00E-09	mg/kg-day	6E-02
				ALUMINUM	7.77E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.76E+01	mg/kg	9.97E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	2.33E-06	mg/kg-day	3.00E-04	mg/kg-day	8E-03
				BARIUM	6.73E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.83E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.64E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	5.66E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.11E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.06E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	5.90E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-05	1.38E-05	mg/kg-day	2.00E-05	mg/kg-day	7E-01
				ALDRIN	1.08E-01	mg/kg		mg/kg-day	1.70E+01	1/(mg/kg-day)			mg/kg-day	3.00E-05	mg/kg-day	
				DELTA-BHC	3.60E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ENDOSULFAN I	3.20E-03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-03	mg/kg-day	
				HEPTACHLOR	1.20E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.00E-04	mg/kg-day	
				ACENAPHTHYLENE	4.90E-01	mg/kg	7.67E-08	mg/kg-day		1/(mg/kg-day)		1.79E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	1.05E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-07	2.45E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	1.22E-06	mg/kg-day	7.30E+00	1/(mg/kg-day)	9E-06	2.85E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	2.04E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	4.75E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.80E+00	mg/kg	9.08E-07	mg/kg-day		1/(mg/kg-day)		2.12E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	5.17E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	4E-08	1.21E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	3.76E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-06	8.77E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.72E+00	mg/kg	4.48E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	7E-07	1.05E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	7.99E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-07	1.86E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	8.80E+00	mg/kg	1.38E-06	mg/kg-day		1/(mg/kg-day)		3.22E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZENE	2.00E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				TRICHLOROETHENE	3.79E-02	mg/kg		mg/kg-day	4.00E-01	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
			Exp. Route Total								**3E-05**					**8E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	2.45E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-06	5.72E-11	mg/kg-day	1.00E-09	mg/kg-day	6E-02
				ALUMINUM	7.77E+03	mg/kg	2.74E-04	mg/kg-day		1/(mg/kg-day)		6.39E-04	mg/kg-day	1.00E+00	mg/kg-day	6E-04
				ARSENIC	2.76E+01	mg/kg	9.72E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	2.27E-06	mg/kg-day	3.00E-04	mg/kg-day	8E-03
				BARIUM	6.73E+02	mg/kg	2.37E-05	mg/kg-day		1/(mg/kg-day)		5.53E-05	mg/kg-day	2.00E-01	mg/kg-day	3E-04
				CHROMIUM	1.83E+02	mg/kg	6.45E-06	mg/kg-day		1/(mg/kg-day)		1.50E-05	mg/kg-day	3.00E-03	mg/kg-day	5E-03
				IRON	2.64E+04	mg/kg	9.30E-04	mg/kg-day		1/(mg/kg-day)		2.17E-03	mg/kg-day	7.00E-01	mg/kg-day	3E-03
				LEAD	5.66E+02	mg/kg	1.99E-05	mg/kg-day		1/(mg/kg-day)		4.65E-05	mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg	1.04E-05	mg/kg-day		1/(mg/kg-day)		2.43E-05	mg/kg-day	1.40E-01	mg/kg-day	2E-04
				MERCURY	1.11E+03	mg/kg	3.90E-05	mg/kg-day		1/(mg/kg-day)		9.09E-05	mg/kg-day	3.00E-04	mg/kg-day	3E-01
				VANADIUM	1.06E+02	mg/kg	3.73E-06	mg/kg-day		1/(mg/kg-day)		8.71E-06	mg/kg-day	9.00E-03	mg/kg-day	1E-03
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	1.23E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	2.88E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ALDRIN	1.08E-01	mg/kg	3.80E-09	mg/kg-day	1.70E+01	1/(mg/kg-day)	6E-08	8.88E-09	mg/kg-day	3.00E-05	mg/kg-day	3E-04
				DELTA-BHC	3.60E-03	mg/kg	1.27E-10	mg/kg-day	6.30E+00	1/(mg/kg-day)	8E-10	2.96E-10	mg/kg-day		mg/kg-day	
				ENDOSULFAN I	3.20E-03	mg/kg	1.13E-10	mg/kg-day		1/(mg/kg-day)		2.63E-10	mg/kg-day	6.00E-03	mg/kg-day	4E-08
				HEPTACHLOR	1.20E-01	mg/kg	4.23E-09	mg/kg-day	4.50E+00	1/(mg/kg-day)	2E-08	9.86E-09	mg/kg-day	5.00E-04	mg/kg-day	2E-05
				ACENAPHTHYLENE	4.90E-01	mg/kg	1.73E-08	mg/kg-day		1/(mg/kg-day)		4.03E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	2.36E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	5.51E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	2.75E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	6.41E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	4.58E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	1.07E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.80E+00	mg/kg	2.04E-07	mg/kg-day		1/(mg/kg-day)		4.77E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	1.16E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	8E-09	2.71E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	8.45E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	6E-07	1.97E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.72E+00	mg/kg	1.31E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-07	3.06E-07	mg/kg-day	8.00E-04	mg/kg-day	4E-04
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	1.80E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	4.19E-07	mg/kg-day		mg/kg-day	

TABLE 7.2d RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Ingestion	PHENANTHRENE	8.80E+00	mg/kg	3.10E-07	mg/kg-day		1/(mg/kg-day)		7.23E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZENE	2.00E-03	mg/kg	7.05E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	4E-12	1.64E-10	mg/kg-day	4.00E-03	mg/kg-day	4E-08
				TRICHLOROETHENE	3.79E-02	mg/kg	1.34E-09	mg/kg-day	4.00E-01	1/(mg/kg-day)	5E-10	3.12E-09	mg/kg-day		mg/kg-day	
			Exp. Route Total								**1E-05**					**5E-01**
		Exp. Point Total									**4E-05**					**1E+00**
	Exp. Medium Total										**4E-05**					**1E+00**
Medium Total											**4E-05**					**1E+00**
							Total of Receptor Risks Across All Media				**4E-05**	Total of Receptor Hazards Across All Media				**1E+00**

TABLE 7.2e RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	State Fair Blvd/Northwest Off-site/Oufall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	1.91E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-06	4.45E-11	mg/kg-day	1.00E-09	mg/kg-day	4E-02
				MERCURY	1.60E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	2.53E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-07	5.90E-07	mg/kg-day	2.00E-05	mg/kg-day	3E-02
				1,2,3-TRICHLOROBENZENE	1.20E-02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				BENZENE	1.40E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**3E-06**					**7E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	1.86E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-06	4.34E-11	mg/kg-day	1.00E-09	mg/kg-day	4E-02
				MERCURY	1.60E+02	mg/kg	5.64E-06	mg/kg-day		1/(mg/kg-day)		1.32E-05	mg/kg-day	3.00E-04	mg/kg-day	4E-02
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	5.28E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-07	1.23E-07	mg/kg-day	2.00E-05	mg/kg-day	6E-03
				1,2,3-TRICHLOROBENZENE	1.20E-02	mg/kg	4.23E-10	mg/kg-day		1/(mg/kg-day)		9.86E-10	mg/kg-day		mg/kg-day	
				BENZENE	1.40E-03	mg/kg	4.93E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-12	1.15E-10	mg/kg-day	4.00E-03	mg/kg-day	3E-08
			Exp. Route Total								**3E-06**					**9E-02**
		Exp. Point Total									**6E-06**					**2E-01**
	Exp. Medium Total										**6E-06**					**2E-01**
Medium Total											**6E-06**					**2E-01**
									Total of Receptor Risks Across All Media		**6E-06**	Total of Receptor Hazards Across All Media				**2E-01**

TABLE 7.2f RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
LAKESHORE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Lakeshore Area	Dermal	2,3,7,8-TCDD Equivalent	5.90E-05	mg/kg	2.13E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-07	4.98E-12	mg/kg-day	1.00E-09	mg/kg-day	5E-03
				ALUMINUM	8.21E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	1.11E+01	mg/kg	4.00E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	6E-07	9.33E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				CHROMIUM	4.42E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	1.75E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.91E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.05E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	2.02E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				ZINC	1.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	3.00E-01	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.70E+00	mg/kg	6.24E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-06	1.46E-06	mg/kg-day	2.00E-05	mg/kg-day	7E-02
				ENDOSULFAN I	2.50E-02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-03	mg/kg-day	
				ACENAPHTHYLENE	1.38E+00	mg/kg	2.16E-07	mg/kg-day		1/(mg/kg-day)		5.04E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.10E+01	mg/kg	1.72E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	4.02E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	8.90E+00	mg/kg	1.39E-06	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-05	3.25E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	1.88E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	4.39E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.36E+00	mg/kg	3.70E-07	mg/kg-day		1/(mg/kg-day)		8.63E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	4.72E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-08	1.10E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	1.88E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	4.39E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	3.77E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	8.79E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.70E+01	mg/kg	4.23E-06	mg/kg-day		1/(mg/kg-day)		9.87E-06	mg/kg-day	3.00E-02	mg/kg-day	3E-04
			Exp. Route Total								**2E-05**					**8E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	5.90E-05	mg/kg	2.08E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-07	4.85E-12	mg/kg-day	1.00E-09	mg/kg-day	5E-03
				ALUMINUM	8.21E+03	mg/kg	2.89E-04	mg/kg-day		1/(mg/kg-day)		6.75E-04	mg/kg-day	1.00E+00	mg/kg-day	7E-04
				ARSENIC	1.11E+01	mg/kg	3.90E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	6E-07	9.09E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				CHROMIUM	4.42E+01	mg/kg	1.56E-06	mg/kg-day		1/(mg/kg-day)		3.63E-06	mg/kg-day	3.00E-03	mg/kg-day	1E-03
				IRON	1.75E+04	mg/kg	6.16E-04	mg/kg-day		1/(mg/kg-day)		1.44E-03	mg/kg-day	7.00E-01	mg/kg-day	2E-03
				MANGANESE	3.91E+02	mg/kg	1.38E-05	mg/kg-day		1/(mg/kg-day)		3.21E-05	mg/kg-day	1.40E-01	mg/kg-day	2E-04
				MERCURY	3.05E+00	mg/kg	1.08E-07	mg/kg-day		1/(mg/kg-day)		2.51E-07	mg/kg-day	3.00E-04	mg/kg-day	8E-04
				VANADIUM	2.02E+01	mg/kg	7.11E-07	mg/kg-day		1/(mg/kg-day)		1.66E-06	mg/kg-day	9.00E-03	mg/kg-day	2E-04
				ZINC	1.01E+02	mg/kg	3.55E-06	mg/kg-day		1/(mg/kg-day)		8.28E-06	mg/kg-day	3.00E-01	mg/kg-day	3E-05
				HIGHLY CHLORINATED PCBs	3.70E+00	mg/kg	1.30E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-07	3.04E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				ENDOSULFAN I	2.50E-02	mg/kg	8.81E-10	mg/kg-day		1/(mg/kg-day)		2.05E-09	mg/kg-day	6.00E-03	mg/kg-day	3E-07
				ACENAPHTHYLENE	1.38E+00	mg/kg	4.86E-08	mg/kg-day		1/(mg/kg-day)		1.13E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.10E+01	mg/kg	3.87E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	9.04E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	8.90E+00	mg/kg	3.14E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	7.32E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	4.23E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	9.86E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.36E+00	mg/kg	8.32E-08	mg/kg-day		1/(mg/kg-day)		1.94E-07	mg/kg-day	3.00E-02	mg/kg-day	6E-06
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	1.06E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	8E-09	2.48E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	4.23E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	9.86E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	8.48E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	1.98E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.70E+01	mg/kg	9.51E-07	mg/kg-day		1/(mg/kg-day)		2.22E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05
			Exp. Route Total								**4E-06**					**3E-02**
		Exp. Point Total									**2E-05**					**1E-01**
	Exp. Medium Total										**2E-05**					**1E-01**
Medium Total											**2E-05**					**1E-01**
										Total of Receptor Risks Across All Media	**2E-05**			Total of Receptor Hazards Across All Media		**1E-01**

TABLE 7.2g RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Petroleum Storage Area	Dermal	ARSENIC	6.76E+01	mg/kg	2.44E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-06	5.70E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				CHROMIUM	2.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.86E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	4.86E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.42E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	2.01E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	1.21E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	2.83E-07	mg/kg-day	2.00E-05	mg/kg-day	1E-02
				DELTA-BHC	1.20E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	6.90E-01	mg/kg	1.08E-07	mg/kg-day		1/(mg/kg-day)		2.52E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	7.30E+00	mg/kg	1.14E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-07	2.67E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.00E+00	mg/kg	1.10E-06	mg/kg-day	7.30E+00	1/(mg/kg-day)	8E-06	2.56E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	1.57E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	3.65E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	6.70E+00	mg/kg	1.05E-06	mg/kg-day		1/(mg/kg-day)		2.45E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	4.39E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-08	1.02E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	2.66E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	6.21E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	9.55E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-07	2.23E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.40E+00	mg/kg	6.89E-07	mg/kg-day		1/(mg/kg-day)		1.61E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				BENZENE	8.60E-02	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**2E-05**					**3E-02**
			Ingestion	ARSENIC	6.76E+01	mg/kg	2.38E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-06	5.56E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				CHROMIUM	2.80E+01	mg/kg	9.86E-07	mg/kg-day		1/(mg/kg-day)		2.30E-06	mg/kg-day	3.00E-03	mg/kg-day	8E-04
				IRON	2.86E+04	mg/kg	1.01E-03	mg/kg-day		1/(mg/kg-day)		2.35E-03	mg/kg-day	7.00E-01	mg/kg-day	3E-03
				MANGANESE	4.86E+02	mg/kg	1.71E-05	mg/kg-day		1/(mg/kg-day)		3.99E-05	mg/kg-day	1.40E-01	mg/kg-day	3E-04
				MERCURY	1.42E+01	mg/kg	5.00E-07	mg/kg-day		1/(mg/kg-day)		1.17E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				VANADIUM	2.01E+01	mg/kg	7.08E-07	mg/kg-day		1/(mg/kg-day)		1.65E-06	mg/kg-day	9.00E-03	mg/kg-day	2E-04
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	2.54E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-08	5.92E-08	mg/kg-day	2.00E-05	mg/kg-day	3E-03
				DELTA-BHC	1.20E-03	mg/kg	4.23E-11	mg/kg-day	6.30E+00	1/(mg/kg-day)	3E-10	9.86E-11	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	6.90E-01	mg/kg	2.43E-08	mg/kg-day		1/(mg/kg-day)		5.67E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	7.30E+00	mg/kg	2.57E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	6.00E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.00E+00	mg/kg	2.47E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	5.75E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	3.52E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	8.22E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	6.70E+00	mg/kg	2.36E-07	mg/kg-day		1/(mg/kg-day)		5.51E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	9.86E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	7E-09	2.30E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	5.99E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	1.40E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	2.15E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	5.01E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.40E+00	mg/kg	1.55E-07	mg/kg-day		1/(mg/kg-day)		3.62E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZENE	8.60E-02	mg/kg	3.03E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-10	7.07E-09	mg/kg-day	4.00E-03	mg/kg-day	2E-06
			Exp. Route Total								**6E-06**					**3E-02**
		Exp. Point Total									**2E-05**					**6E-02**
	Exp. Medium Total										**2E-05**					**6E-02**
Medium Total											**2E-05**					**6E-02**
									Total of Receptor Risks Across All Media		**2E-05**	Total of Receptor Hazards Across All Media				**6E-02**

TABLE 7.2h RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area	Dermal	ARSENIC	1.37E+01	mg/kg	4.95E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-07	1.16E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				CHROMIUM	2.63E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.35E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	2.77E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.13E+02	mg/kg	1.91E-05	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-05	4.45E-05	mg/kg-day	2.00E-05	mg/kg-day	2E+00
				ACENAPHTHYLENE	3.40E-01	mg/kg	5.32E-08	mg/kg-day		1/(mg/kg-day)		1.24E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.34E+01	mg/kg	2.10E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-06	4.91E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.70E+00	mg/kg	1.21E-06	mg/kg-day	7.30E+00	1/(mg/kg-day)	9E-06	2.81E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	2.79E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-06	6.51E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.36E+00	mg/kg	8.40E-07	mg/kg-day		1/(mg/kg-day)		1.96E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	8.42E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	6E-08	1.97E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	2.83E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	6.60E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.94E+00	mg/kg	3.54E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	6E-07	8.25E-07	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	9.76E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-07	2.28E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.50E+01	mg/kg	3.92E-06	mg/kg-day		1/(mg/kg-day)		9.14E-06	mg/kg-day	3.00E-02	mg/kg-day	3E-04
				1,2,4-TRICHLOROBENZENE	1.35E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	5.94E+00	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	8.00E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**5E-05**					**2E+00**
			Ingestion	ARSENIC	1.37E+01	mg/kg	4.83E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-07	1.13E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				CHROMIUM	2.63E+01	mg/kg	9.25E-07	mg/kg-day		1/(mg/kg-day)		2.16E-06	mg/kg-day	3.00E-03	mg/kg-day	7E-04
				IRON	2.35E+04	mg/kg	8.27E-04	mg/kg-day		1/(mg/kg-day)		1.93E-03	mg/kg-day	7.00E-01	mg/kg-day	3E-03
				MANGANESE	3.32E+02	mg/kg	1.17E-05	mg/kg-day		1/(mg/kg-day)		2.73E-05	mg/kg-day	1.40E-01	mg/kg-day	2E-04
				MERCURY	2.77E+00	mg/kg	9.74E-08	mg/kg-day		1/(mg/kg-day)		2.27E-07	mg/kg-day	3.00E-04	mg/kg-day	8E-04
				VANADIUM	1.24E+01	mg/kg	4.36E-07	mg/kg-day		1/(mg/kg-day)		1.02E-06	mg/kg-day	9.00E-03	mg/kg-day	1E-04
				HIGHLY CHLORINATED PCBs	1.13E+02	mg/kg	3.98E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	8E-06	9.29E-06	mg/kg-day	2.00E-05	mg/kg-day	5E-01
				ACENAPHTHYLENE	3.40E-01	mg/kg	1.20E-08	mg/kg-day		1/(mg/kg-day)		2.79E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.34E+01	mg/kg	4.73E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	1.10E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.70E+00	mg/kg	2.71E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	6.32E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	6.27E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-07	1.46E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.36E+00	mg/kg	1.89E-07	mg/kg-day		1/(mg/kg-day)		4.41E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	1.89E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	1E-08	4.42E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	6.37E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	1.49E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.94E+00	mg/kg	1.03E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-07	2.41E-07	mg/kg-day	8.00E-04	mg/kg-day	3E-04
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	2.19E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	5.12E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.50E+01	mg/kg	8.81E-07	mg/kg-day		1/(mg/kg-day)		2.05E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05
				1,2,4-TRICHLOROBENZENE	1.35E+01	mg/kg	4.76E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-09	1.11E-06	mg/kg-day	1.00E-02	mg/kg-day	1E-04
				1,4-DICHLOROBENZENE	5.94E+00	mg/kg	2.09E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-09	4.88E-07	mg/kg-day	7.00E-02	mg/kg-day	7E-06
				BENZENE	8.00E-03	mg/kg	2.82E-10	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-11	6.58E-10	mg/kg-day	4.00E-03	mg/kg-day	2E-07
			Exp. Route Total								**1E-05**					**5E-01**
		Exp. Point Total									**7E-05**					**3E+00**
	Exp. Medium Total										**7E-05**					**3E+00**
Medium Total											**7E-05**					**3E+00**
										Total of Receptor Risks Across All Media	**7E-05**				Total of Receptor Hazards Across All Media	**3E+00**

TABLE 7.2i RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment (0-1 ft bgs)	Tributary 5A	Dermal	2,3,7,8-TCDD Equivalent	2.66E-05	mg/kg	9.62E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-07	2.24E-12	mg/kg-day	1.00E-09	mg/kg-day	2E-03
				ALUMINUM	8.08E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ANTIMONY	2.56E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-05	mg/kg-day	
				ARSENIC	3.36E+01	mg/kg	1.21E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	2.83E-06	mg/kg-day	3.00E-04	mg/kg-day	9E-03
				BARIUM	9.29E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.24E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COBALT	5.46E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				COPPER	2.88E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	1.58E+05	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	4.10E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	1.24E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				NICKEL	1.71E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				SELENIUM	2.33E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.00E-03	mg/kg-day	
				VANADIUM	9.67E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.60E+00	mg/kg	9.44E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	2.20E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ACENAPHTHYLENE	4.63E-01	mg/kg	7.25E-08	mg/kg-day		1/(mg/kg-day)		1.69E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.26E+00	mg/kg	5.11E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-07	1.19E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	4.60E+00	mg/kg	7.20E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-06	1.68E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	8.98E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-07	2.10E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.25E+00	mg/kg	3.53E-07	mg/kg-day		1/(mg/kg-day)		8.23E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	3.56E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-08	8.31E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	1.72E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	4.02E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	3.27E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	7.64E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.86E+00	mg/kg	7.61E-07	mg/kg-day		1/(mg/kg-day)		1.78E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				BENZENE	1.30E+01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**1E-05**					**1E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	2.66E-05	mg/kg	9.37E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-07	2.19E-12	mg/kg-day	1.00E-09	mg/kg-day	2E-03
				ALUMINUM	8.08E+03	mg/kg	2.85E-04	mg/kg-day		1/(mg/kg-day)		6.64E-04	mg/kg-day	1.00E+00	mg/kg-day	7E-04
				ANTIMONY	2.56E+01	mg/kg	9.03E-07	mg/kg-day		1/(mg/kg-day)		2.11E-06	mg/kg-day	4.00E-04	mg/kg-day	5E-03
				ARSENIC	3.36E+01	mg/kg	1.18E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	2.76E-06	mg/kg-day	3.00E-04	mg/kg-day	9E-03
				BARIUM	9.29E+02	mg/kg	3.27E-05	mg/kg-day		1/(mg/kg-day)		7.63E-05	mg/kg-day	2.00E-01	mg/kg-day	4E-04
				CHROMIUM	1.24E+04	mg/kg	4.37E-04	mg/kg-day		1/(mg/kg-day)		1.02E-03	mg/kg-day	3.00E-03	mg/kg-day	3E-01
				COBALT	5.46E+03	mg/kg	1.92E-04	mg/kg-day		1/(mg/kg-day)		4.49E-04	mg/kg-day		mg/kg-day	
				COPPER	2.88E+02	mg/kg	1.01E-05	mg/kg-day		1/(mg/kg-day)		2.36E-05	mg/kg-day	4.00E-02	mg/kg-day	6E-04
				IRON	1.58E+05	mg/kg	5.57E-03	mg/kg-day		1/(mg/kg-day)		1.30E-02	mg/kg-day	7.00E-01	mg/kg-day	2E-02
				LEAD	4.10E+03	mg/kg	1.44E-04	mg/kg-day		1/(mg/kg-day)		3.37E-04	mg/kg-day		mg/kg-day	
				MANGANESE	1.24E+03	mg/kg	4.38E-05	mg/kg-day		1/(mg/kg-day)		1.02E-04	mg/kg-day	1.40E-01	mg/kg-day	7E-04
				NICKEL	1.71E+03	mg/kg	6.02E-05	mg/kg-day		1/(mg/kg-day)		1.41E-04	mg/kg-day	2.00E-02	mg/kg-day	7E-03
				SELENIUM	2.33E+01	mg/kg	8.22E-07	mg/kg-day		1/(mg/kg-day)		1.92E-06	mg/kg-day	5.00E-03	mg/kg-day	4E-04
				VANADIUM	9.67E+03	mg/kg	3.41E-04	mg/kg-day		1/(mg/kg-day)		7.95E-04	mg/kg-day	9.00E-03	mg/kg-day	9E-02
				HIGHLY CHLORINATED PCBs	5.60E+00	mg/kg	1.97E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-07	4.60E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				ACENAPHTHYLENE	4.63E-01	mg/kg	1.63E-08	mg/kg-day		1/(mg/kg-day)		3.81E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.26E+00	mg/kg	1.15E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-08	2.68E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	4.60E+00	mg/kg	1.62E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	3.78E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	2.02E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	4.72E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.25E+00	mg/kg	7.94E-08	mg/kg-day		1/(mg/kg-day)		1.85E-07	mg/kg-day	3.00E-02	mg/kg-day	6E-06
				BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	8.01E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	6E-09	1.87E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	3.87E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	9.04E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	7.37E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	1.72E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.86E+00	mg/kg	1.71E-07	mg/kg-day		1/(mg/kg-day)		3.99E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZENE	1.30E+01	mg/kg	4.58E-07	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-08	1.07E-06	mg/kg-day	4.00E-03	mg/kg-day	3E-04
			Exp. Route Total								**4E-06**					**5E-01**
		Exp. Point Total									**2E-05**					**6E-01**
	Exp. Medium Total										**2E-05**					**6E-01**
Medium Total											**2E-05**					**6E-01**

TABLE 7.2i RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Water	Surface Water	Tributary 5A	Dermal	ANTIMONY	2.77E+00	ug/L	4.45E-08	mg/kg-day		1/(mg/kg-day)		1.04E-07	mg/kg-day	6.00E-05	mg/kg-day	2E-03
				ARSENIC	4.61E+00	ug/L	7.40E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-07	1.73E-07	mg/kg-day	3.00E-04	mg/kg-day	6E-04
				BARIUM	1.80E+02	ug/L	2.89E-06	mg/kg-day		1/(mg/kg-day)		6.75E-06	mg/kg-day	1.40E-02	mg/kg-day	5E-04
				CHROMIUM	3.31E+01	ug/L	1.06E-06	mg/kg-day		1/(mg/kg-day)		2.48E-06	mg/kg-day	7.50E-05	mg/kg-day	3E-02
				COBALT	3.60E+02	ug/L	2.31E-06	mg/kg-day		1/(mg/kg-day)		5.40E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.03E+02	ug/L	1.65E-06	mg/kg-day		1/(mg/kg-day)		3.86E-06	mg/kg-day	5.60E-03	mg/kg-day	7E-04
				NICKEL	5.26E+02	ug/L	1.69E-06	mg/kg-day		1/(mg/kg-day)		3.94E-06	mg/kg-day	8.00E-04	mg/kg-day	5E-03
				VANADIUM	3.52E+02	ug/L	5.65E-06	mg/kg-day		1/(mg/kg-day)		1.32E-05	mg/kg-day	2.34E-04	mg/kg-day	6E-02
				DELTA-BHC	5.40E-03	ug/L		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	1.70E-02	ug/L	1.39E-08	mg/kg-day	1.60E+01	1/(mg/kg-day)	2E-07	3.23E-08	mg/kg-day	5.00E-05	mg/kg-day	6E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	8.70E+02	ug/L	1.58E-03	mg/kg-day	1.40E-02	1/(mg/kg-day)	2E-05	3.68E-03	mg/kg-day	2.00E-02	mg/kg-day	2E-01
				NAPHTHALENE	1.00E+00	ug/L	8.82E-07	mg/kg-day		1/(mg/kg-day)		2.06E-06	mg/kg-day	2.00E-02	mg/kg-day	1E-04
				N-NITROSODIPHENYLAMINE	7.00E+01	ug/L	3.67E-05	mg/kg-day	4.90E-03	1/(mg/kg-day)	2E-07	8.57E-05	mg/kg-day		mg/kg-day	
				PENTACHLOROPHENOL	6.00E+00	ug/L	8.53E-05	mg/kg-day	1.20E-01	1/(mg/kg-day)	1E-05	1.99E-04	mg/kg-day	3.00E-02	mg/kg-day	7E-03
				1,4-DICHLOROBENZENE	2.00E+00	ug/L	1.70E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	9E-09	3.96E-06	mg/kg-day	7.00E-02	mg/kg-day	6E-05
				BENZENE	5.41E+01	ug/L	1.39E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	8E-07	3.25E-05	mg/kg-day	4.00E-03	mg/kg-day	8E-03
				BROMODICHLOROMETHANE	2.00E+00	ug/L	2.13E-07	mg/kg-day	6.20E-02	1/(mg/kg-day)	1E-08	4.97E-07	mg/kg-day	2.00E-02	mg/kg-day	2E-05
				CHLOROFORM	1.11E+01	ug/L	1.51E-06	mg/kg-day		1/(mg/kg-day)		3.53E-06	mg/kg-day	1.00E-02	mg/kg-day	4E-04
			Exp. Route Total								**3E-05**					**3E-01**
			Ingestion	ANTIMONY	2.77E+00	ug/L	5.85E-08	mg/kg-day		1/(mg/kg-day)		1.37E-07	mg/kg-day	4.00E-04	mg/kg-day	3E-04
				ARSENIC	4.61E+00	ug/L	9.74E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-07	2.27E-07	mg/kg-day	3.00E-04	mg/kg-day	8E-04
				BARIUM	1.80E+02	ug/L	3.80E-06	mg/kg-day		1/(mg/kg-day)		8.88E-06	mg/kg-day	2.00E-01	mg/kg-day	4E-05
				CHROMIUM	3.31E+01	ug/L	7.00E-07	mg/kg-day		1/(mg/kg-day)		1.63E-06	mg/kg-day	3.00E-03	mg/kg-day	5E-04
				COBALT	3.60E+02	ug/L	7.61E-06	mg/kg-day		1/(mg/kg-day)		1.78E-05	mg/kg-day		mg/kg-day	
				MANGANESE	1.03E+02	ug/L	2.18E-06	mg/kg-day		1/(mg/kg-day)		5.08E-06	mg/kg-day	1.40E-01	mg/kg-day	4E-05
				NICKEL	5.26E+02	ug/L	1.11E-05	mg/kg-day		1/(mg/kg-day)		2.59E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				VANADIUM	3.52E+02	ug/L	7.44E-06	mg/kg-day		1/(mg/kg-day)		1.74E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				DELTA-BHC	5.40E-03	ug/L	1.14E-10	mg/kg-day	6.30E+00	1/(mg/kg-day)	7E-10	2.66E-10	mg/kg-day		mg/kg-day	
				DIELDRIN	1.70E-02	ug/L	3.59E-10	mg/kg-day	1.60E+01	1/(mg/kg-day)	6E-09	8.38E-10	mg/kg-day	5.00E-05	mg/kg-day	2E-05
				BIS(2-ETHYLHEXYL)PHTHALATE	8.70E+02	ug/L	1.84E-05	mg/kg-day	1.40E-02	1/(mg/kg-day)	3E-07	4.29E-05	mg/kg-day	2.00E-02	mg/kg-day	2E-03
				NAPHTHALENE	1.00E+00	ug/L	2.11E-08	mg/kg-day		1/(mg/kg-day)		4.93E-08	mg/kg-day	2.00E-02	mg/kg-day	2E-06
				N-NITROSODIPHENYLAMINE	7.00E+01	ug/L	1.48E-06	mg/kg-day	4.90E-03	1/(mg/kg-day)	7E-09	3.45E-06	mg/kg-day		mg/kg-day	
				PENTACHLOROPHENOL	6.00E+00	ug/L	1.27E-07	mg/kg-day	1.20E-01	1/(mg/kg-day)	2E-08	2.96E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				1,4-DICHLOROBENZENE	2.00E+00	ug/L	4.23E-08	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-10	9.86E-08	mg/kg-day	7.00E-02	mg/kg-day	1E-06
				BENZENE	5.41E+01	ug/L	1.14E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	6E-08	2.67E-06	mg/kg-day	4.00E-03	mg/kg-day	7E-04
				BROMODICHLOROMETHANE	2.00E+00	ug/L	4.23E-08	mg/kg-day	6.20E-02	1/(mg/kg-day)	3E-09	9.86E-08	mg/kg-day	2.00E-02	mg/kg-day	5E-06
				CHLOROFORM	1.11E+01	ug/L	2.34E-07	mg/kg-day		1/(mg/kg-day)		5.47E-07	mg/kg-day	1.00E-02	mg/kg-day	5E-05
			Exp. Route Total								**5E-07**					**8E-03**
		Exp. Point Total									**3E-05**					**3E-01**
	Exp. Medium Total										**3E-05**					**3E-01**
Medium Total											**3E-05**					**3E-01**
										Total of Receptor Risks Across All Media	**5E-05**			Total of Receptor Hazards Across All Media		**9E-01**

TABLE 7.3a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Dermal	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	8.66E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-06	2.42E-11	mg/kg-day	1.00E-09	mg/kg-day	2E-02
				ALUMINUM	8.34E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.63E+01	mg/kg	3.39E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-07	9.48E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				BARIUM	3.36E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.88E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.27E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.47E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	9.52E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.69E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	2.25E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	1.86E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-07	5.21E-07	mg/kg-day	2.00E-05	mg/kg-day	3E-02
				DELTA-BHC	1.90E+00	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg		mg/kg-day	1.60E+01	1/(mg/kg-day)			mg/kg-day	5.00E-05	mg/kg-day	
				ACENAPHTHYLENE	2.09E-01	mg/kg	1.17E-08	mg/kg-day		1/(mg/kg-day)		3.26E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	5.05E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-07	1.42E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	6.47E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-06	1.81E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	6.99E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-07	1.96E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	5.79E-07	mg/kg-day		1/(mg/kg-day)		1.62E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	3.18E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-08	8.89E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	1.26E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	9E-07	3.53E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	3.06E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	5E-07	8.57E-07	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	7.72E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	6E-09	2.16E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	5.71E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-07	1.60E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	8.21E-07	mg/kg-day		1/(mg/kg-day)		2.30E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	6.03E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	1.39E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**1E-05**					**5E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	2.92E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-06	8.16E-11	mg/kg-day	1.00E-09	mg/kg-day	8E-02
				ALUMINUM	8.34E+03	mg/kg	3.61E-04	mg/kg-day		1/(mg/kg-day)		1.01E-03	mg/kg-day	1.00E+00	mg/kg-day	1E-03
				ARSENIC	2.63E+01	mg/kg	1.14E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	3.19E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				BARIUM	3.36E+02	mg/kg	1.46E-05	mg/kg-day		1/(mg/kg-day)		4.08E-05	mg/kg-day	2.00E-01	mg/kg-day	2E-04
				CHROMIUM	1.88E+01	mg/kg	8.16E-07	mg/kg-day		1/(mg/kg-day)		2.28E-06	mg/kg-day	3.00E-03	mg/kg-day	8E-04
				IRON	2.27E+04	mg/kg	9.86E-04	mg/kg-day		1/(mg/kg-day)		2.76E-03	mg/kg-day	7.00E-01	mg/kg-day	4E-03
				MANGANESE	3.47E+02	mg/kg	1.50E-05	mg/kg-day		1/(mg/kg-day)		4.21E-05	mg/kg-day	1.40E-01	mg/kg-day	3E-04
				MERCURY	9.52E+02	mg/kg	4.13E-05	mg/kg-day		1/(mg/kg-day)		1.16E-04	mg/kg-day	3.00E-04	mg/kg-day	4E-01
				NICKEL	3.69E+03	mg/kg	1.60E-04	mg/kg-day		1/(mg/kg-day)		4.48E-04	mg/kg-day	2.00E-02	mg/kg-day	2E-02
				VANADIUM	2.25E+01	mg/kg	9.74E-07	mg/kg-day		1/(mg/kg-day)		2.73E-06	mg/kg-day	9.00E-03	mg/kg-day	3E-04
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	1.34E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-07	3.76E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				DELTA-BHC	1.90E+00	mg/kg	8.23E-08	mg/kg-day	6.30E+00	1/(mg/kg-day)	5E-07	2.31E-07	mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg	1.60E-07	mg/kg-day	1.60E+01	1/(mg/kg-day)	3E-06	4.49E-07	mg/kg-day	5.00E-05	mg/kg-day	9E-03
				ACENAPHTHYLENE	2.09E-01	mg/kg	9.06E-09	mg/kg-day		1/(mg/kg-day)		2.54E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	3.93E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	1.10E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	5.03E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-06	1.41E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	5.43E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-07	1.52E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	4.50E-07	mg/kg-day		1/(mg/kg-day)		1.26E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	2.47E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-08	6.91E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	9.79E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-07	2.74E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	3.09E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	5E-07	8.65E-07	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	7.80E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	6E-09	2.18E-07	mg/kg-day		mg/kg-day	

TABLE 7.3a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Ingestion	INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	4.43E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	1.24E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	6.38E-07	mg/kg-day		1/(mg/kg-day)		1.79E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg	1.81E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	7E-10	5.07E-07	mg/kg-day	1.00E-02	mg/kg-day	5E-05
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg	1.69E-05	mg/kg-day		1/(mg/kg-day)		4.73E-05	mg/kg-day	9.00E-02	mg/kg-day	5E-04
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg	3.64E-07	mg/kg-day		1/(mg/kg-day)		1.02E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg	1.06E-04	mg/kg-day	5.40E-03	1/(mg/kg-day)	6E-07	2.96E-04	mg/kg-day	7.00E-02	mg/kg-day	4E-03
				BENZENE	6.03E-03	mg/kg	2.61E-10	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-11	7.32E-10	mg/kg-day	4.00E-03	mg/kg-day	2E-07
				CHLOROBENZENE	1.39E+02	mg/kg	6.01E-06	mg/kg-day		1/(mg/kg-day)		1.68E-05	mg/kg-day	2.00E-02	mg/kg-day	8E-04
			Exp. Route Total								**2E-05**					**5E-01**
		Exp. Point Total									**3E-05**					**6E-01**
	Exp. Medium Total										**3E-05**					**6E-01**
Medium Total											**3E-05**					**6E-01**
									Total of Receptor Risks Across All Media		**3E-05**			Total of Receptor Hazards Across All Media		**6E-01**

TABLE 7.3b RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	On-Site Ditches	Dermal	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	9.70E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-05	2.72E-10	mg/kg-day	1.00E-09	mg/kg-day	3E-01
				ARSENIC	3.99E+01	mg/kg	5.14E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-07	1.44E-06	mg/kg-day	3.00E-04	mg/kg-day	5E-03
				CHROMIUM	1.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COPPER	3.26E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	5.39E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	6.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.56E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				METHYL MERCURY	6.86E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				NICKEL	3.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	6.39E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	8.41E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	2.35E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	9.48E-09	mg/kg-day		1/(mg/kg-day)		2.65E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	1.17E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-08	3.28E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	1.12E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	8E-07	3.12E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	1.67E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	4.68E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	7.81E-08	mg/kg-day		1/(mg/kg-day)		2.19E-07	mg/kg-day	3.00E-02	mg/kg-day	7E-06
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	2.45E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	6.87E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	6.69E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	1.87E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	1.12E-07	mg/kg-day		1/(mg/kg-day)		3.12E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
			Exp. Route Total								**2E-05**					**4E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	3.27E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-05	9.15E-10	mg/kg-day	1.00E-09	mg/kg-day	9E-01
				ARSENIC	3.99E+01	mg/kg	1.73E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-06	4.84E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				CHROMIUM	1.92E+02	mg/kg	8.32E-06	mg/kg-day		1/(mg/kg-day)		2.33E-05	mg/kg-day	3.00E-03	mg/kg-day	8E-03
				COPPER	3.26E+02	mg/kg	1.41E-05	mg/kg-day		1/(mg/kg-day)		3.96E-05	mg/kg-day	4.00E-02	mg/kg-day	1E-03
				IRON	5.39E+04	mg/kg	2.34E-03	mg/kg-day		1/(mg/kg-day)		6.54E-03	mg/kg-day	7.00E-01	mg/kg-day	9E-03
				LEAD	6.92E+02	mg/kg	3.00E-05	mg/kg-day		1/(mg/kg-day)		8.40E-05	mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg	1.87E-05	mg/kg-day		1/(mg/kg-day)		5.24E-05	mg/kg-day	1.40E-01	mg/kg-day	4E-04
				MERCURY	3.56E+03	mg/kg	1.54E-04	mg/kg-day		1/(mg/kg-day)		4.32E-04	mg/kg-day	3.00E-04	mg/kg-day	1E+00
				METHYL MERCURY	6.86E-01	mg/kg	2.97E-08	mg/kg-day		1/(mg/kg-day)		8.32E-08	mg/kg-day	1.00E-04	mg/kg-day	8E-04
				NICKEL	3.01E+02	mg/kg	1.30E-05	mg/kg-day		1/(mg/kg-day)		3.65E-05	mg/kg-day	2.00E-02	mg/kg-day	2E-03
				VANADIUM	6.39E+01	mg/kg	2.77E-06	mg/kg-day		1/(mg/kg-day)		7.75E-06	mg/kg-day	9.00E-03	mg/kg-day	9E-04
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	6.07E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-06	1.70E-06	mg/kg-day	2.00E-05	mg/kg-day	8E-02
				ACENAPHTHYLENE	1.70E-01	mg/kg	7.37E-09	mg/kg-day		1/(mg/kg-day)		2.06E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	9.10E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	2.55E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	8.67E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	6E-07	2.43E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	1.30E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-08	3.64E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	6.07E-08	mg/kg-day		1/(mg/kg-day)		1.70E-07	mg/kg-day	3.00E-02	mg/kg-day	6E-06
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	1.91E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	5.34E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	5.20E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	1.46E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	8.67E-08	mg/kg-day		1/(mg/kg-day)		2.43E-07	mg/kg-day	3.00E-02	mg/kg-day	8E-06
			Exp. Route Total								**5E-05**					**2E+00**
		Exp. Point Total									**7E-05**					**3E+00**
	Exp. Medium Total										**7E-05**					**3E+00**
Medium Total											**7E-05**					**3E+00**
										Total of Receptor Risks Across All Media	**7E-05**			Total of Receptor Hazards Across All Media		**3E+00**

TABLE 7.3c RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	Dermal	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	8.06E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-04	2.26E-09	mg/kg-day	1.00E-09	mg/kg-day	2E+00
				ARSENIC	1.04E+01	mg/kg	1.34E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	3.75E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				CHROMIUM	1.35E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	8.57E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.38E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	8.20E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	3.30E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	7E-07	9.25E-07	mg/kg-day	2.00E-05	mg/kg-day	5E-02
				ACENAPHTHYLENE	4.00E-02	mg/kg	2.23E-09	mg/kg-day		1/(mg/kg-day)		6.25E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	8.92E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	2.50E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	8.37E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	6E-07	2.34E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	1.56E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	4.37E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	6.13E-08	mg/kg-day		1/(mg/kg-day)		1.72E-07	mg/kg-day	3.00E-02	mg/kg-day	6E-06
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	1.73E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	4.84E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	4.91E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	1.37E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	1.06E-07	mg/kg-day		1/(mg/kg-day)		2.97E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
			Exp. Route Total								**1E-04**					**2E+00**
			Ingestion	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	2.71E-09	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-04	7.60E-09	mg/kg-day	1.00E-09	mg/kg-day	8E+00
				ARSENIC	1.04E+01	mg/kg	4.51E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-07	1.26E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				CHROMIUM	1.35E+01	mg/kg	5.85E-07	mg/kg-day		1/(mg/kg-day)		1.64E-06	mg/kg-day	3.00E-03	mg/kg-day	5E-04
				IRON	8.57E+03	mg/kg	3.71E-04	mg/kg-day		1/(mg/kg-day)		1.04E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-03
				MANGANESE	3.38E+02	mg/kg	1.46E-05	mg/kg-day		1/(mg/kg-day)		4.10E-05	mg/kg-day	1.40E-01	mg/kg-day	3E-04
				MERCURY	8.20E+00	mg/kg	3.55E-07	mg/kg-day		1/(mg/kg-day)		9.95E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				VANADIUM	1.24E+01	mg/kg	5.37E-07	mg/kg-day		1/(mg/kg-day)		1.50E-06	mg/kg-day	9.00E-03	mg/kg-day	2E-04
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	2.38E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-07	6.67E-07	mg/kg-day	2.00E-05	mg/kg-day	3E-02
				ACENAPHTHYLENE	4.00E-02	mg/kg	1.73E-09	mg/kg-day		1/(mg/kg-day)		4.85E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	6.93E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	1.94E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	6.50E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	1.82E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	1.21E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-08	3.40E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	4.77E-08	mg/kg-day		1/(mg/kg-day)		1.33E-07	mg/kg-day	3.00E-02	mg/kg-day	4E-06
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	1.34E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	3.76E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	3.81E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	1.07E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	8.23E-08	mg/kg-day		1/(mg/kg-day)		2.31E-07	mg/kg-day	3.00E-02	mg/kg-day	8E-06
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg	8.67E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	3E-09	2.43E-06	mg/kg-day	1.00E-02	mg/kg-day	2E-04
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg	3.38E-06	mg/kg-day		1/(mg/kg-day)		9.46E-06	mg/kg-day	9.00E-02	mg/kg-day	1E-04
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg	7.80E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	4E-09	2.18E-06	mg/kg-day	7.00E-02	mg/kg-day	3E-05
			Exp. Route Total								**4E-04**					**8E+00**
		Exp. Point Total									**5E-04**					**1E+01**
	Exp. Medium Total										**5E-04**					**1E+01**
Medium Total											**5E-04**					**1E+01**
									Total of Receptor Risks Across All Media		**5E-04**			Total of Receptor Hazards Across All Media		**1E+01**

TABLE 7.4a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Dermal	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	3.50E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-06	9.80E-11	mg/kg-day	1.00E-09	mg/kg-day	1E-01
				ALUMINUM	8.34E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.63E+01	mg/kg	1.37E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	3.83E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				BARIUM	3.36E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.88E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.27E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.47E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	9.52E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.69E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	2.25E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	7.53E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	2.11E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				DELTA-BHC	1.90E+00	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg		mg/kg-day	1.60E+01	1/(mg/kg-day)			mg/kg-day	5.00E-05	mg/kg-day	
				ACENAPHTHYLENE	2.09E-01	mg/kg	4.71E-08	mg/kg-day		1/(mg/kg-day)		1.32E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	2.04E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	5.72E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	2.62E-06	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-05	7.32E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	2.83E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-06	7.91E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	2.34E-06	mg/kg-day		1/(mg/kg-day)		6.56E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	1.28E-06	mg/kg-day	7.30E-02	1/(mg/kg-day)	9E-08	3.60E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	5.09E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-06	1.43E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	1.24E-06	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-06	3.46E-06	mg/kg-day	8.00E-04	mg/kg-day	4E-03
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	3.12E-07	mg/kg-day	7.80E-02	1/(mg/kg-day)	2E-08	8.74E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	2.31E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-06	6.46E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	3.32E-06	mg/kg-day		1/(mg/kg-day)		9.30E-06	mg/kg-day	3.00E-02	mg/kg-day	3E-04
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	6.03E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	1.39E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**4E-05**					**2E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	8.84E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-05	2.48E-10	mg/kg-day	1.00E-09	mg/kg-day	2E-01
				ALUMINUM	8.34E+03	mg/kg	1.10E-03	mg/kg-day		1/(mg/kg-day)		3.07E-03	mg/kg-day	1.00E+00	mg/kg-day	3E-03
				ARSENIC	2.63E+01	mg/kg	3.46E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-06	9.68E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				BARIUM	3.36E+02	mg/kg	4.41E-05	mg/kg-day		1/(mg/kg-day)		1.24E-04	mg/kg-day	2.00E-01	mg/kg-day	6E-04
				CHROMIUM	1.88E+01	mg/kg	2.47E-06	mg/kg-day		1/(mg/kg-day)		6.93E-06	mg/kg-day	3.00E-03	mg/kg-day	2E-03
				IRON	2.27E+04	mg/kg	2.99E-03	mg/kg-day		1/(mg/kg-day)		8.37E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				MANGANESE	3.47E+02	mg/kg	4.56E-05	mg/kg-day		1/(mg/kg-day)		1.28E-04	mg/kg-day	1.40E-01	mg/kg-day	9E-04
				MERCURY	9.52E+02	mg/kg	1.25E-04	mg/kg-day		1/(mg/kg-day)		3.50E-04	mg/kg-day	3.00E-04	mg/kg-day	1E+00
				NICKEL	3.69E+03	mg/kg	4.85E-04	mg/kg-day		1/(mg/kg-day)		1.36E-03	mg/kg-day	2.00E-02	mg/kg-day	7E-02
				VANADIUM	2.25E+01	mg/kg	2.95E-06	mg/kg-day		1/(mg/kg-day)		8.27E-06	mg/kg-day	9.00E-03	mg/kg-day	9E-04
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	4.07E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	8E-07	1.14E-06	mg/kg-day	2.00E-05	mg/kg-day	6E-02
				DELTA-BHC	1.90E+00	mg/kg	2.50E-07	mg/kg-day	6.30E+00	1/(mg/kg-day)	2E-06	6.99E-07	mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg	4.86E-07	mg/kg-day	1.60E+01	1/(mg/kg-day)	8E-06	1.36E-06	mg/kg-day	5.00E-05	mg/kg-day	3E-02
				ACENAPHTHYLENE	2.09E-01	mg/kg	2.75E-08	mg/kg-day		1/(mg/kg-day)		7.69E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	1.19E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-07	3.33E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	1.52E-06	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-05	4.27E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	1.65E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	4.61E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	1.37E-06	mg/kg-day		1/(mg/kg-day)		3.82E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	7.48E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	5E-08	2.10E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	2.97E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	8.31E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	9.37E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-06	2.62E-06	mg/kg-day	8.00E-04	mg/kg-day	3E-03
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	2.37E-07	mg/kg-day	7.80E-02	1/(mg/kg-day)	2E-08	6.62E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	1.34E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	3.76E-06	mg/kg-day		mg/kg-day	

TABLE 7.4a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Ingestion	PHENANTHRENE	1.47E+01	mg/kg	1.94E-06	mg/kg-day		1/(mg/kg-day)		5.42E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg	5.49E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-09	1.54E-06	mg/kg-day	1.00E-02	mg/kg-day	2E-04
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg	5.13E-05	mg/kg-day		1/(mg/kg-day)		1.44E-04	mg/kg-day	9.00E-02	mg/kg-day	2E-03
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg	1.10E-06	mg/kg-day		1/(mg/kg-day)		3.09E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg	3.20E-04	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-06	8.97E-04	mg/kg-day	7.00E-02	mg/kg-day	1E-02
				BENZENE	6.03E-03	mg/kg	7.92E-10	mg/kg-day	5.50E-02	1/(mg/kg-day)	4E-11	2.22E-09	mg/kg-day	4.00E-03	mg/kg-day	6E-07
				CHLOROBENZENE	1.39E+02	mg/kg	1.82E-05	mg/kg-day		1/(mg/kg-day)		5.11E-05	mg/kg-day	2.00E-02	mg/kg-day	3E-03
			Exp. Route Total								**5E-05**					**2E+00**
		Exp. Point Total									**9E-05**					**2E+00**
	Exp. Medium Total										**9E-05**					**2E+00**
Medium Total											**9E-05**					**2E+00**
										Total of Receptor Risks Across All Media	**9E-05**				Total of Receptor Hazards Across All Media	**2E+00**

TABLE 7.4b RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	On-Site Ditches	Dermal	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	3.92E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	6E-05	1.10E-09	mg/kg-day	1.00E-09	mg/kg-day	1E+00
				ARSENIC	3.99E+01	mg/kg	2.08E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-06	5.81E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				CHROMIUM	1.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COPPER	3.26E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	5.39E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	6.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.56E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				METHYL MERCURY	6.86E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-04	mg/kg-day	
				NICKEL	3.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	6.39E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	3.40E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	7E-06	9.52E-06	mg/kg-day	2.00E-05	mg/kg-day	5E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	3.83E-08	mg/kg-day		1/(mg/kg-day)		1.07E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	4.73E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	1.33E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	4.51E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-06	1.26E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	6.76E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-07	1.89E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	3.16E-07	mg/kg-day		1/(mg/kg-day)		8.84E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	9.92E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-07	2.78E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	2.71E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	7.58E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	4.51E-07	mg/kg-day		1/(mg/kg-day)		1.26E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
			Exp. Route Total								**7E-05**					**2E+00**
			Ingestion	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	9.91E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-04	2.77E-09	mg/kg-day	1.00E-09	mg/kg-day	3E+00
				ARSENIC	3.99E+01	mg/kg	5.24E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-06	1.47E-05	mg/kg-day	3.00E-04	mg/kg-day	5E-02
				CHROMIUM	1.92E+02	mg/kg	2.52E-05	mg/kg-day		1/(mg/kg-day)		7.06E-05	mg/kg-day	3.00E-03	mg/kg-day	2E-02
				COPPER	3.26E+02	mg/kg	4.28E-05	mg/kg-day		1/(mg/kg-day)		1.20E-04	mg/kg-day	4.00E-02	mg/kg-day	3E-03
				IRON	5.39E+04	mg/kg	7.08E-03	mg/kg-day		1/(mg/kg-day)		1.98E-02	mg/kg-day	7.00E-01	mg/kg-day	3E-02
				LEAD	6.92E+02	mg/kg	9.09E-05	mg/kg-day		1/(mg/kg-day)		2.55E-04	mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg	5.68E-05	mg/kg-day		1/(mg/kg-day)		1.59E-04	mg/kg-day	1.40E-01	mg/kg-day	1E-03
				MERCURY	3.56E+03	mg/kg	4.68E-04	mg/kg-day		1/(mg/kg-day)		1.31E-03	mg/kg-day	3.00E-04	mg/kg-day	4E+00
				METHYL MERCURY	6.86E-01	mg/kg	9.01E-08	mg/kg-day		1/(mg/kg-day)		2.52E-07	mg/kg-day	1.00E-04	mg/kg-day	3E-03
				NICKEL	3.01E+02	mg/kg	3.95E-05	mg/kg-day		1/(mg/kg-day)		1.11E-04	mg/kg-day	2.00E-02	mg/kg-day	6E-03
				VANADIUM	6.39E+01	mg/kg	8.40E-06	mg/kg-day		1/(mg/kg-day)		2.35E-05	mg/kg-day	9.00E-03	mg/kg-day	3E-03
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	1.84E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-06	5.15E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	2.23E-08	mg/kg-day		1/(mg/kg-day)		6.25E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	2.76E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	7.73E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	2.63E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	7.36E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	3.94E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	1.10E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	1.84E-07	mg/kg-day		1/(mg/kg-day)		5.15E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	5.78E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	1.62E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	1.58E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	4.41E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	2.63E-07	mg/kg-day		1/(mg/kg-day)		7.36E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
			Exp. Route Total								**2E-04**					**8E+00**
		Exp. Point Total									**2E-04**					**9E+00**
	Exp. Medium Total										**2E-04**					**9E+00**
Medium Total											**2E-04**					**9E+00**
										Total of Receptor Risks Across All Media	**2E-04**			Total of Receptor Hazards Across All Media		**9E+00**

TABLE 7.4c RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	Dermal	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	3.26E-09	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-04	9.13E-09	mg/kg-day	1.00E-09	mg/kg-day	9E+00
				ARSENIC	1.04E+01	mg/kg	5.41E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-07	1.52E-06	mg/kg-day	3.00E-04	mg/kg-day	5E-03
				CHROMIUM	1.35E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	8.57E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.38E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	8.20E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	1.34E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-06	3.74E-06	mg/kg-day	2.00E-05	mg/kg-day	2E-01
				ACENAPHTHYLENE	4.00E-02	mg/kg	9.02E-09	mg/kg-day		1/(mg/kg-day)		2.53E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	3.61E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	1.01E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	3.38E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	9.47E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	6.31E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-07	1.77E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	2.48E-07	mg/kg-day		1/(mg/kg-day)		6.94E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	6.99E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	1.96E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	1.98E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	5.56E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	4.28E-07	mg/kg-day		1/(mg/kg-day)		1.20E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
			Exp. Route Total								**5E-04**					**9E+00**
			Ingestion	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	8.23E-09	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-03	2.30E-08	mg/kg-day	1.00E-09	mg/kg-day	2E+01
				ARSENIC	1.04E+01	mg/kg	1.37E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	3.83E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				CHROMIUM	1.35E+01	mg/kg	1.77E-06	mg/kg-day		1/(mg/kg-day)		4.97E-06	mg/kg-day	3.00E-03	mg/kg-day	2E-03
				IRON	8.57E+03	mg/kg	1.13E-03	mg/kg-day		1/(mg/kg-day)		3.15E-03	mg/kg-day	7.00E-01	mg/kg-day	5E-03
				MANGANESE	3.38E+02	mg/kg	4.44E-05	mg/kg-day		1/(mg/kg-day)		1.24E-04	mg/kg-day	1.40E-01	mg/kg-day	9E-04
				MERCURY	8.20E+00	mg/kg	1.08E-06	mg/kg-day		1/(mg/kg-day)		3.02E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				VANADIUM	1.24E+01	mg/kg	1.63E-06	mg/kg-day		1/(mg/kg-day)		4.56E-06	mg/kg-day	9.00E-03	mg/kg-day	5E-04
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	7.23E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-06	2.02E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ACENAPHTHYLENE	4.00E-02	mg/kg	5.26E-09	mg/kg-day		1/(mg/kg-day)		1.47E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	2.10E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	5.89E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	1.97E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	5.52E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	3.68E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	1.03E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	1.45E-07	mg/kg-day		1/(mg/kg-day)		4.05E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	4.07E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	1.14E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	1.16E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-08	3.24E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	2.50E-07	mg/kg-day		1/(mg/kg-day)		6.99E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg	2.63E-06	mg/kg-day	3.60E-03	1/(mg/kg-day)	9E-09	7.36E-06	mg/kg-day	1.00E-02	mg/kg-day	7E-04
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg	1.02E-05	mg/kg-day		1/(mg/kg-day)		2.87E-05	mg/kg-day	9.00E-02	mg/kg-day	3E-04
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg	2.37E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-08	6.62E-06	mg/kg-day	7.00E-02	mg/kg-day	9E-05
			Exp. Route Total								**1E-03**					**2E+01**
		Exp. Point Total									**2E-03**					**3E+01**
	Exp. Medium Total										**2E-03**					**3E+01**
Medium Total											**2E-03**					**3E+01**
									Total of Receptor Risks Across All Media		**2E-03**			Total of Receptor Hazards Across All Media		**3E+01**

TABLE 7.4d RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 Exposure Area- REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	3.62E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-06	1.01E-10	mg/kg-day	1.00E-09	mg/kg-day	1E-01
				ALUMINUM	7.77E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.76E+01	mg/kg	1.44E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	4.02E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				BARIUM	6.73E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.83E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.64E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	5.66E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.11E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.06E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	8.50E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-05	2.38E-05	mg/kg-day	2.00E-05	mg/kg-day	1E+00
				ALDRIN	1.08E-01	mg/kg		mg/kg-day	1.70E+01	1/(mg/kg-day)			mg/kg-day	3.00E-05	mg/kg-day	
				DELTA-BHC	3.60E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ENDOSULFAN I	3.20E-03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-03	mg/kg-day	
				HEPTACHLOR	1.20E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.00E-04	mg/kg-day	
				ACENAPHTHYLENE	4.90E-01	mg/kg	1.10E-07	mg/kg-day		1/(mg/kg-day)		3.09E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	1.51E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	4.23E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	1.76E-06	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-05	4.92E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	2.93E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-06	8.21E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.80E+00	mg/kg	1.31E-06	mg/kg-day		1/(mg/kg-day)		3.66E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	7.44E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	5E-08	2.08E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	5.41E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-06	1.52E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.72E+00	mg/kg	6.45E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-06	1.81E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	1.15E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-07	3.22E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	8.80E+00	mg/kg	1.98E-06	mg/kg-day		1/(mg/kg-day)		5.56E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZENE	2.00E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				TRICHLOROETHENE	3.79E-02	mg/kg		mg/kg-day	4.00E-01	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
			Exp. Route Total								**5E-05**					**1E+00**
			Ingestion	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	9.15E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-05	2.56E-10	mg/kg-day	1.00E-09	mg/kg-day	3E-01
				ALUMINUM	7.77E+03	mg/kg	1.02E-03	mg/kg-day		1/(mg/kg-day)		2.86E-03	mg/kg-day	1.00E+00	mg/kg-day	3E-03
				ARSENIC	2.76E+01	mg/kg	3.63E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-06	1.02E-05	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				BARIUM	6.73E+02	mg/kg	8.84E-05	mg/kg-day		1/(mg/kg-day)		2.48E-04	mg/kg-day	2.00E-01	mg/kg-day	1E-03
				CHROMIUM	1.83E+02	mg/kg	2.40E-05	mg/kg-day		1/(mg/kg-day)		6.73E-05	mg/kg-day	3.00E-03	mg/kg-day	2E-02
				IRON	2.64E+04	mg/kg	3.47E-03	mg/kg-day		1/(mg/kg-day)		9.71E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				LEAD	5.66E+02	mg/kg	7.44E-05	mg/kg-day		1/(mg/kg-day)		2.08E-04	mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg	3.89E-05	mg/kg-day		1/(mg/kg-day)		1.09E-04	mg/kg-day	1.40E-01	mg/kg-day	8E-04
				MERCURY	1.11E+03	mg/kg	1.45E-04	mg/kg-day		1/(mg/kg-day)		4.07E-04	mg/kg-day	3.00E-04	mg/kg-day	1E+00
				VANADIUM	1.06E+02	mg/kg	1.39E-05	mg/kg-day		1/(mg/kg-day)		3.90E-05	mg/kg-day	9.00E-03	mg/kg-day	4E-03
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	4.60E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	9E-06	1.29E-05	mg/kg-day	2.00E-05	mg/kg-day	6E-01
				ALDRIN	1.08E-01	mg/kg	1.42E-08	mg/kg-day	1.70E+01	1/(mg/kg-day)	2E-07	3.97E-08	mg/kg-day	3.00E-05	mg/kg-day	1E-03
				DELTA-BHC	3.60E-03	mg/kg	4.73E-10	mg/kg-day	6.30E+00	1/(mg/kg-day)	3E-09	1.32E-09	mg/kg-day		mg/kg-day	
				ENDOSULFAN I	3.20E-03	mg/kg	4.20E-10	mg/kg-day		1/(mg/kg-day)		1.18E-09	mg/kg-day	6.00E-03	mg/kg-day	2E-07
				HEPTACHLOR	1.20E-01	mg/kg	1.58E-08	mg/kg-day	4.50E+00	1/(mg/kg-day)	7E-08	4.41E-08	mg/kg-day	5.00E-04	mg/kg-day	9E-05
				ACENAPHTHYLENE	4.90E-01	mg/kg	6.44E-08	mg/kg-day		1/(mg/kg-day)		1.80E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	8.80E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-07	2.46E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	1.02E-06	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-06	2.87E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	1.71E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	4.78E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.80E+00	mg/kg	7.62E-07	mg/kg-day		1/(mg/kg-day)		2.13E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	4.34E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-08	1.21E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	3.15E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	8.83E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.72E+00	mg/kg	4.89E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	8E-07	1.37E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	6.70E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-07	1.88E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	8.80E+00	mg/kg	1.16E-06	mg/kg-day		1/(mg/kg-day)		3.24E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04

TABLE 7.4d RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 Exposure Area- REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006	Ingestion	BENZENE	2.00E-03	mg/kg	2.63E-10	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-11	7.36E-10	mg/kg-day	4.00E-03	mg/kg-day	2E-07
				TRICHLOROETHENE	3.79E-02	mg/kg	4.98E-09	mg/kg-day	4.00E-01	1/(mg/kg-day)	2E-09	1.39E-08	mg/kg-day		mg/kg-day	
		Exposure Area	Exp. Route Total								**4E-05**					**2E+00**
		Exp. Point Total									**9E-05**					**4E+00**
	Exp. Medium Total										**9E-05**					**4E+00**
Medium Total											**9E-05**					**4E+00**
							Total of Receptor Risks Across All Media				**9E-05**	Total of Receptor Hazards Across All Media				**4E+00**

TABLE 7.4e RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Petroleum Storage Area	Dermal	ARSENIC	6.76E+01	mg/kg	3.52E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-06	9.85E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				CHROMIUM	2.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.86E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	4.86E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.42E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	2.01E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	1.75E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-07	4.90E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				DELTA-BHC	1.20E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	6.90E-01	mg/kg	1.56E-07	mg/kg-day		1/(mg/kg-day)		4.36E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	7.30E+00	mg/kg	1.65E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	4.61E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.00E+00	mg/kg	1.58E-06	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-05	4.42E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	2.25E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-06	6.31E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	6.70E+00	mg/kg	1.51E-06	mg/kg-day		1/(mg/kg-day)		4.23E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	6.31E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	5E-08	1.77E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	3.83E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-06	1.07E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	1.38E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	3.85E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.40E+00	mg/kg	9.92E-07	mg/kg-day		1/(mg/kg-day)		2.78E-06	mg/kg-day	3.00E-02	mg/kg-day	9E-05
				BENZENE	8.60E-02	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**2E-05**					**6E-02**
			Ingestion	ARSENIC	6.76E+01	mg/kg	8.88E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-05	2.49E-05	mg/kg-day	3.00E-04	mg/kg-day	8E-02
				CHROMIUM	2.80E+01	mg/kg	3.68E-06	mg/kg-day		1/(mg/kg-day)		1.03E-05	mg/kg-day	3.00E-03	mg/kg-day	3E-03
				IRON	2.86E+04	mg/kg	3.76E-03	mg/kg-day		1/(mg/kg-day)		1.05E-02	mg/kg-day	7.00E-01	mg/kg-day	2E-02
				MANGANESE	4.86E+02	mg/kg	6.39E-05	mg/kg-day		1/(mg/kg-day)		1.79E-04	mg/kg-day	1.40E-01	mg/kg-day	1E-03
				MERCURY	1.42E+01	mg/kg	1.87E-06	mg/kg-day		1/(mg/kg-day)		5.22E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				VANADIUM	2.01E+01	mg/kg	2.64E-06	mg/kg-day		1/(mg/kg-day)		7.39E-06	mg/kg-day	9.00E-03	mg/kg-day	8E-04
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	9.46E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	2.65E-07	mg/kg-day	2.00E-05	mg/kg-day	1E-02
				DELTA-BHC	1.20E-03	mg/kg	1.58E-10	mg/kg-day	6.30E+00	1/(mg/kg-day)	1E-09	4.41E-10	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	6.90E-01	mg/kg	9.07E-08	mg/kg-day		1/(mg/kg-day)		2.54E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	7.30E+00	mg/kg	9.59E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-07	2.69E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.00E+00	mg/kg	9.20E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-06	2.58E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	1.31E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	3.68E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	6.70E+00	mg/kg	8.80E-07	mg/kg-day		1/(mg/kg-day)		2.46E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	3.68E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-08	1.03E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	2.23E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	6.25E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	8.02E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-07	2.24E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.40E+00	mg/kg	5.78E-07	mg/kg-day		1/(mg/kg-day)		1.62E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				BENZENE	8.60E-02	mg/kg	1.13E-08	mg/kg-day	5.50E-02	1/(mg/kg-day)	6E-10	3.16E-08	mg/kg-day	4.00E-03	mg/kg-day	8E-06
			Exp. Route Total								**2E-05**					**1E-01**
		Exp. Point Total									**5E-05**					**2E-01**
	Exp. Medium Total										**5E-05**					**2E-01**
Medium Total											**5E-05**					**2E-01**
										Total of Receptor Risks Across All Media	**5E-05**				Total of Receptor Hazards Across All Media	**2E-01**

TABLE 7.4f RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area	Dermal	ARSENIC	1.37E+01	mg/kg	7.13E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	2.00E-06	mg/kg-day	3.00E-04	mg/kg-day	7E-03
				CHROMIUM	2.63E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.35E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	2.77E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.13E+02	mg/kg	2.74E-05	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-05	7.68E-05	mg/kg-day	2.00E-05	mg/kg-day	4E+00
				ACENAPHTHYLENE	3.40E-01	mg/kg	7.67E-08	mg/kg-day		1/(mg/kg-day)		2.15E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.34E+01	mg/kg	3.03E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-06	8.48E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.70E+00	mg/kg	1.74E-06	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-05	4.86E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	4.02E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-06	1.12E-05	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.36E+00	mg/kg	1.21E-06	mg/kg-day		1/(mg/kg-day)		3.38E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	1.21E-06	mg/kg-day	7.30E-02	1/(mg/kg-day)	9E-08	3.40E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	4.07E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-06	1.14E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.94E+00	mg/kg	5.09E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	8E-07	1.43E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	1.40E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	3.93E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.50E+01	mg/kg	5.64E-06	mg/kg-day		1/(mg/kg-day)		1.58E-05	mg/kg-day	3.00E-02	mg/kg-day	5E-04
				1,2,4-TRICHLOROBENZENE	1.35E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	5.94E+00	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	8.00E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**8E-05**					**4E+00**
			Ingestion	ARSENIC	1.37E+01	mg/kg	1.80E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-06	5.04E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				CHROMIUM	2.63E+01	mg/kg	3.45E-06	mg/kg-day		1/(mg/kg-day)		9.66E-06	mg/kg-day	3.00E-03	mg/kg-day	3E-03
				IRON	2.35E+04	mg/kg	3.09E-03	mg/kg-day		1/(mg/kg-day)		8.64E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				MANGANESE	3.32E+02	mg/kg	4.37E-05	mg/kg-day		1/(mg/kg-day)		1.22E-04	mg/kg-day	1.40E-01	mg/kg-day	9E-04
				MERCURY	2.77E+00	mg/kg	3.63E-07	mg/kg-day		1/(mg/kg-day)		1.02E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				VANADIUM	1.24E+01	mg/kg	1.63E-06	mg/kg-day		1/(mg/kg-day)		4.55E-06	mg/kg-day	9.00E-03	mg/kg-day	5E-04
				HIGHLY CHLORINATED PCBs	1.13E+02	mg/kg	1.48E-05	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-05	4.16E-05	mg/kg-day	2.00E-05	mg/kg-day	2E+00
				ACENAPHTHYLENE	3.40E-01	mg/kg	4.47E-08	mg/kg-day		1/(mg/kg-day)		1.25E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.34E+01	mg/kg	1.76E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-06	4.94E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.70E+00	mg/kg	1.01E-06	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-06	2.83E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	2.34E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-06	6.55E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.36E+00	mg/kg	7.04E-07	mg/kg-day		1/(mg/kg-day)		1.97E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	7.07E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	5E-08	1.98E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	2.37E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	6.65E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.94E+00	mg/kg	3.86E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	6E-07	1.08E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	8.19E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-07	2.29E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.50E+01	mg/kg	3.28E-06	mg/kg-day		1/(mg/kg-day)		9.20E-06	mg/kg-day	3.00E-02	mg/kg-day	3E-04
				1,2,4-TRICHLOROBENZENE	1.35E+01	mg/kg	1.77E-06	mg/kg-day	3.60E-03	1/(mg/kg-day)	6E-09	4.97E-06	mg/kg-day	1.00E-02	mg/kg-day	5E-04
				1,4-DICHLOROBENZENE	5.94E+00	mg/kg	7.80E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	4E-09	2.18E-06	mg/kg-day	7.00E-02	mg/kg-day	3E-05
				BENZENE	8.00E-03	mg/kg	1.05E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	6E-11	2.94E-09	mg/kg-day	4.00E-03	mg/kg-day	7E-07
			Exp. Route Total								**5E-05**					**2E+00**
		Exp. Point Total									**1E-04**					**6E+00**
	Exp. Medium Total										**1E-04**					**6E+00**
Medium Total											**1E-04**					**6E+00**
										Total of Receptor Risks Across All Media	**1E-04**				Total of Receptor Hazards Across All Media	**6E+00**

TABLE 7.5a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Plant Area	Dermal	2,3,7,8-TCDD Equivalent	6.65E-04	mg/kg	1.10E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-07	7.73E-11	mg/kg-day	1.00E-09	mg/kg-day	8E-02
				ALUMINUM	8.77E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.45E+01	mg/kg	4.07E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	6E-08	2.85E-06	mg/kg-day	3.00E-04	mg/kg-day	9E-03
				BARIUM	2.60E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.78E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.09E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.28E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.17E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	2.54E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.93E+00	mg/kg	1.50E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-08	1.05E-06	mg/kg-day	2.00E-05	mg/kg-day	5E-02
				DELTA-BHC	1.90E+00	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg		mg/kg-day	1.60E+01	1/(mg/kg-day)			mg/kg-day	5.00E-05	mg/kg-day	
				ACENAPHTHYLENE	2.08E-01	mg/kg	1.50E-09	mg/kg-day		1/(mg/kg-day)		1.05E-07	mg/kg-day		mg/kg-day	
				BENZ(A)ANTHRACENE	1.05E+01	mg/kg	7.54E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	5.28E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.09E+01	mg/kg	7.84E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	6E-07	5.49E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.46E+01	mg/kg	1.05E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-08	7.34E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.23E+01	mg/kg	8.84E-08	mg/kg-day		1/(mg/kg-day)		6.19E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZO(K)FLUORANTHENE	5.34E+00	mg/kg	3.84E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-09	2.69E-06	mg/kg-day		mg/kg-day	
				DIBENZ(A,H)ANTHRACENE	2.26E+00	mg/kg	1.63E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.14E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.86E+01	mg/kg	1.03E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-07	7.20E-06	mg/kg-day	8.00E-04	mg/kg-day	9E-03
				HEXACHLOROBUTADIENE	1.26E+00	mg/kg	6.98E-09	mg/kg-day	7.80E-02	1/(mg/kg-day)	5E-10	4.89E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	9.58E+00	mg/kg	6.89E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	4.83E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.38E+01	mg/kg	9.94E-08	mg/kg-day		1/(mg/kg-day)		6.96E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				1,2,3-TRICHLOROBENZENE	3.30E-03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	4.68E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	2.71E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	5.80E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.64E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	2.11E+00	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	1.28E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**1E-06**					**1E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	6.65E-04	mg/kg	1.23E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-06	8.59E-10	mg/kg-day	1.00E-09	mg/kg-day	9E-01
				ALUMINUM	8.77E+03	mg/kg	1.62E-04	mg/kg-day		1/(mg/kg-day)		1.13E-02	mg/kg-day	1.00E+00	mg/kg-day	1E-02
				ARSENIC	2.45E+01	mg/kg	4.52E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-07	3.16E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				BARIUM	2.60E+02	mg/kg	4.79E-06	mg/kg-day		1/(mg/kg-day)		3.36E-04	mg/kg-day	2.00E-01	mg/kg-day	2E-03
				CHROMIUM	1.78E+01	mg/kg	3.28E-07	mg/kg-day		1/(mg/kg-day)		2.30E-05	mg/kg-day	3.00E-03	mg/kg-day	8E-03
				IRON	2.09E+04	mg/kg	3.86E-04	mg/kg-day		1/(mg/kg-day)		2.70E-02	mg/kg-day	7.00E-01	mg/kg-day	4E-02
				MANGANESE	3.32E+02	mg/kg	6.13E-06	mg/kg-day		1/(mg/kg-day)		4.29E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	3.28E+02	mg/kg	6.06E-06	mg/kg-day		1/(mg/kg-day)		4.24E-04	mg/kg-day	3.00E-04	mg/kg-day	1E+00
				NICKEL	3.17E+03	mg/kg	5.84E-05	mg/kg-day		1/(mg/kg-day)		4.09E-03	mg/kg-day	2.00E-02	mg/kg-day	2E-01
				VANADIUM	2.54E+01	mg/kg	4.69E-07	mg/kg-day		1/(mg/kg-day)		3.29E-05	mg/kg-day	9.00E-03	mg/kg-day	4E-03
				HIGHLY CHLORINATED PCBs	1.93E+00	mg/kg	3.56E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	7E-08	2.49E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				DELTA-BHC	1.90E+00	mg/kg	3.51E-08	mg/kg-day	6.30E+00	1/(mg/kg-day)	2E-07	2.45E-06	mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg	6.83E-08	mg/kg-day	1.60E+01	1/(mg/kg-day)	1E-06	4.78E-06	mg/kg-day	5.00E-05	mg/kg-day	1E-01
				ACENAPHTHYLENE	2.08E-01	mg/kg	3.84E-09	mg/kg-day		1/(mg/kg-day)		2.69E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.05E+01	mg/kg	1.93E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.35E-05	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.09E+01	mg/kg	2.01E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	1.41E-05	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.46E+01	mg/kg	2.69E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	1.88E-05	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.23E+01	mg/kg	2.27E-07	mg/kg-day		1/(mg/kg-day)		1.59E-05	mg/kg-day	3.00E-02	mg/kg-day	5E-04
				BENZO(K)FLUORANTHENE	5.34E+00	mg/kg	9.85E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	7E-09	6.90E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	4.17E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	2.92E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.86E+01	mg/kg	3.43E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	5E-07	2.40E-05	mg/kg-day	8.00E-04	mg/kg-day	3E-02
				HEXACHLOROBUTADIENE	1.26E+00	mg/kg	2.33E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	2E-09	1.63E-06	mg/kg-day		mg/kg-day	

TABLE 7.5a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Plant Area	Ingestion	INDENO(1,2,3-CD)PYRENE	9.58E+00	mg/kg	1.77E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.24E-05	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.38E+01	mg/kg	2.55E-07	mg/kg-day		1/(mg/kg-day)		1.78E-05	mg/kg-day	3.00E-02	mg/kg-day	6E-04
				1,2,3-TRICHLOROBENZENE	3.30E-03	mg/kg	6.09E-11	mg/kg-day		1/(mg/kg-day)		4.26E-09	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	4.68E+00	mg/kg	8.63E-08	mg/kg-day	3.60E-03	1/(mg/kg-day)	3E-10	6.04E-06	mg/kg-day	1.00E-02	mg/kg-day	6E-04
				1,2-DICHLOROBENZENE	2.71E+02	mg/kg	4.99E-06	mg/kg-day		1/(mg/kg-day)		3.50E-04	mg/kg-day	9.00E-02	mg/kg-day	4E-03
				1,3-DICHLOROBENZENE	5.80E+00	mg/kg	1.07E-07	mg/kg-day		1/(mg/kg-day)		7.48E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.64E+03	mg/kg	3.02E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-07	2.11E-03	mg/kg-day	7.00E-02	mg/kg-day	3E-02
				BENZENE	2.11E+00	mg/kg	3.88E-08	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-09	2.72E-06	mg/kg-day	4.00E-03	mg/kg-day	7E-04
				CHLOROBENZENE	1.28E+02	mg/kg	2.36E-06	mg/kg-day		1/(mg/kg-day)		1.65E-04	mg/kg-day	2.00E-02	mg/kg-day	8E-03
			Exp. Route Total								**7E-06**					**3E+00**
			Inhalation	2,3,7,8-TCDD Equivalent	9.47E-10	mg/m3	1.36E-12	mg/kg-day		1/(mg/kg-day)		9.49E-11	mg/kg-day		mg/kg-day	
				ALUMINUM	1.25E-02	mg/m3	1.79E-05	mg/kg-day		1/(mg/kg-day)		1.25E-03	mg/kg-day	1.43E-03	mg/kg-day	9E-01
				ARSENIC	3.49E-05	mg/m3	4.99E-08	mg/kg-day	1.51E+01	1/(mg/kg-day)	8E-07	3.49E-06	mg/kg-day	1.43E-05	mg/kg-day	2E-01
				BARIUM	3.70E-04	mg/m3	5.30E-07	mg/kg-day		1/(mg/kg-day)		3.71E-05	mg/kg-day	1.40E-04	mg/kg-day	3E-01
				CHROMIUM	2.53E-05	mg/m3	3.62E-08	mg/kg-day	4.20E+01	1/(mg/kg-day)	2E-06	2.54E-06	mg/kg-day	2.86E-05	mg/kg-day	9E-02
				IRON	2.98E-02	mg/m3	4.26E-05	mg/kg-day		1/(mg/kg-day)		2.98E-03	mg/kg-day		mg/kg-day	
				MANGANESE	4.73E-04	mg/m3	6.77E-07	mg/kg-day		1/(mg/kg-day)		4.74E-05	mg/kg-day	1.43E-05	mg/kg-day	3E+00
				MERCURY	4.68E-04	mg/m3	6.70E-07	mg/kg-day		1/(mg/kg-day)		4.69E-05	mg/kg-day	8.57E-05	mg/kg-day	5E-01
				NICKEL	4.51E-03	mg/m3	6.45E-06	mg/kg-day	9.10E-01	1/(mg/kg-day)	6E-06	4.52E-04	mg/kg-day	2.57E-05	mg/kg-day	2E+01
				VANADIUM	3.62E-05	mg/m3	5.19E-08	mg/kg-day		1/(mg/kg-day)		3.63E-06	mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	2.75E-06	mg/m3	3.93E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	8E-09	2.75E-07	mg/kg-day		mg/kg-day	
				DELTA-BHC	2.71E-06	mg/m3	3.87E-09	mg/kg-day	6.30E+00	1/(mg/kg-day)	2E-08	2.71E-07	mg/kg-day		mg/kg-day	
				DIELDRIN	5.27E-06	mg/m3	7.54E-09	mg/kg-day	1.60E+01	1/(mg/kg-day)	1E-07	5.28E-07	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	2.96E-07	mg/m3	4.24E-10	mg/kg-day		1/(mg/kg-day)		2.97E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.49E-05	mg/m3	2.14E-08	mg/kg-day		1/(mg/kg-day)		1.50E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.55E-05	mg/m3	2.22E-08	mg/kg-day		1/(mg/kg-day)		1.55E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.08E-05	mg/m3	2.97E-08	mg/kg-day		1/(mg/kg-day)		2.08E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.75E-05	mg/m3	2.51E-08	mg/kg-day		1/(mg/kg-day)		1.75E-06	mg/kg-day		mg/kg-day	
				BENZO(K)FLUORANTHENE	7.61E-06	mg/m3	1.09E-08	mg/kg-day		1/(mg/kg-day)		7.62E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	3.22E-06	mg/m3	4.61E-09	mg/kg-day		1/(mg/kg-day)		3.23E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.65E-05	mg/m3	3.79E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	6E-08	2.65E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBUTADIENE	1.80E-06	mg/m3	2.57E-09	mg/kg-day	7.70E-02	1/(mg/kg-day)	2E-10	1.80E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.36E-05	mg/m3	1.95E-08	mg/kg-day		1/(mg/kg-day)		1.37E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.97E-05	mg/m3	2.82E-08	mg/kg-day		1/(mg/kg-day)		1.97E-06	mg/kg-day		mg/kg-day	
				1,2,3-TRICHLOROBENZENE	9.83E-08	mg/m3	1.41E-10	mg/kg-day		1/(mg/kg-day)		9.85E-09	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.39E-04	mg/m3	2.00E-07	mg/kg-day		1/(mg/kg-day)		1.40E-05	mg/kg-day		mg/kg-day	
				1,2-DICHLOROBENZENE	2.38E-02	mg/m3	3.41E-05	mg/kg-day		1/(mg/kg-day)		2.38E-03	mg/kg-day	4.00E-02	mg/kg-day	6E-02
				1,3-DICHLOROBENZENE	5.64E-04	mg/m3	8.07E-07	mg/kg-day		1/(mg/kg-day)		5.65E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.63E-01	mg/m3	2.33E-04	mg/kg-day	4.00E-02	1/(mg/kg-day)	9E-06	1.63E-02	mg/kg-day	2.29E-01	mg/kg-day	7E-02
				BENZENE	9.91E-04	mg/m3	1.42E-06	mg/kg-day	2.73E-02	1/(mg/kg-day)	4E-08	9.93E-05	mg/kg-day	8.57E-03	mg/kg-day	1E-02
				CHLOROBENZENE	8.79E-02	mg/m3	1.26E-04	mg/kg-day		1/(mg/kg-day)		8.81E-03	mg/kg-day		mg/kg-day	
			Exp. Route Total								**2E-05**					**2E+01**
		Exp. Point Total									**3E-05**					**3E+01**
	Exp. Medium Total										**3E-05**					**3E+01**
Medium Total											**3E-05**					**3E+01**
									Total of Receptor Risks Across All Media		**3E-05**			Total of Receptor Hazards Across All Media		**3E+01**

TABLE 7.5b RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe: Future
Receptor Population: Construction Worker
Exposure Area: On-Site Ditches
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	On-Site Ditches	Dermal	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	1.25E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-06	8.76E-10	mg/kg-day	1.00E-09	mg/kg-day	9E-01
				ARSENIC	3.99E+01	mg/kg	6.63E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-07	4.64E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				CHROMIUM	1.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COPPER	3.26E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	5.39E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	6.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	4.78E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				METHYL MERCURY	6.86E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-04	mg/kg-day	
				NICKEL	3.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	6.39E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	9.88E+00	mg/kg	7.66E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	5.36E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	1.22E-09	mg/kg-day		1/(mg/kg-day)		8.56E-08	mg/kg-day		mg/kg-day	
				BENZ(A)ANTHRACENE	2.10E+00	mg/kg	1.51E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.06E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	1.44E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.01E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	2.16E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.51E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	1.01E-08	mg/kg-day		1/(mg/kg-day)		7.05E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				DIBENZ(A,H)ANTHRACENE	4.40E-01	mg/kg	3.17E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-08	2.22E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	8.64E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-09	6.04E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	1.44E-08	mg/kg-day		1/(mg/kg-day)		1.01E-06	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				1,2,3-TRICHLOROBENZENE	2.20E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	7.50E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	1.90E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	7.60E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	4.30E+02	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	1.20E-01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	7.10E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**2E-06**					**1E+00**
			Ingestion	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	1.39E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-05	9.74E-09	mg/kg-day	1.00E-09	mg/kg-day	1E+01
				ARSENIC	3.99E+01	mg/kg	7.36E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	5.15E-05	mg/kg-day	3.00E-04	mg/kg-day	2E-01
				CHROMIUM	1.92E+02	mg/kg	3.54E-06	mg/kg-day		1/(mg/kg-day)		2.48E-04	mg/kg-day	3.00E-03	mg/kg-day	8E-02
				COPPER	3.26E+02	mg/kg	6.02E-06	mg/kg-day		1/(mg/kg-day)		4.21E-04	mg/kg-day	4.00E-02	mg/kg-day	1E-02
				IRON	5.39E+04	mg/kg	9.95E-04	mg/kg-day		1/(mg/kg-day)		6.96E-02	mg/kg-day	7.00E-01	mg/kg-day	1E-01
				LEAD	6.92E+02	mg/kg	1.28E-05	mg/kg-day		1/(mg/kg-day)		8.94E-04	mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg	7.97E-06	mg/kg-day		1/(mg/kg-day)		5.58E-04	mg/kg-day	1.40E-01	mg/kg-day	4E-03
				MERCURY	4.78E+03	mg/kg	8.82E-05	mg/kg-day		1/(mg/kg-day)		6.17E-03	mg/kg-day	3.00E-04	mg/kg-day	2E+01
				METHYL MERCURY	6.86E-01	mg/kg	1.27E-08	mg/kg-day		1/(mg/kg-day)		8.86E-07	mg/kg-day	1.00E-04	mg/kg-day	9E-03
				NICKEL	3.01E+02	mg/kg	5.55E-06	mg/kg-day		1/(mg/kg-day)		3.89E-04	mg/kg-day	2.00E-02	mg/kg-day	2E-02
				VANADIUM	6.39E+01	mg/kg	1.18E-06	mg/kg-day		1/(mg/kg-day)		8.25E-05	mg/kg-day	9.00E-03	mg/kg-day	9E-03
				HIGHLY CHLORINATED PCBs	9.88E+00	mg/kg	1.82E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-07	1.28E-05	mg/kg-day	2.00E-05	mg/kg-day	6E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	3.14E-09	mg/kg-day		1/(mg/kg-day)		2.20E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	3.87E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.71E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	3.69E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	2.58E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	5.54E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.87E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	2.58E-08	mg/kg-day		1/(mg/kg-day)		1.81E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	8.12E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	6E-08	5.68E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	2.21E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.55E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	3.69E-08	mg/kg-day		1/(mg/kg-day)		2.58E-06	mg/kg-day	3.00E-02	mg/kg-day	9E-05
				1,2,3-TRICHLOROBENZENE	2.20E+00	mg/kg	4.06E-08	mg/kg-day		1/(mg/kg-day)		2.84E-06	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	7.50E+00	mg/kg	1.38E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	5E-10	9.69E-06	mg/kg-day	1.00E-02	mg/kg-day	1E-03
				1,2-DICHLOROBENZENE	1.90E+02	mg/kg	3.51E-06	mg/kg-day		1/(mg/kg-day)		2.45E-04	mg/kg-day	9.00E-02	mg/kg-day	3E-03

TABLE 7.5b RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe: Future
Receptor Population: Construction Worker
Exposure Area: On-Site Ditches
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	On-Site Ditches	Ingestion	1,3-DICHLOROBENZENE	7.60E+01	mg/kg	1.40E-06	mg/kg-day		1/(mg/kg-day)		9.82E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	4.30E+02	mg/kg	7.93E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	4E-08	5.55E-04	mg/kg-day	7.00E-02	mg/kg-day	8E-03
				BENZENE	1.20E-01	mg/kg	2.21E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-10	1.55E-07	mg/kg-day	4.00E-03	mg/kg-day	4E-05
				CHLOROBENZENE	7.10E+01	mg/kg	1.31E-06	mg/kg-day		1/(mg/kg-day)		9.17E-05	mg/kg-day	2.00E-02	mg/kg-day	5E-03
			Exp. Route Total								**2E-05**					**3E+01**
			Inhalation	2,3,7,8-TCDD Equivalent	1.07E-08	mg/m3	1.54E-11	mg/kg-day		1/(mg/kg-day)		1.08E-09	mg/kg-day		mg/kg-day	
				ARSENIC	5.68E-05	mg/m3	8.13E-08	mg/kg-day	1.51E+01	1/(mg/kg-day)	1E-06	5.69E-06	mg/kg-day	1.43E-05	mg/kg-day	4E-01
				CHROMIUM	2.73E-04	mg/m3	3.91E-07	mg/kg-day	4.20E+01	1/(mg/kg-day)	2E-05	2.74E-05	mg/kg-day	2.86E-05	mg/kg-day	1E+00
				COPPER	4.64E-04	mg/m3	6.65E-07	mg/kg-day		1/(mg/kg-day)		4.65E-05	mg/kg-day		mg/kg-day	
				IRON	7.68E-02	mg/m3	1.10E-04	mg/kg-day		1/(mg/kg-day)		7.69E-03	mg/kg-day		mg/kg-day	
				LEAD	9.86E-04	mg/m3	1.41E-06	mg/kg-day		1/(mg/kg-day)		9.88E-05	mg/kg-day		mg/kg-day	
				MANGANESE	6.15E-04	mg/m3	8.81E-07	mg/kg-day		1/(mg/kg-day)		6.17E-05	mg/kg-day	1.43E-05	mg/kg-day	4E+00
				MERCURY	6.81E-03	mg/m3	9.75E-06	mg/kg-day		1/(mg/kg-day)		6.82E-04	mg/kg-day	8.57E-05	mg/kg-day	8E+00
				METHYL MERCURY	9.77E-07	mg/m3	1.40E-09	mg/kg-day		1/(mg/kg-day)		9.79E-08	mg/kg-day	8.57E-05	mg/kg-day	1E-03
				NICKEL	4.29E-04	mg/m3	6.14E-07	mg/kg-day	9.10E-01	1/(mg/kg-day)	6E-07	4.30E-05	mg/kg-day	2.57E-05	mg/kg-day	2E+00
				VANADIUM	9.10E-05	mg/m3	1.30E-07	mg/kg-day		1/(mg/kg-day)		9.12E-06	mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.41E-05	mg/m3	2.01E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-08	1.41E-06	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	2.42E-07	mg/m3	3.47E-10	mg/kg-day		1/(mg/kg-day)		2.43E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.99E-06	mg/m3	4.28E-09	mg/kg-day		1/(mg/kg-day)		3.00E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.85E-06	mg/m3	4.08E-09	mg/kg-day		1/(mg/kg-day)		2.85E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	4.27E-06	mg/m3	6.12E-09	mg/kg-day		1/(mg/kg-day)		4.28E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.99E-06	mg/m3	2.85E-09	mg/kg-day		1/(mg/kg-day)		2.00E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	6.27E-07	mg/m3	8.97E-10	mg/kg-day		1/(mg/kg-day)		6.28E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.71E-06	mg/m3	2.45E-09	mg/kg-day		1/(mg/kg-day)		1.71E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.85E-06	mg/m3	4.08E-09	mg/kg-day		1/(mg/kg-day)		2.85E-07	mg/kg-day		mg/kg-day	
				1,2,3-TRICHLOROBENZENE	6.55E-05	mg/m3	9.38E-08	mg/kg-day		1/(mg/kg-day)		6.57E-06	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	2.23E-04	mg/m3	3.20E-07	mg/kg-day		1/(mg/kg-day)		2.24E-05	mg/kg-day		mg/kg-day	
				1,2-DICHLOROBENZENE	1.67E-02	mg/m3	2.39E-05	mg/kg-day		1/(mg/kg-day)		1.67E-03	mg/kg-day	4.00E-02	mg/kg-day	4E-02
				1,3-DICHLOROBENZENE	7.39E-03	mg/m3	1.06E-05	mg/kg-day		1/(mg/kg-day)		7.41E-04	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	4.27E-02	mg/m3	6.11E-05	mg/kg-day	4.00E-02	1/(mg/kg-day)	2E-06	4.28E-03	mg/kg-day	2.29E-01	mg/kg-day	2E-02
				BENZENE	5.65E-05	mg/m3	8.09E-08	mg/kg-day	2.73E-02	1/(mg/kg-day)	2E-09	5.66E-06	mg/kg-day	8.57E-03	mg/kg-day	7E-04
				CHLOROBENZENE	4.89E-02	mg/m3	6.99E-05	mg/kg-day		1/(mg/kg-day)		4.90E-03	mg/kg-day		mg/kg-day	
			Exp. Route Total								**2E-05**					**2E+01**
		Exp. Point Total									**5E-05**					**5E+01**
	Exp. Medium Total										**5E-05**					**5E+01**
Medium Total											**5E-05**					**5E+01**
									Total of Receptor Risks Across All Media		**5E-05**			Total of Receptor Hazards Across All Media		**5E+01**

TABLE 7.5c RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Former Chlorination Building	Dermal	2,3,7,8-TCDD Equivalent	2.52E-01	mg/kg	4.19E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	6E-05	2.93E-08	mg/kg-day	1.00E-09	mg/kg-day	3E+01
				ARSENIC	1.04E+01	mg/kg	1.73E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-08	1.21E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				CHROMIUM	1.35E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	8.57E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.38E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.50E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	4.26E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	9E-08	2.98E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				LESS CHLORINATED PCBs	1.10E+00	mg/kg	8.52E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-08	5.97E-07	mg/kg-day	7.00E-05	mg/kg-day	9E-03
				ACENAPHTHYLENE	4.00E-02	mg/kg	2.88E-10	mg/kg-day		1/(mg/kg-day)		2.01E-08	mg/kg-day		mg/kg-day	
				BENZ(A)ANTHRACENE	1.60E+00	mg/kg	1.15E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-09	8.06E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	1.08E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	8E-08	7.56E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	2.01E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.41E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	7.92E-09	mg/kg-day		1/(mg/kg-day)		5.54E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				DIBENZ(A,H)ANTHRACENE	3.10E-01	mg/kg	2.23E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-08	1.56E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.20E+00	mg/kg	6.64E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-08	4.65E-07	mg/kg-day	8.00E-04	mg/kg-day	6E-04
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	6.33E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-09	4.43E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	1.37E-08	mg/kg-day		1/(mg/kg-day)		9.57E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
			Exp. Route Total								**6E-05**					**3E+01**
			Ingestion	2,3,7,8-TCDD Equivalent	2.52E-01	mg/kg	4.66E-09	mg/kg-day	1.50E+05	1/(mg/kg-day)	7E-04	3.26E-07	mg/kg-day	1.00E-09	mg/kg-day	3E+02
				ARSENIC	1.04E+01	mg/kg	1.92E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-07	1.34E-05	mg/kg-day	3.00E-04	mg/kg-day	4E-02
				CHROMIUM	1.35E+01	mg/kg	2.49E-07	mg/kg-day		1/(mg/kg-day)		1.74E-05	mg/kg-day	3.00E-03	mg/kg-day	6E-03
				IRON	8.57E+03	mg/kg	1.58E-04	mg/kg-day		1/(mg/kg-day)		1.11E-02	mg/kg-day	7.00E-01	mg/kg-day	2E-02
				MANGANESE	3.38E+02	mg/kg	6.24E-06	mg/kg-day		1/(mg/kg-day)		4.37E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	1.50E+02	mg/kg	2.77E-06	mg/kg-day		1/(mg/kg-day)		1.94E-04	mg/kg-day	3.00E-04	mg/kg-day	6E-01
				VANADIUM	1.24E+01	mg/kg	2.29E-07	mg/kg-day		1/(mg/kg-day)		1.60E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	1.01E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	7.10E-06	mg/kg-day	2.00E-05	mg/kg-day	4E-01
				LESS CHLORINATED PCBs	1.10E+00	mg/kg	2.03E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-08	1.42E-06	mg/kg-day	7.00E-05	mg/kg-day	2E-02
				ACENAPHTHYLENE	4.00E-02	mg/kg	7.38E-10	mg/kg-day		1/(mg/kg-day)		5.17E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	2.95E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.07E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	2.77E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.94E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	5.17E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.62E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	2.03E-08	mg/kg-day		1/(mg/kg-day)		1.42E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	5.72E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-08	4.00E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.20E+00	mg/kg	2.21E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	4E-08	1.55E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	1.62E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.14E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	3.51E-08	mg/kg-day		1/(mg/kg-day)		2.45E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg	3.69E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	1E-09	2.58E-05	mg/kg-day	1.00E-02	mg/kg-day	3E-03
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg	1.44E-06	mg/kg-day		1/(mg/kg-day)		1.01E-04	mg/kg-day	9.00E-02	mg/kg-day	1E-03
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg	3.32E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-09	2.32E-05	mg/kg-day	7.00E-02	mg/kg-day	3E-04
			Exp. Route Total								**7E-04**					**3E+02**
			Inhalation	2,3,7,8-TCDD Equivalent	3.59E-07	mg/m3	5.14E-10	mg/kg-day		1/(mg/kg-day)		3.60E-08	mg/kg-day		mg/kg-day	
				ARSENIC	1.48E-05	mg/m3	2.12E-08	mg/kg-day	1.51E+01	1/(mg/kg-day)	3E-07	1.48E-06	mg/kg-day	1.43E-05	mg/kg-day	1E-01
				CHROMIUM	1.92E-05	mg/m3	2.75E-08	mg/kg-day	4.20E+01	1/(mg/kg-day)	1E-06	1.93E-06	mg/kg-day	2.86E-05	mg/kg-day	7E-02
				IRON	1.22E-02	mg/m3	1.75E-05	mg/kg-day		1/(mg/kg-day)		1.22E-03	mg/kg-day		mg/kg-day	
				MANGANESE	4.81E-04	mg/m3	6.89E-07	mg/kg-day		1/(mg/kg-day)		4.82E-05	mg/kg-day	1.43E-05	mg/kg-day	3E+00
				MERCURY	2.14E-04	mg/m3	3.06E-07	mg/kg-day		1/(mg/kg-day)		2.14E-05	mg/kg-day	8.57E-05	mg/kg-day	2E-01
				VANADIUM	1.77E-05	mg/m3	2.53E-08	mg/kg-day		1/(mg/kg-day)		1.77E-06	mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	7.83E-06	mg/m3	1.12E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-08	7.85E-07	mg/kg-day		mg/kg-day	
				LESS CHLORINATED PCBs	1.57E-06	mg/m3	2.24E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-09	1.57E-07	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	5.70E-08	mg/m3	8.15E-11	mg/kg-day		1/(mg/kg-day)		5.71E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.28E-06	mg/m3	3.26E-09	mg/kg-day		1/(mg/kg-day)		2.28E-07	mg/kg-day		mg/kg-day	

TABLE 7.5c RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Former Chlorination Building	Inhalation	BENZO(A)PYRENE	2.14E-06	mg/m3	3.06E-09	mg/kg-day		1/(mg/kg-day)		2.14E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.99E-06	mg/m3	5.71E-09	mg/kg-day		1/(mg/kg-day)		4.00E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.57E-06	mg/m3	2.24E-09	mg/kg-day		1/(mg/kg-day)		1.57E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	4.42E-07	mg/m3	6.32E-10	mg/kg-day		1/(mg/kg-day)		4.42E-08	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.71E-06	mg/m3	2.45E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	4E-09	1.71E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.25E-06	mg/m3	1.79E-09	mg/kg-day		1/(mg/kg-day)		1.26E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.71E-06	mg/m3	3.87E-09	mg/kg-day		1/(mg/kg-day)		2.71E-07	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	5.96E-04	mg/m3	8.53E-07	mg/kg-day		1/(mg/kg-day)		5.97E-05	mg/kg-day		mg/kg-day	
				1,2-DICHLOROBENZENE	6.86E-03	mg/m3	9.81E-06	mg/kg-day		1/(mg/kg-day)		6.87E-04	mg/kg-day	4.00E-02	mg/kg-day	2E-02
				1,4-DICHLOROBENZENE	1.79E-03	mg/m3	2.56E-06	mg/kg-day	4.00E-02	1/(mg/kg-day)	1E-07	1.79E-04	mg/kg-day	2.29E-01	mg/kg-day	8E-04
			Exp. Route Total								**2E-06**					**4E+00**
		Exp. Point Total									**8E-04**					**4E+02**
	Exp. Medium Total										**8E-04**					**4E+02**
Medium Total											**8E-04**					**4E+02**
										Total of Receptor Risks Across All Media	**8E-04**				Total of Receptor Hazards Across All Media	**4E+02**

TABLE 7.5d RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	1.16E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-07	8.09E-11	mg/kg-day	1.00E-09	mg/kg-day	8E-02
				ALUMINUM	7.77E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.76E+01	mg/kg	4.58E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-08	3.21E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				BARIUM	6.73E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.83E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.64E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	5.66E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.88E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.06E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	2.71E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-07	1.90E-05	mg/kg-day	2.00E-05	mg/kg-day	9E-01
				ALDRIN	8.80E-02	mg/kg		mg/kg-day	1.70E+01	1/(mg/kg-day)			mg/kg-day	3.00E-05	mg/kg-day	
				HEPTACHLOR	1.20E-01	mg/kg		mg/kg-day	4.50E+00	1/(mg/kg-day)			mg/kg-day	5.00E-04	mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	4.82E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.37E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	5.61E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	3.93E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	9.35E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	6.55E-06	mg/kg-day		mg/kg-day	
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	2.37E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-09	1.66E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	1.73E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.21E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.08E+00	mg/kg	1.70E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	3E-08	1.19E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	3.67E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.57E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	3.20E+03	mg/kg	2.30E-05	mg/kg-day		1/(mg/kg-day)		1.61E-03	mg/kg-day	2.00E-02	mg/kg-day	8E-02
				1,2,4-TRIMETHYLBENZENE	1.40E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,3,5-TRIMETHYLBENZENE	1.00E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	5.99E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	7.60E+03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				ETHYLBENZENE	8.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-01	mg/kg-day	
				SEC-BUTYLBENZENE	1.30E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				TERT-BUTYLBENZENE	4.30E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				TOLUENE	3.10E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-02	mg/kg-day	
				TRICHLOROETHENE	3.36E-02	mg/kg		mg/kg-day	4.00E-01	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				XYLENES, TOTAL	1.70E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-01	mg/kg-day	
			Exp. Route Total								**1E-06**					**1E+00**
			Ingestion	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	1.28E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-06	8.99E-10	mg/kg-day	1.00E-09	mg/kg-day	9E-01
				ALUMINUM	7.77E+03	mg/kg	1.43E-04	mg/kg-day		1/(mg/kg-day)		1.00E-02	mg/kg-day	1.00E+00	mg/kg-day	1E-02
				ARSENIC	2.76E+01	mg/kg	5.09E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-07	3.56E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				BARIUM	6.73E+02	mg/kg	1.24E-05	mg/kg-day		1/(mg/kg-day)		8.69E-04	mg/kg-day	2.00E-01	mg/kg-day	4E-03
				CHROMIUM	1.83E+02	mg/kg	3.38E-06	mg/kg-day		1/(mg/kg-day)		2.36E-04	mg/kg-day	3.00E-03	mg/kg-day	8E-02
				IRON	2.64E+04	mg/kg	4.87E-04	mg/kg-day		1/(mg/kg-day)		3.41E-02	mg/kg-day	7.00E-01	mg/kg-day	5E-02
				LEAD	5.66E+02	mg/kg	1.04E-05	mg/kg-day		1/(mg/kg-day)		7.31E-04	mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg	5.46E-06	mg/kg-day		1/(mg/kg-day)		3.82E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	1.88E+03	mg/kg	3.47E-05	mg/kg-day		1/(mg/kg-day)		2.43E-03	mg/kg-day	3.00E-04	mg/kg-day	8E+00
				VANADIUM	1.06E+02	mg/kg	1.96E-06	mg/kg-day		1/(mg/kg-day)		1.37E-04	mg/kg-day	9.00E-03	mg/kg-day	2E-02
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	6.46E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-06	4.52E-05	mg/kg-day	2.00E-05	mg/kg-day	2E+00
				ALDRIN	8.80E-02	mg/kg	1.62E-09	mg/kg-day	1.70E+01	1/(mg/kg-day)	3E-08	1.14E-07	mg/kg-day	3.00E-05	mg/kg-day	4E-03
				HEPTACHLOR	1.20E-01	mg/kg	2.21E-09	mg/kg-day	4.50E+00	1/(mg/kg-day)	1E-08	1.55E-07	mg/kg-day	5.00E-04	mg/kg-day	3E-04
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	1.24E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-08	8.65E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	1.44E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	1.01E-05	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	2.40E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	1.68E-05	mg/kg-day		mg/kg-day	
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	6.09E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	4E-09	4.26E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	4.43E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	3.10E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.08E+00	mg/kg	5.68E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	9E-08	3.97E-06	mg/kg-day	8.00E-04	mg/kg-day	5E-03
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	9.41E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	6.59E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	3.20E+03	mg/kg	5.90E-05	mg/kg-day		1/(mg/kg-day)		4.13E-03	mg/kg-day	2.00E-02	mg/kg-day	2E-01

TABLE 7.5d RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Ingestion	1,2,4-TRIMETHYLBENZENE	1.40E+02	mg/kg	2.58E-06	mg/kg-day		1/(mg/kg-day)		1.81E-04	mg/kg-day		mg/kg-day	
				1,3,5-TRIMETHYLBENZENE	1.00E+02	mg/kg	1.85E-06	mg/kg-day		1/(mg/kg-day)		1.29E-04	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	5.99E+01	mg/kg	1.11E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	6E-09	7.74E-05	mg/kg-day	7.00E-02	mg/kg-day	1E-03
				BENZENE	7.60E+03	mg/kg	1.40E-04	mg/kg-day	5.50E-02	1/(mg/kg-day)	8E-06	9.82E-03	mg/kg-day	4.00E-03	mg/kg-day	2E+00
				ETHYLBENZENE	8.80E+01	mg/kg	1.62E-06	mg/kg-day		1/(mg/kg-day)		1.14E-04	mg/kg-day	1.00E-01	mg/kg-day	1E-03
				SEC-BUTYLBENZENE	1.30E+02	mg/kg	2.40E-06	mg/kg-day		1/(mg/kg-day)		1.68E-04	mg/kg-day		mg/kg-day	
				TERT-BUTYLBENZENE	4.30E+01	mg/kg	7.93E-07	mg/kg-day		1/(mg/kg-day)		5.55E-05	mg/kg-day		mg/kg-day	
				TOLUENE	3.10E+03	mg/kg	5.72E-05	mg/kg-day		1/(mg/kg-day)		4.00E-03	mg/kg-day	8.00E-02	mg/kg-day	5E-02
				TRICHLOROETHENE	3.36E-02	mg/kg	6.20E-10	mg/kg-day	4.00E-01	1/(mg/kg-day)	2E-10	4.34E-08	mg/kg-day		mg/kg-day	
				XYLENES, TOTAL	1.70E+03	mg/kg	3.14E-05	mg/kg-day		1/(mg/kg-day)		2.20E-03	mg/kg-day	2.00E-01	mg/kg-day	1E-02
			Exp. Route Total								**1E-05**					**1E+01**
			Inhalation	2,3,7,8-TCDD Equivalent	9.92E-10	mg/m3	1.42E-12	mg/kg-day		1/(mg/kg-day)		9.94E-11	mg/kg-day		mg/kg-day	
				ALUMINUM	1.11E-02	mg/m3	1.58E-05	mg/kg-day		1/(mg/kg-day)		1.11E-03	mg/kg-day	1.43E-03	mg/kg-day	8E-01
				ARSENIC	3.93E-05	mg/m3	5.63E-08	mg/kg-day	1.51E+01	1/(mg/kg-day)	8E-07	3.94E-06	mg/kg-day	1.43E-05	mg/kg-day	3E-01
				BARIUM	9.59E-04	mg/m3	1.37E-06	mg/kg-day		1/(mg/kg-day)		9.60E-05	mg/kg-day	1.40E-04	mg/kg-day	7E-01
				CHROMIUM	2.61E-04	mg/m3	3.73E-07	mg/kg-day	4.20E+01	1/(mg/kg-day)	2E-05	2.61E-05	mg/kg-day	2.86E-05	mg/kg-day	9E-01
				IRON	3.76E-02	mg/m3	5.38E-05	mg/kg-day		1/(mg/kg-day)		3.77E-03	mg/kg-day		mg/kg-day	
				LEAD	8.06E-04	mg/m3	1.15E-06	mg/kg-day		1/(mg/kg-day)		8.08E-05	mg/kg-day		mg/kg-day	
				MANGANESE	4.22E-04	mg/m3	6.03E-07	mg/kg-day		1/(mg/kg-day)		4.22E-05	mg/kg-day	1.43E-05	mg/kg-day	3E+00
				MERCURY	2.68E-03	mg/m3	3.83E-06	mg/kg-day		1/(mg/kg-day)		2.68E-04	mg/kg-day	8.57E-05	mg/kg-day	3E+00
				VANADIUM	1.51E-04	mg/m3	2.16E-07	mg/kg-day		1/(mg/kg-day)		1.51E-05	mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	4.99E-05	mg/m3	7.14E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-07	4.99E-06	mg/kg-day		mg/kg-day	
				ALDRIN	1.25E-07	mg/m3	1.79E-10	mg/kg-day	1.70E+01	1/(mg/kg-day)	3E-09	1.26E-08	mg/kg-day		mg/kg-day	
				HEPTACHLOR	1.71E-07	mg/m3	2.45E-10	mg/kg-day	4.50E+00	1/(mg/kg-day)	1E-09	1.71E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.54E-06	mg/m3	1.37E-08	mg/kg-day		1/(mg/kg-day)		9.56E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.11E-05	mg/m3	1.59E-08	mg/kg-day		1/(mg/kg-day)		1.11E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.85E-05	mg/m3	2.65E-08	mg/kg-day		1/(mg/kg-day)		1.86E-06	mg/kg-day		mg/kg-day	
				BENZO(K)FLUORANTHENE	4.70E-06	mg/m3	6.73E-09	mg/kg-day		1/(mg/kg-day)		4.71E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	3.42E-06	mg/m3	4.89E-09	mg/kg-day		1/(mg/kg-day)		3.43E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	4.38E-06	mg/m3	6.27E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-08	4.39E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	7.26E-06	mg/m3	1.04E-08	mg/kg-day		1/(mg/kg-day)		7.28E-07	mg/kg-day		mg/kg-day	
				NAPHTHALENE	4.56E-03	mg/m3	6.52E-06	mg/kg-day	1.20E-01	1/(mg/kg-day)	8E-07	4.57E-04	mg/kg-day	8.57E-04	mg/kg-day	5E-01
				1,2,4-TRIMETHYLBENZENE	4.17E-03	mg/m3	5.97E-06	mg/kg-day		1/(mg/kg-day)		4.18E-04	mg/kg-day	2.00E-03	mg/kg-day	2E-01
				1,3,5-TRIMETHYLBENZENE	9.52E-03	mg/m3	1.36E-05	mg/kg-day		1/(mg/kg-day)		9.54E-04	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	5.95E-03	mg/m3	8.52E-06	mg/kg-day	4.00E-02	1/(mg/kg-day)	3E-07	5.96E-04	mg/kg-day	2.29E-01	mg/kg-day	3E-03
				BENZENE	3.58E+00	mg/m3	5.12E-03	mg/kg-day	2.73E-02	1/(mg/kg-day)	1E-04	3.59E-01	mg/kg-day	8.57E-03	mg/kg-day	4E+01
				ETHYLBENZENE	2.10E-02	mg/m3	3.00E-05	mg/kg-day		1/(mg/kg-day)		2.10E-03	mg/kg-day	2.86E-01	mg/kg-day	7E-03
				SEC-BUTYLBENZENE		mg/m3		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				TERT-BUTYLBENZENE		mg/m3		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				TOLUENE	1.00E+00	mg/m3	1.43E-03	mg/kg-day		1/(mg/kg-day)		1.00E-01	mg/kg-day	1.43E+00	mg/kg-day	7E-02
				TRICHLOROETHENE	1.33E-05	mg/m3	1.90E-08	mg/kg-day	4.00E-01	1/(mg/kg-day)	8E-09	1.33E-06	mg/kg-day		mg/kg-day	
				XYLENES, TOTAL	2.45E+00	mg/m3	3.51E-03	mg/kg-day		1/(mg/kg-day)		2.46E-01	mg/kg-day	2.86E-02	mg/kg-day	9E+00
			Exp. Route Total								**2E-04**					**6E+01**
		Exp. Point Total									**2E-04**					**8E+01**
	Exp. Medium Total										**2E-04**					**8E+01**
Medium Total											**2E-04**					**8E+01**
										Total of Receptor Risks Across All Media	**2E-04**				Total of Receptor Hazards Across All Media	**8E+01**

TABLE 7.5e RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Petroleum Storage Area	Dermal	ALUMINUM	9.13E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	3.85E+01	mg/kg	6.40E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-07	4.48E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				CHROMIUM	2.06E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.46E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	4.47E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.03E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.73E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	5.58E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-08	3.91E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				DELTA-BHC	1.20E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	3.78E-01	mg/kg	2.72E-09	mg/kg-day		1/(mg/kg-day)		1.90E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.99E+00	mg/kg	2.87E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.01E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	3.77E+00	mg/kg	2.71E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.90E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.62E+00	mg/kg	4.04E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.83E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	3.66E+00	mg/kg	2.64E-08	mg/kg-day		1/(mg/kg-day)		1.85E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				BENZO(K)FLUORANTHENE	1.73E+00	mg/kg	1.24E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	9E-10	8.70E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	9.50E-01	mg/kg	6.84E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-08	4.79E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	3.15E+00	mg/kg	2.26E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.58E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	2.24E+01	mg/kg	1.61E-07	mg/kg-day		1/(mg/kg-day)		1.13E-05	mg/kg-day	2.00E-02	mg/kg-day	6E-04
				PHENANTHRENE	3.37E+00	mg/kg	2.43E-08	mg/kg-day		1/(mg/kg-day)		1.70E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				BENZENE	1.02E-01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**4E-07**					**4E-02**
			Ingestion	ALUMINUM	9.13E+03	mg/kg	1.68E-04	mg/kg-day		1/(mg/kg-day)		1.18E-02	mg/kg-day	1.00E+00	mg/kg-day	1E-02
				ARSENIC	3.85E+01	mg/kg	7.11E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	4.98E-05	mg/kg-day	3.00E-04	mg/kg-day	2E-01
				CHROMIUM	2.06E+01	mg/kg	3.80E-07	mg/kg-day		1/(mg/kg-day)		2.66E-05	mg/kg-day	3.00E-03	mg/kg-day	9E-03
				IRON	2.46E+04	mg/kg	4.55E-04	mg/kg-day		1/(mg/kg-day)		3.18E-02	mg/kg-day	7.00E-01	mg/kg-day	5E-02
				MANGANESE	4.47E+02	mg/kg	8.24E-06	mg/kg-day		1/(mg/kg-day)		5.77E-04	mg/kg-day	1.40E-01	mg/kg-day	4E-03
				MERCURY	1.03E+01	mg/kg	1.90E-07	mg/kg-day		1/(mg/kg-day)		1.33E-05	mg/kg-day	3.00E-04	mg/kg-day	4E-02
				VANADIUM	1.73E+01	mg/kg	3.20E-07	mg/kg-day		1/(mg/kg-day)		2.24E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	1.33E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-08	9.30E-07	mg/kg-day	2.00E-05	mg/kg-day	5E-02
				DELTA-BHC	1.20E-03	mg/kg	2.21E-11	mg/kg-day	6.30E+00	1/(mg/kg-day)	1E-10	1.55E-09	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	3.78E-01	mg/kg	6.97E-09	mg/kg-day		1/(mg/kg-day)		4.88E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.99E+00	mg/kg	7.37E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	5.16E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	3.77E+00	mg/kg	6.95E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	4.86E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.62E+00	mg/kg	1.04E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-08	7.26E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	3.66E+00	mg/kg	6.76E-08	mg/kg-day		1/(mg/kg-day)		4.73E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZO(K)FLUORANTHENE	1.73E+00	mg/kg	3.19E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-09	2.23E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	9.50E-01	mg/kg	1.75E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.23E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	3.15E+00	mg/kg	5.80E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	4.06E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	2.24E+01	mg/kg	4.14E-07	mg/kg-day		1/(mg/kg-day)		2.90E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				PHENANTHRENE	3.37E+00	mg/kg	6.22E-08	mg/kg-day		1/(mg/kg-day)		4.35E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZENE	1.02E-01	mg/kg	1.88E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-10	1.32E-07	mg/kg-day	4.00E-03	mg/kg-day	3E-05
			Exp. Route Total								**2E-06**					**3E-01**
			Inhalation	ALUMINUM	1.30E-02	mg/m3	1.86E-05	mg/kg-day		1/(mg/kg-day)		1.30E-03	mg/kg-day	1.43E-03	mg/kg-day	9E-01
				ARSENIC	5.49E-05	mg/m3	7.85E-08	mg/kg-day	1.51E+01	1/(mg/kg-day)	1E-06	5.50E-06	mg/kg-day	1.43E-05	mg/kg-day	4E-01
				CHROMIUM	2.94E-05	mg/m3	4.20E-08	mg/kg-day	4.20E+01	1/(mg/kg-day)	2E-06	2.94E-06	mg/kg-day	2.86E-05	mg/kg-day	1E-01
				IRON	3.51E-02	mg/m3	5.02E-05	mg/kg-day		1/(mg/kg-day)		3.52E-03	mg/kg-day		mg/kg-day	
				MANGANESE	6.36E-04	mg/m3	9.11E-07	mg/kg-day		1/(mg/kg-day)		6.38E-05	mg/kg-day	1.43E-05	mg/kg-day	4E+00
				MERCURY	1.47E-05	mg/m3	2.10E-08	mg/kg-day		1/(mg/kg-day)		1.47E-06	mg/kg-day	8.57E-05	mg/kg-day	2E-02
				VANADIUM	2.47E-05	mg/m3	3.54E-08	mg/kg-day		1/(mg/kg-day)		2.47E-06	mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.03E-06	mg/m3	1.47E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-09	1.03E-07	mg/kg-day		mg/kg-day	
				DELTA-BHC	1.71E-09	mg/m3	2.45E-12	mg/kg-day	6.30E+00	1/(mg/kg-day)	2E-11	1.71E-10	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	5.38E-07	mg/m3	7.71E-10	mg/kg-day		1/(mg/kg-day)		5.39E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	5.69E-06	mg/m3	8.14E-09	mg/kg-day		1/(mg/kg-day)		5.70E-07	mg/kg-day		mg/kg-day	

TABLE 7.5e RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Petroleum Storage Area	Inhalation	BENZO(A)PYRENE	5.36E-06	mg/m3	7.68E-09	mg/kg-day		1/(mg/kg-day)		5.37E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	8.00E-06	mg/m3	1.15E-08	mg/kg-day		1/(mg/kg-day)		8.02E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.22E-06	mg/m3	7.47E-09	mg/kg-day		1/(mg/kg-day)		5.23E-07	mg/kg-day		mg/kg-day	
				BENZO(K)FLUORANTHENE	2.46E-06	mg/m3	3.52E-09	mg/kg-day		1/(mg/kg-day)		2.46E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.35E-06	mg/m3	1.94E-09	mg/kg-day		1/(mg/kg-day)		1.36E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	4.48E-06	mg/m3	6.41E-09	mg/kg-day		1/(mg/kg-day)		4.49E-07	mg/kg-day		mg/kg-day	
				NAPHTHALENE	3.19E-05	mg/m3	4.57E-08	mg/kg-day	1.20E-01	1/(mg/kg-day)	5E-09	3.20E-06	mg/kg-day	8.57E-04	mg/kg-day	4E-03
				PHENANTHRENE	4.80E-06	mg/m3	6.87E-09	mg/kg-day		1/(mg/kg-day)		4.81E-07	mg/kg-day		mg/kg-day	
				BENZENE	4.80E-05	mg/m3	6.88E-08	mg/kg-day	2.73E-02	1/(mg/kg-day)	2E-09	4.81E-06	mg/kg-day	8.57E-03	mg/kg-day	6E-04
			Exp. Route Total								**3E-06**					**6E+00**
		Exp. Point Total									**5E-06**					**6E+00**
	Exp. Medium Total										**5E-06**					**6E+00**
Medium Total											**5E-06**					**6E+00**
Groundwater	Shallow Groundwater (0-10 ft bgs)	Petroleum Storage Area	Dermal	ALUMINUM	2.64E+04	ug/L	3.90E-05	mg/kg-day		1/(mg/kg-day)		2.73E-03	mg/kg-day	1.00E+00	mg/kg-day	3E-03
				BARIUM	3.28E+02	ug/L	4.84E-07	mg/kg-day		1/(mg/kg-day)		3.39E-05	mg/kg-day	1.40E-02	mg/kg-day	2E-03
				CHROMIUM	5.13E+01	ug/L	1.51E-07	mg/kg-day		1/(mg/kg-day)		1.06E-05	mg/kg-day	7.50E-05	mg/kg-day	1E-01
				COPPER	1.79E+02	ug/L	2.64E-07	mg/kg-day		1/(mg/kg-day)		1.85E-05	mg/kg-day	4.00E-02	mg/kg-day	5E-04
				IRON	4.53E+04	ug/L	6.68E-05	mg/kg-day		1/(mg/kg-day)		4.68E-03	mg/kg-day	7.00E-01	mg/kg-day	7E-03
				LEAD	7.17E+01	ug/L	1.06E-08	mg/kg-day		1/(mg/kg-day)		7.41E-07	mg/kg-day		mg/kg-day	
				MANGANESE	1.73E+03	ug/L	2.55E-06	mg/kg-day		1/(mg/kg-day)		1.78E-04	mg/kg-day	5.60E-03	mg/kg-day	3E-02
				MERCURY	2.44E+00	ug/L	3.60E-09	mg/kg-day		1/(mg/kg-day)		2.52E-07	mg/kg-day	2.10E-05	mg/kg-day	1E-02
				NICKEL	6.91E+01	ug/L	2.04E-08	mg/kg-day		1/(mg/kg-day)		1.43E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				VANADIUM	5.94E+01	ug/L	8.77E-08	mg/kg-day		1/(mg/kg-day)		6.14E-06	mg/kg-day	2.34E-04	mg/kg-day	3E-02
				2-METHYLNAPHTHALENE	2.40E+01	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				DIBENZOFURAN	2.00E+00	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-03	mg/kg-day	
				NAPHTHALENE	2.30E+02	ug/L	1.60E-05	mg/kg-day		1/(mg/kg-day)		1.12E-03	mg/kg-day	2.00E-02	mg/kg-day	6E-02
				PHENANTHRENE	6.00E+00	ug/L	1.25E-06	mg/kg-day		1/(mg/kg-day)		8.74E-05	mg/kg-day	3.00E-02	mg/kg-day	3E-03
				BENZENE	2.89E+03	ug/L	6.33E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-06	4.43E-03	mg/kg-day	4.00E-03	mg/kg-day	1E+00
				XYLENES, TOTAL	4.10E+01	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-01	mg/kg-day	
			Exp. Route Total								**3E-06**					**1E+00**
			Ingestion	ALUMINUM	2.64E+04	ug/L	4.44E-05	mg/kg-day		1/(mg/kg-day)		3.10E-03	mg/kg-day	1.00E+00	mg/kg-day	3E-03
				BARIUM	3.28E+02	ug/L	5.50E-07	mg/kg-day		1/(mg/kg-day)		3.85E-05	mg/kg-day	2.00E-01	mg/kg-day	2E-04
				CHROMIUM	5.13E+01	ug/L	8.60E-08	mg/kg-day		1/(mg/kg-day)		6.02E-06	mg/kg-day	3.00E-03	mg/kg-day	2E-03
				COPPER	1.79E+02	ug/L	3.00E-07	mg/kg-day		1/(mg/kg-day)		2.10E-05	mg/kg-day	4.00E-02	mg/kg-day	5E-04
				IRON	4.53E+04	ug/L	7.59E-05	mg/kg-day		1/(mg/kg-day)		5.31E-03	mg/kg-day	7.00E-01	mg/kg-day	8E-03
				LEAD	7.17E+01	ug/L	1.20E-07	mg/kg-day		1/(mg/kg-day)		8.42E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.73E+03	ug/L	2.90E-06	mg/kg-day		1/(mg/kg-day)		2.03E-04	mg/kg-day	1.40E-01	mg/kg-day	1E-03
				MERCURY	2.44E+00	ug/L	4.09E-09	mg/kg-day		1/(mg/kg-day)		2.86E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				NICKEL	6.91E+01	ug/L	1.16E-07	mg/kg-day		1/(mg/kg-day)		8.11E-06	mg/kg-day	2.00E-02	mg/kg-day	4E-04
				VANADIUM	5.94E+01	ug/L	9.96E-08	mg/kg-day		1/(mg/kg-day)		6.97E-06	mg/kg-day	9.00E-03	mg/kg-day	8E-04
				2-METHYLNAPHTHALENE	2.40E+01	ug/L	4.03E-08	mg/kg-day		1/(mg/kg-day)		2.82E-06	mg/kg-day	4.00E-03	mg/kg-day	7E-04
				DIBENZOFURAN	2.00E+00	ug/L	3.35E-09	mg/kg-day		1/(mg/kg-day)		2.35E-07	mg/kg-day	1.00E-03	mg/kg-day	2E-04
				NAPHTHALENE	2.30E+02	ug/L	3.86E-07	mg/kg-day		1/(mg/kg-day)		2.70E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				PHENANTHRENE	6.00E+00	ug/L	1.01E-08	mg/kg-day		1/(mg/kg-day)		7.05E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZENE	2.89E+03	ug/L	4.85E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-07	3.40E-04	mg/kg-day	4.00E-03	mg/kg-day	8E-02
				XYLENES, TOTAL	4.10E+01	ug/L	6.88E-08	mg/kg-day		1/(mg/kg-day)		4.81E-06	mg/kg-day	2.00E-01	mg/kg-day	2E-05
			Exp. Route Total								**3E-07**					**1E-01**
		Exp. Point Total									**4E-06**					**1E+00**
	Exp. Medium Total										**4E-06**					**1E+00**
Medium Total											**4E-06**					**1E+00**
											9E-06					**8E+00**

Total of Receptor Risks Across All Media

Total of Receptor Hazards Across All Media

TABLE 7.5f RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Chlorobenzene Hot-Spot Area	Dermal	ARSENIC	1.02E+01	mg/kg	1.70E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-08	1.19E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				CHROMIUM	2.23E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	1.82E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.82E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.68E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.13E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	6.17E+01	mg/kg	4.78E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-06	3.34E-05	mg/kg-day	2.00E-05	mg/kg-day	2E+00
				ACENAPHTHYLENE	2.71E-01	mg/kg	1.95E-09	mg/kg-day		1/(mg/kg-day)		1.37E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.70E+01	mg/kg	1.22E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-08	8.56E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.18E+00	mg/kg	5.17E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	3.62E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.07E+01	mg/kg	7.72E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	5.40E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.49E+00	mg/kg	3.95E-08	mg/kg-day		1/(mg/kg-day)		2.76E-06	mg/kg-day	3.00E-02	mg/kg-day	9E-05
				BENZO(K)FLUORANTHENE	5.63E+00	mg/kg	4.05E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-09	2.83E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.96E+00	mg/kg	1.41E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	9.88E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.66E+00	mg/kg	2.02E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	3E-08	1.42E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				INDENO(1,2,3-CD)PYRENE	4.66E+00	mg/kg	3.35E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.35E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.61E+01	mg/kg	1.16E-07	mg/kg-day		1/(mg/kg-day)		8.12E-06	mg/kg-day	3.00E-02	mg/kg-day	3E-04
				1,2,4-TRICHLOROBENZENE	2.59E+03	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	1.20E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	6.30E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.70E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	5.37E-01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	4.79E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**2E-06**					**2E+00**
			Ingestion	ARSENIC	1.02E+01	mg/kg	1.89E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-07	1.32E-05	mg/kg-day	3.00E-04	mg/kg-day	4E-02
				CHROMIUM	2.23E+01	mg/kg	4.11E-07	mg/kg-day		1/(mg/kg-day)		2.87E-05	mg/kg-day	3.00E-03	mg/kg-day	1E-02
				IRON	1.82E+04	mg/kg	3.35E-04	mg/kg-day		1/(mg/kg-day)		2.35E-02	mg/kg-day	7.00E-01	mg/kg-day	3E-02
				MANGANESE	3.82E+02	mg/kg	7.05E-06	mg/kg-day		1/(mg/kg-day)		4.94E-04	mg/kg-day	1.40E-01	mg/kg-day	4E-03
				MERCURY	3.68E+00	mg/kg	6.78E-08	mg/kg-day		1/(mg/kg-day)		4.75E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				VANADIUM	1.13E+01	mg/kg	2.08E-07	mg/kg-day		1/(mg/kg-day)		1.45E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				HIGHLY CHLORINATED PCBs	6.17E+01	mg/kg	1.14E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	7.96E-05	mg/kg-day	2.00E-05	mg/kg-day	4E+00
				ACENAPHTHYLENE	2.71E-01	mg/kg	5.00E-09	mg/kg-day		1/(mg/kg-day)		3.50E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.70E+01	mg/kg	3.14E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	2.20E-05	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.18E+00	mg/kg	1.33E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	9.28E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.07E+01	mg/kg	1.98E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.39E-05	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.49E+00	mg/kg	1.01E-07	mg/kg-day		1/(mg/kg-day)		7.09E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZO(K)FLUORANTHENE	5.63E+00	mg/kg	1.04E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	8E-09	7.27E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.96E+00	mg/kg	3.62E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	2.53E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.66E+00	mg/kg	6.75E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-07	4.72E-06	mg/kg-day	8.00E-04	mg/kg-day	6E-03
				INDENO(1,2,3-CD)PYRENE	4.66E+00	mg/kg	8.59E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	6.02E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.61E+01	mg/kg	2.97E-07	mg/kg-day		1/(mg/kg-day)		2.08E-05	mg/kg-day	3.00E-02	mg/kg-day	7E-04
				1,2,4-TRICHLOROBENZENE	2.59E+03	mg/kg	4.78E-05	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-07	3.34E-03	mg/kg-day	1.00E-02	mg/kg-day	3E-01
				1,2-DICHLOROBENZENE	1.20E+03	mg/kg	2.21E-05	mg/kg-day		1/(mg/kg-day)		1.55E-03	mg/kg-day	9.00E-02	mg/kg-day	2E-02
				1,3-DICHLOROBENZENE	6.30E+01	mg/kg	1.16E-06	mg/kg-day		1/(mg/kg-day)		8.14E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.70E+03	mg/kg	3.14E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-07	2.20E-03	mg/kg-day	7.00E-02	mg/kg-day	3E-02
				BENZENE	5.37E-01	mg/kg	9.91E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	5E-10	6.94E-07	mg/kg-day	4.00E-03	mg/kg-day	2E-04
				CHLOROBENZENE	4.79E+01	mg/kg	8.84E-07	mg/kg-day		1/(mg/kg-day)		6.19E-05	mg/kg-day	2.00E-02	mg/kg-day	3E-03
			Exp. Route Total								**5E-06**					**4E+00**
			Inhalation	ARSENIC	1.46E-05	mg/m3	2.08E-08	mg/kg-day	1.51E+01	1/(mg/kg-day)	3E-07	1.46E-06	mg/kg-day	1.43E-05	mg/kg-day	1E-01
				CHROMIUM	3.17E-05	mg/m3	4.54E-08	mg/kg-day	4.20E+01	1/(mg/kg-day)	2E-06	3.18E-06	mg/kg-day	2.86E-05	mg/kg-day	1E-01
				IRON	2.59E-02	mg/m3	3.71E-05	mg/kg-day		1/(mg/kg-day)		2.59E-03	mg/kg-day		mg/kg-day	
				MANGANESE	5.45E-04	mg/m3	7.79E-07	mg/kg-day		1/(mg/kg-day)		5.46E-05	mg/kg-day	1.43E-05	mg/kg-day	4E+00
				MERCURY	5.24E-06	mg/m3	7.49E-09	mg/kg-day		1/(mg/kg-day)		5.25E-07	mg/kg-day	8.57E-05	mg/kg-day	6E-03
				VANADIUM	1.60E-05	mg/m3	2.30E-08	mg/kg-day		1/(mg/kg-day)		1.61E-06	mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	8.78E-05	mg/m3	1.26E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-07	8.80E-06	mg/kg-day		mg/kg-day	

TABLE 7.5f RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Chlorobenzene Hot-Spot Area	Inhalation	ACENAPHTHYLENE	3.86E-07	mg/m3	5.52E-10	mg/kg-day		1/(mg/kg-day)		3.87E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.42E-05	mg/m3	3.47E-08	mg/kg-day		1/(mg/kg-day)		2.43E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.02E-05	mg/m3	1.46E-08	mg/kg-day		1/(mg/kg-day)		1.03E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.53E-05	mg/m3	2.19E-08	mg/kg-day		1/(mg/kg-day)		1.53E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	7.82E-06	mg/m3	1.12E-08	mg/kg-day		1/(mg/kg-day)		7.83E-07	mg/kg-day		mg/kg-day	
				BENZO(K)FLUORANTHENE	8.01E-06	mg/m3	1.15E-08	mg/kg-day		1/(mg/kg-day)		8.03E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.79E-06	mg/m3	4.00E-09	mg/kg-day		1/(mg/kg-day)		2.80E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	5.21E-06	mg/m3	7.46E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-08	5.22E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.63E-06	mg/m3	9.50E-09	mg/kg-day		1/(mg/kg-day)		6.65E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.30E-05	mg/m3	3.29E-08	mg/kg-day		1/(mg/kg-day)		2.30E-06	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	7.71E-02	mg/m3	1.10E-04	mg/kg-day		1/(mg/kg-day)		7.73E-03	mg/kg-day		mg/kg-day	
				1,2-DICHLOROBENZENE	1.05E-01	mg/m3	1.51E-04	mg/kg-day		1/(mg/kg-day)		1.06E-02	mg/kg-day	4.00E-02	mg/kg-day	3E-01
				1,3-DICHLOROBENZENE	6.13E-03	mg/m3	8.77E-06	mg/kg-day		1/(mg/kg-day)		6.14E-04	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.69E-01	mg/m3	2.42E-04	mg/kg-day	4.00E-02	1/(mg/kg-day)	1E-05	1.70E-02	mg/kg-day	2.29E-01	mg/kg-day	7E-02
				BENZENE	2.53E-04	mg/m3	3.62E-07	mg/kg-day	2.73E-02	1/(mg/kg-day)	1E-08	2.53E-05	mg/kg-day	8.57E-03	mg/kg-day	3E-03
				CHLOROBENZENE	3.30E-02	mg/m3	4.72E-05	mg/kg-day		1/(mg/kg-day)		3.30E-03	mg/kg-day		mg/kg-day	
			Exp. Route Total								**1E-05**					**4E+00**
		Exp. Point Total									**2E-05**					**1E+01**
	Exp. Medium Total										**2E-05**					**1E+01**
Medium Total											**2E-05**					**1E+01**
Groundwater	Shallow Groundwater (0-10 ft bgs)	Chlorobenzene Hot-Spot Spot Area	Dermal	ALUMINUM	2.91E+04	ug/L	4.30E-05	mg/kg-day		1/(mg/kg-day)		3.01E-03	mg/kg-day	1.00E+00	mg/kg-day	3E-03
				ARSENIC	1.78E+02	ug/L	2.63E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-07	1.84E-05	mg/kg-day	3.00E-04	mg/kg-day	6E-02
				BARIUM	4.44E+02	ug/L	6.55E-07	mg/kg-day		1/(mg/kg-day)		4.59E-05	mg/kg-day	1.40E-02	mg/kg-day	3E-03
				CHROMIUM	4.49E+02	ug/L	1.33E-06	mg/kg-day		1/(mg/kg-day)		9.28E-05	mg/kg-day	7.50E-05	mg/kg-day	1E+00
				COBALT	2.94E+01	ug/L	1.74E-08	mg/kg-day		1/(mg/kg-day)		1.22E-06	mg/kg-day		mg/kg-day	
				COPPER	1.54E+02	ug/L	2.27E-07	mg/kg-day		1/(mg/kg-day)		1.59E-05	mg/kg-day	4.00E-02	mg/kg-day	4E-04
				CYANIDE	4.27E+02	ug/L	6.30E-07	mg/kg-day		1/(mg/kg-day)		4.41E-05	mg/kg-day	2.00E-02	mg/kg-day	2E-03
				IRON	8.60E+04	ug/L	1.27E-04	mg/kg-day		1/(mg/kg-day)		8.89E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				LEAD	8.75E+01	ug/L	1.29E-08	mg/kg-day		1/(mg/kg-day)		9.04E-07	mg/kg-day		mg/kg-day	
				MANGANESE	1.70E+03	ug/L	2.51E-06	mg/kg-day		1/(mg/kg-day)		1.76E-04	mg/kg-day	5.60E-03	mg/kg-day	3E-02
				MERCURY	2.48E+00	ug/L	3.66E-09	mg/kg-day		1/(mg/kg-day)		2.56E-07	mg/kg-day	2.10E-05	mg/kg-day	1E-02
				NICKEL	4.03E+02	ug/L	1.19E-07	mg/kg-day		1/(mg/kg-day)		8.33E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-02
				VANADIUM	1.29E+02	ug/L	1.90E-07	mg/kg-day		1/(mg/kg-day)		1.33E-05	mg/kg-day	2.34E-04	mg/kg-day	6E-02
				HEXACHLOROBENZENE	2.00E+00	ug/L	6.93E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-06	4.85E-05	mg/kg-day	8.00E-04	mg/kg-day	6E-02
				NAPHTHALENE	5.38E+00	ug/L	3.73E-07	mg/kg-day		1/(mg/kg-day)		2.61E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				PHENANTHRENE	2.00E+00	ug/L	4.16E-07	mg/kg-day		1/(mg/kg-day)		2.91E-05	mg/kg-day	3.00E-02	mg/kg-day	1E-03
				1,2,3-TRICHLOROBENZENE	1.50E+02	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.33E+02	ug/L	1.46E-05	mg/kg-day	3.60E-03	1/(mg/kg-day)	5E-08	1.02E-03	mg/kg-day	1.00E-02	mg/kg-day	1E-01
				1,2-DICHLOROBENZENE	1.11E+03	ug/L	7.00E-05	mg/kg-day		1/(mg/kg-day)		4.90E-03	mg/kg-day	9.00E-02	mg/kg-day	5E-02
				1,3-DICHLOROBENZENE	4.10E+01	ug/L	3.50E-06	mg/kg-day		1/(mg/kg-day)		2.45E-04	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.05E+03	ug/L	1.33E-04	mg/kg-day	5.40E-03	1/(mg/kg-day)	7E-07	9.32E-03	mg/kg-day	7.00E-02	mg/kg-day	1E-01
				BENZENE	3.29E+03	ug/L	7.21E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	4E-06	5.05E-03	mg/kg-day	4.00E-03	mg/kg-day	1E+00
				CHLOROBENZENE	4.01E+03	ug/L	1.72E-04	mg/kg-day		1/(mg/kg-day)		1.20E-02	mg/kg-day	2.00E-02	mg/kg-day	6E-01
				CHLOROFORM	1.00E+00	ug/L	1.13E-08	mg/kg-day		1/(mg/kg-day)		7.90E-07	mg/kg-day	1.00E-02	mg/kg-day	8E-05
			Exp. Route Total								**6E-06**					**4E+00**
			Ingestion	ALUMINUM	2.91E+04	ug/L	4.89E-05	mg/kg-day		1/(mg/kg-day)		3.42E-03	mg/kg-day	1.00E+00	mg/kg-day	3E-03
				ARSENIC	1.78E+02	ug/L	2.99E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-07	2.09E-05	mg/kg-day	3.00E-04	mg/kg-day	7E-02
				BARIUM	4.44E+02	ug/L	7.45E-07	mg/kg-day		1/(mg/kg-day)		5.21E-05	mg/kg-day	2.00E-01	mg/kg-day	3E-04
				CHROMIUM	4.49E+02	ug/L	7.53E-07	mg/kg-day		1/(mg/kg-day)		5.27E-05	mg/kg-day	3.00E-03	mg/kg-day	2E-02
				COBALT	2.94E+01	ug/L	4.93E-08	mg/kg-day		1/(mg/kg-day)		3.45E-06	mg/kg-day		mg/kg-day	
				COPPER	1.54E+02	ug/L	2.58E-07	mg/kg-day		1/(mg/kg-day)		1.81E-05	mg/kg-day	4.00E-02	mg/kg-day	5E-04
				CYANIDE	4.27E+02	ug/L	7.16E-07	mg/kg-day		1/(mg/kg-day)		5.01E-05	mg/kg-day	2.00E-02	mg/kg-day	3E-03
				IRON	8.60E+04	ug/L	1.44E-04	mg/kg-day		1/(mg/kg-day)		1.01E-02	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				LEAD	8.75E+01	ug/L	1.47E-07	mg/kg-day		1/(mg/kg-day)		1.03E-05	mg/kg-day		mg/kg-day	
				MANGANESE	1.70E+03	ug/L	2.86E-06	mg/kg-day		1/(mg/kg-day)		2.00E-04	mg/kg-day	1.40E-01	mg/kg-day	1E-03

TABLE 7.5f RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Shallow Groundwater (0-10 ft bgs)	Chlorobenzene Hot-Spot Spot Area	Ingestion	MERCURY	2.48E+00	ug/L	4.16E-09	mg/kg-day		1/(mg/kg-day)		2.91E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				NICKEL	4.03E+02	ug/L	6.76E-07	mg/kg-day		1/(mg/kg-day)		4.73E-05	mg/kg-day	2.00E-02	mg/kg-day	2E-03
				VANADIUM	1.29E+02	ug/L	2.16E-07	mg/kg-day		1/(mg/kg-day)		1.51E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				HEXACHLOROBENZENE	2.00E+00	ug/L	3.35E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	5E-09	2.35E-07	mg/kg-day	8.00E-04	mg/kg-day	3E-04
				NAPHTHALENE	5.38E+00	ug/L	9.02E-09	mg/kg-day		1/(mg/kg-day)		6.31E-07	mg/kg-day	2.00E-02	mg/kg-day	3E-05
				PHENANTHRENE	2.00E+00	ug/L	3.35E-09	mg/kg-day		1/(mg/kg-day)		2.35E-07	mg/kg-day	3.00E-02	mg/kg-day	8E-06
				1,2,3-TRICHLOROBENZENE	1.50E+02	ug/L	2.52E-07	mg/kg-day		1/(mg/kg-day)		1.76E-05	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.33E+02	ug/L	2.24E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	8E-10	1.57E-05	mg/kg-day	1.00E-02	mg/kg-day	2E-03
				1,2-DICHLOROBENZENE	1.11E+03	ug/L	1.86E-06	mg/kg-day		1/(mg/kg-day)		1.30E-04	mg/kg-day	9.00E-02	mg/kg-day	1E-03
				1,3-DICHLOROBENZENE	4.10E+01	ug/L	6.87E-08	mg/kg-day		1/(mg/kg-day)		4.81E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.05E+03	ug/L	3.45E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-08	2.41E-04	mg/kg-day	7.00E-02	mg/kg-day	3E-03
				BENZENE	3.29E+03	ug/L	5.53E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-07	3.87E-04	mg/kg-day	4.00E-03	mg/kg-day	1E-01
				CHLOROBENZENE	4.01E+03	ug/L	6.73E-06	mg/kg-day		1/(mg/kg-day)		4.71E-04	mg/kg-day	2.00E-02	mg/kg-day	2E-02
				CHLOROFORM	1.00E+00	ug/L	1.68E-09	mg/kg-day		1/(mg/kg-day)		1.17E-07	mg/kg-day	1.00E-02	mg/kg-day	1E-05
			Exp. Route Total								**8E-07**					**2E-01**
		Exp. Point Total									**7E-06**					**4E+00**
	Exp. Medium Total										**7E-06**					**4E+00**
Medium Total											**7E-06**					**4E+00**
									Total of Receptor Risks Across All Media		**3E-05**			Total of Receptor Hazards Across All Media		**1E+01**

TABLE 7.6 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Transient*
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	Dermal	2,3,7,8-TCDD EQUIVALENT	5.28E-04	mg/kg	3.82E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	6E-08	2.97E-12	mg/kg-day	1.00E-09	mg/kg-day	3E-03
				MERCURY	1.60E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	5.06E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-08	3.94E-08	mg/kg-day	2.00E-05	mg/kg-day	2E-03
				1,2,3-TRICHLOROBENZENE	1.20E-02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				BENZENE	1.40E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**7E-08**					**5E-03**
			Ingestion	2,3,7,8-TCDD EQUIVALENT	5.28E-04	mg/kg	3.72E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	6E-07	2.89E-11	mg/kg-day	1.00E-09	mg/kg-day	3E-02
				MERCURY	1.60E+02	mg/kg	1.13E-06	mg/kg-day		1/(mg/kg-day)		8.77E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	1.06E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-08	8.22E-08	mg/kg-day	2.00E-05	mg/kg-day	4E-03
				1,2,3-TRICHLOROBENZENE	1.20E-02	mg/kg	8.45E-11	mg/kg-day		1/(mg/kg-day)		6.58E-10	mg/kg-day		mg/kg-day	
				BENZENE	1.40E-03	mg/kg	9.86E-12	mg/kg-day	5.50E-02	1/(mg/kg-day)	5E-13	7.67E-11	mg/kg-day	4.00E-03	mg/kg-day	2E-08
			Exp. Route Total								**6E-07**					**6E-02**
		Exp. Point Total									**6E-07**					**7E-02**
	Exp. Medium Total										**6E-07**					**7E-02**
Medium Total											**6E-07**					**7E-02**
										Total of Receptor Risks Across All Media	**6E-07**				Total of Receptor Hazards Across All Media	**7E-02**

Notes:
* = refers to an adult walking legally along State Fair Boulevard during the NYS fair.

TABLE 7.7a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Intermediate Soils (0-20 ft)	Plant Area	Dermal	2,3,7,8-TCDD Equivalent	1.21E-06	mg/kg	4.52E-15	mg/kg-day	1.50E+05	1/(mg/kg-day)	7E-10	3.16E-13	mg/kg-day	1.00E-09	mg/kg-day	3E-04
				ALUMINUM	1.19E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.01E+01	mg/kg	7.49E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-07	5.24E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				BARIUM	3.10E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.69E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	1.78E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.06E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	9.91E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	2.22E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	2.92E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.93E+00	mg/kg	3.37E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	7E-08	2.36E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				DELTA-BHC	1.90E+00	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg		mg/kg-day	1.60E+01	1/(mg/kg-day)			mg/kg-day	5.00E-05	mg/kg-day	
				ACENAPHTHYLENE	4.34E+00	mg/kg	7.02E-08	mg/kg-day		1/(mg/kg-day)		4.91E-06	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.21E+00	mg/kg	1.00E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	7.03E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	6.45E+00	mg/kg	1.04E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	8E-07	7.31E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	8.96E+00	mg/kg	1.45E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.02E-05	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	7.14E+00	mg/kg	1.16E-07	mg/kg-day		1/(mg/kg-day)		8.09E-06	mg/kg-day	3.00E-02	mg/kg-day	3E-04
				BENZO(K)FLUORANTHENE	4.38E+00	mg/kg	7.09E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	5E-09	4.97E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.94E+00	mg/kg	3.14E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	2.20E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.76E+01	mg/kg	2.19E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	4E-07	1.53E-05	mg/kg-day	8.00E-04	mg/kg-day	2E-02
				HEXACHLOROBUTADIENE	1.19E+00	mg/kg	1.48E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	1E-09	1.04E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	5.43E+00	mg/kg	8.79E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	6.16E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	7.18E+00	mg/kg	1.16E-07	mg/kg-day		1/(mg/kg-day)		8.14E-06	mg/kg-day	2.00E-02	mg/kg-day	4E-04
				PHENANTHRENE	1.21E+01	mg/kg	1.96E-07	mg/kg-day		1/(mg/kg-day)		1.37E-05	mg/kg-day	3.00E-02	mg/kg-day	5E-04
				1,2,3-TRICHLOROBENZENE	3.30E-03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	4.78E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	5.42E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	4.25E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.34E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	2.95E+00	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	1.67E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**2E-06**					**2E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	1.21E-06	mg/kg	1.67E-14	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-09	1.17E-12	mg/kg-day	1.00E-09	mg/kg-day	1E-03
				ALUMINUM	1.19E+04	mg/kg	1.65E-04	mg/kg-day		1/(mg/kg-day)		1.15E-02	mg/kg-day	1.00E+00	mg/kg-day	1E-02
				ARSENIC	2.01E+01	mg/kg	2.77E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-07	1.94E-05	mg/kg-day	3.00E-04	mg/kg-day	6E-02
				BARIUM	3.10E+02	mg/kg	4.29E-06	mg/kg-day		1/(mg/kg-day)		3.00E-04	mg/kg-day	2.00E-01	mg/kg-day	2E-03
				CHROMIUM	1.69E+01	mg/kg	2.34E-07	mg/kg-day		1/(mg/kg-day)		1.64E-05	mg/kg-day	3.00E-03	mg/kg-day	5E-03
				IRON	1.78E+04	mg/kg	2.46E-04	mg/kg-day		1/(mg/kg-day)		1.72E-02	mg/kg-day	7.00E-01	mg/kg-day	2E-02
				MANGANESE	3.06E+02	mg/kg	4.23E-06	mg/kg-day		1/(mg/kg-day)		2.96E-04	mg/kg-day	1.40E-01	mg/kg-day	2E-03
				MERCURY	9.91E+02	mg/kg	1.37E-05	mg/kg-day		1/(mg/kg-day)		9.60E-04	mg/kg-day	3.00E-04	mg/kg-day	3E+00
				NICKEL	2.22E+03	mg/kg	3.07E-05	mg/kg-day		1/(mg/kg-day)		2.15E-03	mg/kg-day	2.00E-02	mg/kg-day	1E-01
				VANADIUM	2.92E+01	mg/kg	4.04E-07	mg/kg-day		1/(mg/kg-day)		2.83E-05	mg/kg-day	9.00E-03	mg/kg-day	3E-03
				HIGHLY CHLORINATED PCBs	1.93E+00	mg/kg	2.67E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-08	1.87E-06	mg/kg-day	2.00E-05	mg/kg-day	9E-02
				DELTA-BHC	1.90E+00	mg/kg	2.63E-08	mg/kg-day	6.30E+00	1/(mg/kg-day)	2E-07	1.84E-06	mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg	5.12E-08	mg/kg-day	1.60E+01	1/(mg/kg-day)	8E-07	3.58E-06	mg/kg-day	5.00E-05	mg/kg-day	7E-02
				ACENAPHTHYLENE	4.34E+00	mg/kg	6.00E-08	mg/kg-day		1/(mg/kg-day)		4.20E-06	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.21E+00	mg/kg	8.59E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	6.01E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	6.45E+00	mg/kg	8.93E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-07	6.25E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	8.96E+00	mg/kg	1.24E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-08	8.68E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	7.14E+00	mg/kg	9.88E-08	mg/kg-day		1/(mg/kg-day)		6.91E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZO(K)FLUORANTHENE	4.38E+00	mg/kg	6.06E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	4E-09	4.24E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.94E+00	mg/kg	2.68E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.88E-06	mg/kg-day		mg/kg-day	

TABLE 7.7a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Intermediate Soils (0-20 ft)	Plant Area	Ingestion	HEXACHLOROBENZENE	1.76E+01	mg/kg	2.44E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	4E-07	1.70E-05	mg/kg-day	8.00E-04	mg/kg-day	2E-02
				HEXACHLOROBUTADIENE	1.19E+00	mg/kg	1.64E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	1E-09	1.15E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	5.43E+00	mg/kg	7.52E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	5.26E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	7.18E+00	mg/kg	9.94E-08	mg/kg-day		1/(mg/kg-day)		6.96E-06	mg/kg-day	2.00E-02	mg/kg-day	3E-04
				PHENANTHRENE	1.21E+01	mg/kg	1.68E-07	mg/kg-day		1/(mg/kg-day)		1.18E-05	mg/kg-day	3.00E-02	mg/kg-day	4E-04
				1,2,3-TRICHLOROBENZENE	3.30E-03	mg/kg	4.57E-11	mg/kg-day		1/(mg/kg-day)		3.20E-09	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	4.78E+01	mg/kg	6.61E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-09	4.63E-05	mg/kg-day	1.00E-02	mg/kg-day	5E-03
				1,2-DICHLOROBENZENE	5.42E+02	mg/kg	7.50E-06	mg/kg-day		1/(mg/kg-day)		5.25E-04	mg/kg-day	9.00E-02	mg/kg-day	6E-03
				1,3-DICHLOROBENZENE	4.25E+01	mg/kg	5.89E-07	mg/kg-day		1/(mg/kg-day)		4.12E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.34E+03	mg/kg	1.86E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-07	1.30E-03	mg/kg-day	7.00E-02	mg/kg-day	2E-02
				BENZENE	2.95E+00	mg/kg	4.08E-08	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-09	2.86E-06	mg/kg-day	4.00E-03	mg/kg-day	7E-04
				CHLOROBENZENE	1.67E+02	mg/kg	2.31E-06	mg/kg-day		1/(mg/kg-day)		1.62E-04	mg/kg-day	2.00E-02	mg/kg-day	8E-03
			Exp. Route Total								**3E-06**					**4E+00**
		Exp. Point Total									**5E-06**					**4E+00**
	Exp. Medium Total										**5E-06**					**4E+00**
Medium Total											**5E-06**					**4E+00**
Groundwater	Intermediate Ground Water (0-20 ft)	Plant Area	Dermal	ALUMINUM	4.99E+04	ug/l	5.52E-05	mg/kg-day		1/(mg/kg-day)		3.87E-03	mg/kg-day	1.00E+00	mg/kg-day	4E-03
				ARSENIC	1.05E+02	ug/l	1.16E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	8.14E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				BARIUM	1.82E+03	ug/l	2.01E-06	mg/kg-day		1/(mg/kg-day)		1.41E-04	mg/kg-day	1.40E-02	mg/kg-day	1E-02
				COPPER	3.84E+02	ug/l	4.25E-07	mg/kg-day		1/(mg/kg-day)		2.98E-05	mg/kg-day	4.00E-02	mg/kg-day	7E-04
				IRON	4.66E+04	ug/l	5.16E-05	mg/kg-day		1/(mg/kg-day)		3.61E-03	mg/kg-day	7.00E-01	mg/kg-day	5E-03
				LEAD	4.88E+02	ug/l	5.40E-08	mg/kg-day		1/(mg/kg-day)		3.78E-06	mg/kg-day		mg/kg-day	
				MANGANESE	4.23E+02	ug/l	4.68E-07	mg/kg-day		1/(mg/kg-day)		3.28E-05	mg/kg-day	5.60E-03	mg/kg-day	6E-03
				MERCURY	6.60E+00	ug/l	7.31E-09	mg/kg-day		1/(mg/kg-day)		5.11E-07	mg/kg-day	2.10E-05	mg/kg-day	2E-02
				NICKEL	1.46E+02	ug/l	3.23E-08	mg/kg-day		1/(mg/kg-day)		2.26E-06	mg/kg-day	8.00E-04	mg/kg-day	3E-03
				VANADIUM	3.90E+02	ug/l	4.32E-07	mg/kg-day		1/(mg/kg-day)		3.02E-05	mg/kg-day	2.34E-04	mg/kg-day	1E-01
				2,4-DICHLOROPHENOL	1.80E+01	ug/l	4.80E-07	mg/kg-day		1/(mg/kg-day)		3.36E-05	mg/kg-day	3.00E-03	mg/kg-day	1E-02
				2-CHLOROPHENOL	4.00E+00	ug/l	4.04E-08	mg/kg-day		1/(mg/kg-day)		2.83E-06	mg/kg-day	5.00E-03	mg/kg-day	6E-04
				BENZO(G,H,I)PERYLENE	1.00E+00	ug/l		mg/kg-day		1/(mg/kg-day)			mg/kg-day	3.00E-02	mg/kg-day	
				CHRYSENE	4.00E+00	ug/l	2.90E-06	mg/kg-day	7.30E-03	1/(mg/kg-day)	2E-08	2.03E-04	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.00E+00	ug/l	2.52E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-06	1.77E-04	mg/kg-day		mg/kg-day	
				NAPHTHALENE	3.30E+01	ug/l	1.72E-06	mg/kg-day		1/(mg/kg-day)		1.20E-04	mg/kg-day	2.00E-02	mg/kg-day	6E-03
				PHENANTHRENE	6.00E+00	ug/l	9.37E-07	mg/kg-day		1/(mg/kg-day)		6.56E-05	mg/kg-day	3.00E-02	mg/kg-day	2E-03
				1,2,4-TRICHLOROBENZENE	1.90E+01	ug/l	1.56E-06	mg/kg-day	3.60E-03	1/(mg/kg-day)	6E-09	1.09E-04	mg/kg-day	1.00E-02	mg/kg-day	1E-02
				1,2-DICHLOROBENZENE	2.60E+02	ug/l	1.23E-05	mg/kg-day		1/(mg/kg-day)		8.64E-04	mg/kg-day	9.00E-02	mg/kg-day	1E-02
				1,3-DICHLOROBENZENE	1.70E+01	ug/l	1.09E-06	mg/kg-day		1/(mg/kg-day)		7.62E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	6.50E+02	ug/l	3.16E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-07	2.21E-03	mg/kg-day	7.00E-02	mg/kg-day	3E-02
				BENZENE	1.70E+03	ug/l	2.79E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-06	1.95E-03	mg/kg-day	4.00E-03	mg/kg-day	5E-01
				CHLOROBENZENE	5.10E+03	ug/l	1.64E-04	mg/kg-day		1/(mg/kg-day)		1.15E-02	mg/kg-day	2.00E-02	mg/kg-day	6E-01
				CHLOROFORM	5.20E+01	ug/l	4.40E-07	mg/kg-day		1/(mg/kg-day)		3.08E-05	mg/kg-day	1.00E-02	mg/kg-day	3E-03
				METHYLENE CHLORIDE	1.50E+02	ug/l	6.28E-07	mg/kg-day	7.50E-03	1/(mg/kg-day)	5E-09	4.39E-05	mg/kg-day	6.00E-02	mg/kg-day	7E-04
			Exp. Route Total								**4E-06**					**1E+00**
			Ingestion	ALUMINUM	4.99E+04	ug/l	6.28E-05	mg/kg-day		1/(mg/kg-day)		4.39E-03	mg/kg-day	1.00E+00	mg/kg-day	4E-03
				ARSENIC	1.05E+02	ug/l	1.32E-07	mg/kg-day	1.50E+00		2E-07	9.25E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				BARIUM	1.82E+03	ug/l	2.29E-06	mg/kg-day		1/(mg/kg-day)		1.60E-04	mg/kg-day	2.00E-01	mg/kg-day	8E-04
				COPPER	3.84E+02	ug/l	4.83E-07	mg/kg-day		1/(mg/kg-day)		3.38E-05	mg/kg-day	4.00E-02	mg/kg-day	8E-04
				IRON	4.66E+04	ug/l	5.86E-05	mg/kg-day		1/(mg/kg-day)		4.10E-03	mg/kg-day	7.00E-01	mg/kg-day	6E-03
				LEAD	4.88E+02	ug/l	6.14E-07	mg/kg-day		1/(mg/kg-day)		4.30E-05	mg/kg-day		mg/kg-day	
				MANGANESE	4.23E+02	ug/l	5.32E-07	mg/kg-day		1/(mg/kg-day)		3.73E-05	mg/kg-day	1.40E-01	mg/kg-day	3E-04
				MERCURY	6.60E+00	ug/l	8.30E-09	mg/kg-day		1/(mg/kg-day)		5.81E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				NICKEL	1.46E+02	ug/l	1.84E-07	mg/kg-day		1/(mg/kg-day)		1.29E-05	mg/kg-day	2.00E-02	mg/kg-day	6E-04
				VANADIUM	3.90E+02	ug/l	4.91E-07	mg/kg-day		1/(mg/kg-day)		3.43E-05	mg/kg-day	9.00E-03	mg/kg-day	4E-03

TABLE 7.7a RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Intermediate Ground	Plant Area	Ingestion	2,4-DICHLOROPHENOL	1.80E+01	ug/l	2.26E-08	mg/kg-day		1/(mg/kg-day)		1.59E-06	mg/kg-day	3.00E-03	mg/kg-day	5E-04
				2-CHLOROPHENOL	4.00E+00	ug/l	5.03E-09	mg/kg-day		1/(mg/kg-day)		3.52E-07	mg/kg-day	5.00E-03	mg/kg-day	7E-05
				BENZO(G,H,I)PERYLENE	1.00E+00	ug/l	1.26E-09	mg/kg-day		1/(mg/kg-day)		8.81E-08	mg/kg-day	3.00E-02	mg/kg-day	3E-06
				CHRYSENE	4.00E+00	ug/l	5.03E-09	mg/kg-day	7.30E-03	1/(mg/kg-day)	4E-11	3.52E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.00E+00	ug/l	2.52E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-09	1.76E-07	mg/kg-day		mg/kg-day	
				NAPHTHALENE	3.30E+01	ug/l	4.15E-08	mg/kg-day		1/(mg/kg-day)		2.91E-06	mg/kg-day	2.00E-02	mg/kg-day	1E-04
				PHENANTHRENE	6.00E+00	ug/l	7.55E-09	mg/kg-day		1/(mg/kg-day)		5.28E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				1,2,4-TRICHLOROBENZENE	1.90E+01	ug/l	2.39E-08	mg/kg-day	3.60E-03	1/(mg/kg-day)	9E-11	1.67E-06	mg/kg-day	1.00E-02	mg/kg-day	2E-04
				1,2-DICHLOROBENZENE	2.60E+02	ug/l	3.27E-07	mg/kg-day		1/(mg/kg-day)		2.29E-05	mg/kg-day	9.00E-02	mg/kg-day	3E-04
				1,3-DICHLOROBENZENE	1.70E+01	ug/l	2.14E-08	mg/kg-day		1/(mg/kg-day)		1.50E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	6.50E+02	ug/l	8.18E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	4E-09	5.72E-05	mg/kg-day	7.00E-02	mg/kg-day	8E-04
				BENZENE	1.70E+03	ug/l	2.14E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-07	1.50E-04	mg/kg-day	4.00E-03	mg/kg-day	4E-02
				CHLOROBENZENE	5.10E+03	ug/l	6.42E-06	mg/kg-day		1/(mg/kg-day)		4.49E-04	mg/kg-day	2.00E-02	mg/kg-day	2E-02
				CHLOROFORM	5.20E+01	ug/l	6.54E-08	mg/kg-day		1/(mg/kg-day)		4.58E-06	mg/kg-day	1.00E-02	mg/kg-day	5E-04
				METHYLENE CHLORIDE	1.50E+02	ug/l	1.89E-07	mg/kg-day	7.50E-03	1/(mg/kg-day)	1E-09	1.32E-05	mg/kg-day	6.00E-02	mg/kg-day	2E-04
			Exp. Route Total								**3E-07**					**1E-01**
		Exp. Point Total									**4E-06**					**1E+00**
	Exp. Medium Total										**4E-06**					**1E+00**
Medium Total											**4E-06**					**1E+00**
										Total of Receptor Risks Across All Media	**9E-06**				Total of Receptor Hazards Across All Media	**5E+00**

TABLE 7.7b RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Intermediate Soils (0-20 ft)	On-Site Ditches	Dermal	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	2.82E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-06	1.97E-09	mg/kg-day	1.00E-09	mg/kg-day	2E+00
				ARSENIC	3.99E+01	mg/kg	1.49E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	1.04E-05	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				CHROMIUM	1.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COPPER	3.26E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	5.39E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	6.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	4.78E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	6.39E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				METHYL MERCURY	6.86E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	9.88E+00	mg/kg	1.72E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-07	1.21E-05	mg/kg-day	2.00E-05	mg/kg-day	6E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	2.75E-09	mg/kg-day		1/(mg/kg-day)		1.93E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	3.40E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.38E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	3.24E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	2.27E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	4.86E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.40E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	2.27E-08	mg/kg-day		1/(mg/kg-day)		1.59E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	7.12E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-08	4.99E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	1.94E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.36E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	3.24E-08	mg/kg-day		1/(mg/kg-day)		2.27E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				1,2,3-TRICHLOROBENZENE	2.20E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	7.50E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	1.90E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	7.60E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	4.30E+02	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	1.20E-01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	7.10E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**5E-06**					**3E+00**
			Ingestion	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	1.04E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-05	7.30E-09	mg/kg-day	1.00E-09	mg/kg-day	7E+00
				ARSENIC	3.99E+01	mg/kg	5.52E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-07	3.87E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				CHROMIUM	1.92E+02	mg/kg	2.66E-06	mg/kg-day		1/(mg/kg-day)		1.86E-04	mg/kg-day	3.00E-03	mg/kg-day	6E-02
				COPPER	3.26E+02	mg/kg	4.51E-06	mg/kg-day		1/(mg/kg-day)		3.16E-04	mg/kg-day	4.00E-02	mg/kg-day	8E-03
				IRON	5.39E+04	mg/kg	7.46E-04	mg/kg-day		1/(mg/kg-day)		5.22E-02	mg/kg-day	7.00E-01	mg/kg-day	7E-02
				LEAD	6.92E+02	mg/kg	9.58E-06	mg/kg-day		1/(mg/kg-day)		6.70E-04	mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg	5.98E-06	mg/kg-day		1/(mg/kg-day)		4.18E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	4.78E+03	mg/kg	6.61E-05	mg/kg-day		1/(mg/kg-day)		4.63E-03	mg/kg-day	3.00E-04	mg/kg-day	2E+01
				NICKEL	3.01E+02	mg/kg	4.17E-06	mg/kg-day		1/(mg/kg-day)		2.92E-04	mg/kg-day	2.00E-02	mg/kg-day	1E-02
				VANADIUM	6.39E+01	mg/kg	8.84E-07	mg/kg-day		1/(mg/kg-day)		6.19E-05	mg/kg-day	9.00E-03	mg/kg-day	7E-03
				METHYL MERCURY	6.86E-01	mg/kg	9.49E-09	mg/kg-day		1/(mg/kg-day)		6.65E-07	mg/kg-day	1.00E-04	mg/kg-day	7E-03
				HIGHLY CHLORINATED PCBs	9.88E+00	mg/kg	1.37E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-07	9.57E-06	mg/kg-day	2.00E-05	mg/kg-day	5E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	2.35E-09	mg/kg-day		1/(mg/kg-day)		1.65E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	2.91E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.03E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	2.77E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.94E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	4.15E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.91E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	1.94E-08	mg/kg-day		1/(mg/kg-day)		1.36E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	6.09E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-08	4.26E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	1.66E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.16E-06	mg/kg-day		mg/kg-day	

TABLE 7.7b RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Intermediate Soils (0-20 ft)	On-Site Ditches	Ingestion	PHENANTHRENE	2.00E+00	mg/kg	2.77E-08	mg/kg-day		1/(mg/kg-day)		1.94E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				1,2,3-TRICHLOROBENZENE	2.20E+00	mg/kg	3.04E-08	mg/kg-day		1/(mg/kg-day)		2.13E-06	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	7.50E+00	mg/kg	1.04E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	4E-10	7.27E-06	mg/kg-day	1.00E-02	mg/kg-day	7E-04
				1,2-DICHLOROBENZENE	1.90E+02	mg/kg	2.63E-06	mg/kg-day		1/(mg/kg-day)		1.84E-04	mg/kg-day	9.00E-02	mg/kg-day	2E-03
				1,3-DICHLOROBENZENE	7.60E+01	mg/kg	1.05E-06	mg/kg-day		1/(mg/kg-day)		7.36E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	4.30E+02	mg/kg	5.95E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	3E-08	4.17E-04	mg/kg-day	7.00E-02	mg/kg-day	6E-03
				BENZENE	1.20E-01	mg/kg	1.66E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	9E-11	1.16E-07	mg/kg-day	4.00E-03	mg/kg-day	3E-05
				CHLOROBENZENE	7.10E+01	mg/kg	9.83E-07	mg/kg-day		1/(mg/kg-day)		6.88E-05	mg/kg-day	2.00E-02	mg/kg-day	3E-03
			Exp. Route Total								**2E-05**					**2E+01**
		Exp. Point Total									**2E-05**					**3E+01**
	Exp. Medium Total										**2E-05**					**3E+01**
Medium Total											**2E-05**					**3E+01**
										Total of Receptor Risks Across All Media	**2E-05**				Total of Receptor Hazards Across All Media	**3E+01**

TABLE 7.7c RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Intermediate Soils (0-20 ft)	Former Chlorination Building	Dermal	2,3,7,8-TCDD Equivalent	2.52E-01	mg/kg	9.43E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-04	6.60E-08	mg/kg-day	1.00E-09	mg/kg-day	7E+01
				ARSENIC	1.04E+01	mg/kg	3.89E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	6E-08	2.72E-06	mg/kg-day	3.00E-04	mg/kg-day	9E-03
				CHROMIUM	1.35E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	8.57E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.38E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.50E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	9.59E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	6.71E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				LESS CHLORINATED PCBs	1.10E+00	mg/kg	1.92E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-08	1.34E-06	mg/kg-day	7.00E-05	mg/kg-day	2E-02
				ALDRIN	2.50E-02	mg/kg		mg/kg-day	1.70E+01	1/(mg/kg-day)			mg/kg-day	3.00E-05	mg/kg-day	
				ACENAPHTHYLENE	4.00E-02	mg/kg	6.48E-10	mg/kg-day		1/(mg/kg-day)		4.53E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	2.59E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.81E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	2.43E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.70E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	4.53E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.17E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	1.78E-08	mg/kg-day		1/(mg/kg-day)		1.25E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	5.02E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-08	3.51E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.20E+00	mg/kg	1.49E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-08	1.05E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	1.42E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	9.97E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	3.08E-08	mg/kg-day		1/(mg/kg-day)		2.15E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
			Exp. Route Total								**1E-04**					**7E+01**
			Ingestion	2,3,7,8-TCDD Equivalent	2.52E-01	mg/kg	3.49E-09	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-04	2.44E-07	mg/kg-day	1.00E-09	mg/kg-day	2E+02
				ARSENIC	1.04E+01	mg/kg	1.44E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	1.01E-05	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				CHROMIUM	1.35E+01	mg/kg	1.87E-07	mg/kg-day		1/(mg/kg-day)		1.31E-05	mg/kg-day	3.00E-03	mg/kg-day	4E-03
				IRON	8.57E+03	mg/kg	1.19E-04	mg/kg-day		1/(mg/kg-day)		8.30E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				MANGANESE	3.38E+02	mg/kg	4.68E-06	mg/kg-day		1/(mg/kg-day)		3.27E-04	mg/kg-day	1.40E-01	mg/kg-day	2E-03
				MERCURY	1.50E+02	mg/kg	2.08E-06	mg/kg-day		1/(mg/kg-day)		1.45E-04	mg/kg-day	3.00E-04	mg/kg-day	5E-01
				VANADIUM	1.24E+01	mg/kg	1.72E-07	mg/kg-day		1/(mg/kg-day)		1.20E-05	mg/kg-day	9.00E-03	mg/kg-day	1E-03
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	7.61E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	5.33E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				LESS CHLORINATED PCBs	1.10E+00	mg/kg	1.52E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-08	1.07E-06	mg/kg-day	7.00E-05	mg/kg-day	2E-02
				ALDRIN	2.50E-02	mg/kg	3.46E-10	mg/kg-day	1.70E+01	1/(mg/kg-day)	6E-09	2.42E-08	mg/kg-day	3.00E-05	mg/kg-day	8E-04
				ACENAPHTHYLENE	4.00E-02	mg/kg	5.54E-10	mg/kg-day		1/(mg/kg-day)		3.87E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	2.21E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.55E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	2.08E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.45E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	3.87E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.71E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	1.52E-08	mg/kg-day		1/(mg/kg-day)		1.07E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	4.29E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-08	3.00E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.20E+00	mg/kg	1.66E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	3E-08	1.16E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	1.22E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-09	8.52E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	2.63E-08	mg/kg-day		1/(mg/kg-day)		1.84E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg	2.77E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	1E-09	1.94E-05	mg/kg-day	1.00E-02	mg/kg-day	2E-03
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg	1.08E-06	mg/kg-day		1/(mg/kg-day)		7.56E-05	mg/kg-day	9.00E-02	mg/kg-day	8E-04
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg	2.49E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-09	1.74E-05	mg/kg-day	7.00E-02	mg/kg-day	2E-04
			Exp. Route Total								**5E-04**					**2E+02**
		Exp. Point Total									**7E-04**					**3E+02**
	Exp. Medium Total										**7E-04**					**3E+02**
Medium Total											**7E-04**					**3E+02**
										Total of Receptor Risks Across All Media	**7E-04**			Total of Receptor Hazards Across All Media		**3E+02**

TABLE 7.7d RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	State Fair Blvd/ Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Expsoure Area	Dermal	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	1.97E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-07	1.38E-10	mg/kg-day	1.00E-09	mg/kg-day	1E-01
				MERCURY	1.15E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	2.62E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-08	1.83E-06	mg/kg-day	2.00E-05	mg/kg-day	9E-02
				LESS CHLORINATED PCBs	6.90E-01	mg/kg	1.20E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-08	8.42E-07	mg/kg-day	7.00E-05	mg/kg-day	1E-02
				HEXACHLOROBENZENE	7.30E-01	mg/kg	9.09E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-08	6.36E-07	mg/kg-day	8.00E-04	mg/kg-day	8E-04
				1,2,3-TRICHLOROBENZENE	7.40E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.40E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	1.40E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				TRICHLOROETHENE	5.70E-01	mg/kg		mg/kg-day	4.00E-01	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
			Exp. Route Total								**4E-07**					**2E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	7.31E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-06	5.11E-10	mg/kg-day	1.00E-09	mg/kg-day	5E-01
				MERCURY	1.15E+02	mg/kg	1.59E-06	mg/kg-day		1/(mg/kg-day)		1.11E-04	mg/kg-day	3.00E-04	mg/kg-day	4E-01
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	2.08E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-08	1.45E-06	mg/kg-day	2.00E-05	mg/kg-day	7E-02
				LESS CHLORINATED PCBs	6.90E-01	mg/kg	9.55E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-08	6.68E-07	mg/kg-day	7.00E-05	mg/kg-day	1E-02
				HEXACHLOROBENZENE	7.30E-01	mg/kg	1.01E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-08	7.07E-07	mg/kg-day	8.00E-04	mg/kg-day	9E-04
				1,2,3-TRICHLOROBENZENE	7.40E+00	mg/kg	1.02E-07	mg/kg-day		1/(mg/kg-day)		7.17E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.40E+03	mg/kg	3.32E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-07	2.32E-03	mg/kg-day	7.00E-02	mg/kg-day	3E-02
				BENZENE	1.40E-03	mg/kg	1.94E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-12	1.36E-09	mg/kg-day	4.00E-03	mg/kg-day	3E-07
				TRICHLOROETHENE	5.70E-01	mg/kg	7.89E-09	mg/kg-day	4.00E-01	1/(mg/kg-day)	3E-09	5.52E-07	mg/kg-day		mg/kg-day	
			Exp. Route Total								**1E-06**					**1E+00**
		Exp. Point Total									**2E-06**					**1E+00**
	Exp. Medium Total										**2E-06**					**1E+00**
Medium Total											**2E-06**					**1E+00**
									Total of Receptor Risks Across All Media		**2E-06**			Total of Receptor Hazards Across All Media		**1E+00**

TABLE 7.7e RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
LAKESHORE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Lakeshore Area	Dermal	2,3,7,8-TCDD Equivalent	7.62E-05	mg/kg	2.85E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-08	1.99E-11	mg/kg-day	1.00E-09	mg/kg-day	2E-02
				ALUMINUM	8.21E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	1.11E+01	mg/kg	4.13E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	6E-08	2.89E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				CHROMIUM	4.42E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	1.75E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.91E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.05E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	2.02E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				ZINC	1.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	3.00E-01	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.70E+00	mg/kg	6.45E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-07	4.52E-06	mg/kg-day	2.00E-05	mg/kg-day	2E-01
				ENDOSULFAN I	2.50E-02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-03	mg/kg-day	
				ACENAPHTHYLENE	1.38E+00	mg/kg	2.23E-08	mg/kg-day		1/(mg/kg-day)		1.56E-06	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.10E+01	mg/kg	1.78E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.25E-05	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	8.90E+00	mg/kg	1.44E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	1.01E-05	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	1.94E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.36E-05	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.36E+00	mg/kg	3.83E-08	mg/kg-day		1/(mg/kg-day)		2.68E-06	mg/kg-day	3.00E-02	mg/kg-day	9E-05
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	4.88E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	4E-09	3.42E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	1.94E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.36E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	3.90E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.73E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.70E+01	mg/kg	4.37E-07	mg/kg-day		1/(mg/kg-day)		3.06E-05	mg/kg-day	3.00E-02	mg/kg-day	1E-03
			Exp. Route Total								**2E-06**					**3E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	7.62E-05	mg/kg	1.05E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-07	7.38E-11	mg/kg-day	1.00E-09	mg/kg-day	7E-02
				ALUMINUM	8.21E+03	mg/kg	1.14E-04	mg/kg-day		1/(mg/kg-day)		7.96E-03	mg/kg-day	1.00E+00	mg/kg-day	8E-03
				ARSENIC	1.11E+01	mg/kg	1.53E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	1.07E-05	mg/kg-day	3.00E-04	mg/kg-day	4E-02
				CHROMIUM	4.42E+01	mg/kg	6.12E-07	mg/kg-day		1/(mg/kg-day)		4.28E-05	mg/kg-day	3.00E-03	mg/kg-day	1E-02
				IRON	1.75E+04	mg/kg	2.42E-04	mg/kg-day		1/(mg/kg-day)		1.69E-02	mg/kg-day	7.00E-01	mg/kg-day	2E-02
				MANGANESE	3.91E+02	mg/kg	5.41E-06	mg/kg-day		1/(mg/kg-day)		3.79E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	3.05E+00	mg/kg	4.23E-08	mg/kg-day		1/(mg/kg-day)		2.96E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				VANADIUM	2.02E+01	mg/kg	2.79E-07	mg/kg-day		1/(mg/kg-day)		1.96E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				ZINC	1.01E+02	mg/kg	1.39E-06	mg/kg-day		1/(mg/kg-day)		9.75E-05	mg/kg-day	3.00E-01	mg/kg-day	3E-04
				HIGHLY CHLORINATED PCBs	3.70E+00	mg/kg	5.12E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-07	3.58E-06	mg/kg-day	2.00E-05	mg/kg-day	2E-01
				ENDOSULFAN I	2.50E-02	mg/kg	3.46E-10	mg/kg-day		1/(mg/kg-day)		2.42E-08	mg/kg-day	6.00E-03	mg/kg-day	4E-06
				ACENAPHTHYLENE	1.38E+00	mg/kg	1.91E-08	mg/kg-day		1/(mg/kg-day)		1.34E-06	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.10E+01	mg/kg	1.52E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.07E-05	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	8.90E+00	mg/kg	1.23E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	9E-07	8.62E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	1.66E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.16E-05	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.36E+00	mg/kg	3.27E-08	mg/kg-day		1/(mg/kg-day)		2.29E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	4.17E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-09	2.92E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	1.66E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.16E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	3.33E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.33E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.70E+01	mg/kg	3.74E-07	mg/kg-day		1/(mg/kg-day)		2.62E-05	mg/kg-day	3.00E-02	mg/kg-day	9E-04
			Exp. Route Total								**2E-06**					**4E-01**
		Exp. Point Total									**4E-06**					**6E-01**
	Exp. Medium Total										**4E-06**					**6E-01**
Medium Total											**4E-06**					**6E-01**
Groundwater	Shallow Groundwater (0-10 ft)	Lakeshore Area	Dermal	ARSENIC	1.78E+01	ug/L	1.97E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-08	1.38E-06	mg/kg-day	3.00E-04	mg/kg-day	5E-03
				BARIUM	3.25E+02	ug/L	3.60E-07	mg/kg-day		1/(mg/kg-day)		2.52E-05	mg/kg-day	1.40E-02	mg/kg-day	2E-03
				BERYLLIUM	2.83E+01	ug/L	3.13E-08	mg/kg-day		1/(mg/kg-day)		2.19E-06	mg/kg-day	1.40E-05	mg/kg-day	2E-01
				CHROMIUM	3.52E+01	ug/L	7.79E-08	mg/kg-day		1/(mg/kg-day)		5.46E-06	mg/kg-day	7.50E-05	mg/kg-day	7E-02
				IRON	2.95E+03	ug/L	3.27E-06	mg/kg-day		1/(mg/kg-day)		2.29E-04	mg/kg-day	7.00E-01	mg/kg-day	3E-04
				MANGANESE	9.49E+01	ug/L	1.05E-07	mg/kg-day		1/(mg/kg-day)		7.35E-06	mg/kg-day	5.60E-03	mg/kg-day	1E-03
				MERCURY	6.08E+00	ug/L	6.73E-09	mg/kg-day		1/(mg/kg-day)		4.71E-07	mg/kg-day	2.10E-05	mg/kg-day	2E-02
				VANADIUM	7.88E+01	ug/L	8.72E-08	mg/kg-day		1/(mg/kg-day)		6.11E-06	mg/kg-day	2.34E-04	mg/kg-day	3E-02

TABLE 7.7e RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
LAKESHORE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Shallow Groundwater (0-10 ft)	Lakeshore Area	Dermal	2,4-DICHLOROPHENOL	2.30E+01	ug/L	6.14E-07	mg/kg-day		1/(mg/kg-day)		4.30E-05	mg/kg-day	3.00E-03	mg/kg-day	1E-02
				2-CHLOROPHENOL	4.10E+01	ug/L	4.14E-07	mg/kg-day		1/(mg/kg-day)		2.90E-05	mg/kg-day	5.00E-03	mg/kg-day	6E-03
				2-METHYLNAPHTHALENE	6.00E+00	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				4-CHLORO-3-METHYLPHENOL	3.00E+00	ug/L	1.05E-07	mg/kg-day		1/(mg/kg-day)		7.37E-06	mg/kg-day		mg/kg-day	
				4-METHYLPHENOL	6.20E+01	ug/L	5.85E-07	mg/kg-day		1/(mg/kg-day)		4.10E-05	mg/kg-day		mg/kg-day	
				NAPHTHALENE	1.40E+02	ug/L	7.29E-06	mg/kg-day		1/(mg/kg-day)		5.10E-04	mg/kg-day	2.00E-02	mg/kg-day	3E-02
				PHENANTHRENE	2.00E+00	ug/L	3.12E-07	mg/kg-day		1/(mg/kg-day)		2.19E-05	mg/kg-day	3.00E-02	mg/kg-day	7E-04
				1,2,4-TRICHLOROBENZENE	2.10E+01	ug/L	1.73E-06	mg/kg-day	3.60E-03	1/(mg/kg-day)	6E-09	1.21E-04	mg/kg-day	1.00E-02	mg/kg-day	1E-02
				1,2-DICHLOROBENZENE	6.60E+03	ug/L	3.13E-04	mg/kg-day		1/(mg/kg-day)		2.19E-02	mg/kg-day	9.00E-02	mg/kg-day	2E-01
				1,3-DICHLOROBENZENE	4.80E+02	ug/L	3.07E-05	mg/kg-day		1/(mg/kg-day)		2.15E-03	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.20E+04	ug/L	5.83E-04	mg/kg-day	5.40E-03	1/(mg/kg-day)	3E-06	4.08E-02	mg/kg-day	7.00E-02	mg/kg-day	6E-01
				BENZENE	3.00E+04	ug/L	4.93E-04	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-05	3.45E-02	mg/kg-day	4.00E-03	mg/kg-day	9E+00
				CARBON DISULFIDE	2.50E+02	ug/L	4.67E-06	mg/kg-day		1/(mg/kg-day)		3.27E-04	mg/kg-day	1.00E-01	mg/kg-day	3E-03
				CHLOROBENZENE	2.50E+04	ug/L	8.02E-04	mg/kg-day		1/(mg/kg-day)		5.62E-02	mg/kg-day	2.00E-02	mg/kg-day	3E+00
				TOLUENE	2.70E+04	ug/L	9.32E-04	mg/kg-day		1/(mg/kg-day)		6.52E-02	mg/kg-day	8.00E-02	mg/kg-day	8E-01
			Exp. Route Total								**3E-05**					**1E+01**
			Ingestion	ARSENIC	1.78E+01	ug/L	2.24E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-08	1.57E-06	mg/kg-day	3.00E-04	mg/kg-day	5E-03
				BARIUM	3.25E+02	ug/L	4.09E-07	mg/kg-day		1/(mg/kg-day)		2.86E-05	mg/kg-day	2.00E-01	mg/kg-day	1E-04
				BERYLLIUM	2.83E+01	ug/L	3.56E-08	mg/kg-day		1/(mg/kg-day)		2.49E-06	mg/kg-day	2.00E-03	mg/kg-day	1E-03
				CHROMIUM	3.52E+01	ug/L	4.43E-08	mg/kg-day		1/(mg/kg-day)		3.10E-06	mg/kg-day	3.00E-03	mg/kg-day	1E-03
				IRON	2.95E+03	ug/L	3.71E-06	mg/kg-day		1/(mg/kg-day)		2.60E-04	mg/kg-day	7.00E-01	mg/kg-day	4E-04
				MANGANESE	9.49E+01	ug/L	1.19E-07	mg/kg-day		1/(mg/kg-day)		8.36E-06	mg/kg-day	1.40E-01	mg/kg-day	6E-05
				MERCURY	6.08E+00	ug/L	7.65E-09	mg/kg-day		1/(mg/kg-day)		5.35E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				VANADIUM	7.88E+01	ug/L	9.91E-08	mg/kg-day		1/(mg/kg-day)		6.94E-06	mg/kg-day	9.00E-03	mg/kg-day	8E-04
				2,4-DICHLOROPHENOL	2.30E+01	ug/L	2.89E-08	mg/kg-day		1/(mg/kg-day)		2.03E-06	mg/kg-day	3.00E-03	mg/kg-day	7E-04
				2-CHLOROPHENOL	4.10E+01	ug/L	5.16E-08	mg/kg-day		1/(mg/kg-day)		3.61E-06	mg/kg-day	5.00E-03	mg/kg-day	7E-04
				2-METHYLNAPHTHALENE	6.00E+00	ug/L	7.55E-09	mg/kg-day		1/(mg/kg-day)		5.28E-07	mg/kg-day	4.00E-03	mg/kg-day	1E-04
				4-CHLORO-3-METHYLPHENOL	3.00E+00	ug/L	3.77E-09	mg/kg-day		1/(mg/kg-day)		2.64E-07	mg/kg-day		mg/kg-day	
				4-METHYLPHENOL	6.20E+01	ug/L	7.80E-08	mg/kg-day		1/(mg/kg-day)		5.46E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	1.40E+02	ug/L	1.76E-07	mg/kg-day		1/(mg/kg-day)		1.23E-05	mg/kg-day	2.00E-02	mg/kg-day	6E-04
				PHENANTHRENE	2.00E+00	ug/L	2.52E-09	mg/kg-day		1/(mg/kg-day)		1.76E-07	mg/kg-day	3.00E-02	mg/kg-day	6E-06
				1,2,4-TRICHLOROBENZENE	2.10E+01	ug/L	2.64E-08	mg/kg-day	3.60E-03	1/(mg/kg-day)	1E-10	1.85E-06	mg/kg-day	1.00E-02	mg/kg-day	2E-04
				1,2-DICHLOROBENZENE	6.60E+03	ug/L	8.30E-06	mg/kg-day		1/(mg/kg-day)		5.81E-04	mg/kg-day	9.00E-02	mg/kg-day	6E-03
				1,3-DICHLOROBENZENE	4.80E+02	ug/L	6.04E-07	mg/kg-day		1/(mg/kg-day)		4.23E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.20E+04	ug/L	1.51E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	8E-08	1.06E-03	mg/kg-day	7.00E-02	mg/kg-day	2E-02
				BENZENE	3.00E+04	ug/L	3.77E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-06	2.64E-03	mg/kg-day	4.00E-03	mg/kg-day	7E-01
				CARBON DISULFIDE	2.50E+02	ug/L	3.15E-07	mg/kg-day		1/(mg/kg-day)		2.20E-05	mg/kg-day	1.00E-01	mg/kg-day	2E-04
				CHLOROBENZENE	2.50E+04	ug/L	3.15E-05	mg/kg-day		1/(mg/kg-day)		2.20E-03	mg/kg-day	2.00E-02	mg/kg-day	1E-01
				TOLUENE	2.70E+04	ug/L	3.40E-05	mg/kg-day		1/(mg/kg-day)		2.38E-03	mg/kg-day	8.00E-02	mg/kg-day	3E-02
			Exp. Route Total								**2E-06**					**8E-01**
		Exp. Point Total									**3E-05**					**1E+01**
	Exp. Medium Total										**3E-05**					**1E+01**
Medium Total											**3E-05**					**1E+01**
									Total of Receptor Risks Across All Media		**4E-05**			Total of Receptor Hazards Across All Media		**1E+01**

TABLE 7.7f RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Petroleum Storage Area	Dermal	ALUMINUM	9.13E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	3.85E+01	mg/kg	1.44E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	1.01E-05	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				CHROMIUM	2.06E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.46E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	4.47E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.03E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.73E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	1.26E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-08	8.79E-07	mg/kg-day	2.00E-05	mg/kg-day	4E-02
				DELTA-BHC	1.20E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	3.78E-01	mg/kg	6.12E-09	mg/kg-day		1/(mg/kg-day)		4.28E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.99E+00	mg/kg	6.47E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	4.53E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	3.77E+00	mg/kg	6.10E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	4.27E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.62E+00	mg/kg	9.10E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	6.37E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	3.66E+00	mg/kg	5.93E-08	mg/kg-day		1/(mg/kg-day)		4.15E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZO(K)FLUORANTHENE	1.73E+00	mg/kg	2.80E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-09	1.96E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	9.50E-01	mg/kg	1.54E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.08E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	3.15E+00	mg/kg	5.09E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.56E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	2.24E+01	mg/kg	3.63E-07	mg/kg-day		1/(mg/kg-day)		2.54E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				PHENANTHRENE	3.37E+00	mg/kg	5.46E-08	mg/kg-day		1/(mg/kg-day)		3.82E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZENE	1.02E-01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**1E-06**					**8E-02**
			Ingestion	ALUMINUM	9.13E+03	mg/kg	1.26E-04	mg/kg-day		1/(mg/kg-day)		8.84E-03	mg/kg-day	1.00E+00	mg/kg-day	9E-03
				ARSENIC	3.85E+01	mg/kg	5.33E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-07	3.73E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				CHROMIUM	2.06E+01	mg/kg	2.85E-07	mg/kg-day		1/(mg/kg-day)		2.00E-05	mg/kg-day	3.00E-03	mg/kg-day	7E-03
				IRON	2.46E+04	mg/kg	3.41E-04	mg/kg-day		1/(mg/kg-day)		2.39E-02	mg/kg-day	7.00E-01	mg/kg-day	3E-02
				MANGANESE	4.47E+02	mg/kg	6.18E-06	mg/kg-day		1/(mg/kg-day)		4.33E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	1.03E+01	mg/kg	1.43E-07	mg/kg-day		1/(mg/kg-day)		9.98E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				VANADIUM	1.73E+01	mg/kg	2.40E-07	mg/kg-day		1/(mg/kg-day)		1.68E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	9.96E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-08	6.97E-07	mg/kg-day	2.00E-05	mg/kg-day	3E-02
				DELTA-BHC	1.20E-03	mg/kg	1.66E-11	mg/kg-day	6.30E+00	1/(mg/kg-day)	1E-10	1.16E-09	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	3.78E-01	mg/kg	5.23E-09	mg/kg-day		1/(mg/kg-day)		3.66E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.99E+00	mg/kg	5.53E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.87E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	3.77E+00	mg/kg	5.21E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	3.65E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.62E+00	mg/kg	7.78E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	5.44E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	3.66E+00	mg/kg	5.07E-08	mg/kg-day		1/(mg/kg-day)		3.55E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZO(K)FLUORANTHENE	1.73E+00	mg/kg	2.39E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-09	1.67E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	9.50E-01	mg/kg	1.31E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	9.20E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	3.15E+00	mg/kg	4.35E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.05E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	2.24E+01	mg/kg	3.10E-07	mg/kg-day		1/(mg/kg-day)		2.17E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				PHENANTHRENE	3.37E+00	mg/kg	4.66E-08	mg/kg-day		1/(mg/kg-day)		3.26E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZENE	1.02E-01	mg/kg	1.41E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	8E-11	9.88E-08	mg/kg-day	4.00E-03	mg/kg-day	2E-05
			Exp. Route Total								**1E-06**					**2E-01**
		Exp. Point Total									**2E-06**					**3E-01**
	Exp. Medium Total										**2E-06**					**3E-01**
Medium Total											**2E-06**					**3E-01**
Groundwater	Shallow Groundwater (0-10 ft)	Petroleum Storage Area	Dermal	ALUMINUM	2.64E+04	ug/L	2.93E-05	mg/kg-day		1/(mg/kg-day)		2.05E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				BARIUM	3.28E+02	ug/L	3.63E-07	mg/kg-day		1/(mg/kg-day)		2.54E-05	mg/kg-day	1.40E-02	mg/kg-day	2E-03
				CHROMIUM	5.13E+01	ug/L	1.14E-07	mg/kg-day		1/(mg/kg-day)		7.95E-06	mg/kg-day	7.50E-05	mg/kg-day	1E-01
				COPPER	1.79E+02	ug/L	1.98E-07	mg/kg-day		1/(mg/kg-day)		1.39E-05	mg/kg-day	4.00E-02	mg/kg-day	3E-04
				IRON	4.53E+04	ug/L	5.01E-05	mg/kg-day		1/(mg/kg-day)		3.51E-03	mg/kg-day	7.00E-01	mg/kg-day	5E-03
				LEAD	7.17E+01	ug/L	7.94E-09	mg/kg-day		1/(mg/kg-day)		5.56E-07	mg/kg-day		mg/kg-day	
				MANGANESE	1.73E+03	ug/L	1.91E-06	mg/kg-day		1/(mg/kg-day)		1.34E-04	mg/kg-day	5.60E-03	mg/kg-day	2E-02
				MERCURY	2.44E+00	ug/L	2.70E-09	mg/kg-day		1/(mg/kg-day)		1.89E-07	mg/kg-day	2.10E-05	mg/kg-day	9E-03
				NICKEL	6.91E+01	ug/L	1.53E-08	mg/kg-day		1/(mg/kg-day)		1.07E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-03

TABLE 7.7f RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Shallow Groundwater (0-10 ft)	Petroleum Storage Area	Dermal	VANADIUM	5.94E+01	ug/L	6.58E-08	mg/kg-day		1/(mg/kg-day)		4.60E-06	mg/kg-day	2.34E-04	mg/kg-day	2E-02
				2-METHYLNAPHTHALENE	2.40E+01	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				DIBENZOFURAN	2.00E+00	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-03	mg/kg-day	
				NAPHTHALENE	2.30E+02	ug/L	1.20E-05	mg/kg-day		1/(mg/kg-day)		8.38E-04	mg/kg-day	2.00E-02	mg/kg-day	4E-02
				PHENANTHRENE	6.00E+00	ug/L	9.37E-07	mg/kg-day		1/(mg/kg-day)		6.56E-05	mg/kg-day	3.00E-02	mg/kg-day	2E-03
				BENZENE	2.89E+03	ug/L	4.75E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-06	3.33E-03	mg/kg-day	4.00E-03	mg/kg-day	8E-01
				XYLENES, TOTAL	4.10E+01	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-01	mg/kg-day	
			Exp. Route Total								**3E-06**					**1E+00**
			Ingestion	ALUMINUM	2.64E+04	ug/L	3.33E-05	mg/kg-day		1/(mg/kg-day)		2.33E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				BARIUM	3.28E+02	ug/L	4.13E-07	mg/kg-day		1/(mg/kg-day)		2.89E-05	mg/kg-day	2.00E-01	mg/kg-day	1E-04
				CHROMIUM	5.13E+01	ug/L	6.45E-08	mg/kg-day		1/(mg/kg-day)		4.52E-06	mg/kg-day	3.00E-03	mg/kg-day	2E-03
				COPPER	1.79E+02	ug/L	2.25E-07	mg/kg-day		1/(mg/kg-day)		1.58E-05	mg/kg-day	4.00E-02	mg/kg-day	4E-04
				IRON	4.53E+04	ug/L	5.69E-05	mg/kg-day		1/(mg/kg-day)		3.99E-03	mg/kg-day	7.00E-01	mg/kg-day	6E-03
				LEAD	7.17E+01	ug/L	9.02E-08	mg/kg-day		1/(mg/kg-day)		6.31E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.73E+03	ug/L	2.17E-06	mg/kg-day		1/(mg/kg-day)		1.52E-04	mg/kg-day	1.40E-01	mg/kg-day	1E-03
				MERCURY	2.44E+00	ug/L	3.07E-09	mg/kg-day		1/(mg/kg-day)		2.15E-07	mg/kg-day	3.00E-04	mg/kg-day	7E-04
				NICKEL	6.91E+01	ug/L	8.69E-08	mg/kg-day		1/(mg/kg-day)		6.09E-06	mg/kg-day	2.00E-02	mg/kg-day	3E-04
				VANADIUM	5.94E+01	ug/L	7.47E-08	mg/kg-day		1/(mg/kg-day)		5.23E-06	mg/kg-day	9.00E-03	mg/kg-day	6E-04
				2-METHYLNAPHTHALENE	2.40E+01	ug/L	3.02E-08	mg/kg-day		1/(mg/kg-day)		2.11E-06	mg/kg-day	4.00E-03	mg/kg-day	5E-04
				DIBENZOFURAN	2.00E+00	ug/L	2.52E-09	mg/kg-day		1/(mg/kg-day)		1.76E-07	mg/kg-day	1.00E-03	mg/kg-day	2E-04
				NAPHTHALENE	2.30E+02	ug/L	2.89E-07	mg/kg-day		1/(mg/kg-day)		2.03E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				PHENANTHRENE	6.00E+00	ug/L	7.55E-09	mg/kg-day		1/(mg/kg-day)		5.28E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZENE	2.89E+03	ug/L	3.64E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-07	2.55E-04	mg/kg-day	4.00E-03	mg/kg-day	6E-02
				XYLENES, TOTAL	4.10E+01	ug/L	5.16E-08	mg/kg-day		1/(mg/kg-day)		3.61E-06	mg/kg-day	2.00E-01	mg/kg-day	2E-05
			Exp. Route Total								**2E-07**					**8E-02**
		Exp. Point Total									**3E-06**					**1E+00**
	Exp. Medium Total										**3E-06**					**1E+00**
Medium Total											**3E-06**					**1E+00**
										Total of Receptor Risks Across All Media	**5E-06**				Total of Receptor Hazards Across All Media	**1E+00**

TABLE 7.7g RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Chlorobenzene Hot-Spot Area	Dermal	ARSENIC	1.02E+01	mg/kg	3.82E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	6.E-08	2.67E-06	mg/kg-day	3.00E-04	mg/kg-day	9.E-03
				CHROMIUM	2.23E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	1.82E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.82E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.68E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.13E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	6.17E+01	mg/kg	1.07E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	2.E-06	7.52E-05	mg/kg-day	2.00E-05	mg/kg-day	4.E+00
				ACENAPHTHYLENE	2.71E-01	mg/kg	4.39E-09	mg/kg-day		1/(mg/kg-day)		3.07E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.70E+01	mg/kg	2.75E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2.E-07	1.93E-05	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.18E+00	mg/kg	1.16E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	8.E-07	8.14E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.07E+01	mg/kg	1.74E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1.E-07	1.22E-05	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.49E+00	mg/kg	8.89E-08	mg/kg-day		1/(mg/kg-day)		6.22E-06	mg/kg-day	3.00E-02	mg/kg-day	2.E-04
				BENZO(K)FLUORANTHENE	5.63E+00	mg/kg	9.11E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	7.E-09	6.38E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.96E+00	mg/kg	3.18E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2.E-07	2.22E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.66E+00	mg/kg	4.55E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	7.E-08	3.19E-06	mg/kg-day	8.00E-04	mg/kg-day	4.E-03
				INDENO(1,2,3-CD)PYRENE	4.66E+00	mg/kg	7.54E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6.E-08	5.28E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.61E+01	mg/kg	2.61E-07	mg/kg-day		1/(mg/kg-day)		1.83E-05	mg/kg-day	3.00E-02	mg/kg-day	6.E-04
				1,2,4-TRICHLOROBENZENE	2.59E+03	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	1.20E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	6.30E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.70E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	5.37E-01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	4.79E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**4.E-06**					**4.E+00**
			Ingestion	ARSENIC	1.02E+01	mg/kg	1.41E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2.E-07	9.90E-06	mg/kg-day	3.00E-04	mg/kg-day	3.E-02
				CHROMIUM	2.23E+01	mg/kg	3.08E-07	mg/kg-day		1/(mg/kg-day)		2.16E-05	mg/kg-day	3.00E-03	mg/kg-day	7.E-03
				IRON	1.82E+04	mg/kg	2.52E-04	mg/kg-day		1/(mg/kg-day)		1.76E-02	mg/kg-day	7.00E-01	mg/kg-day	3.E-02
				MANGANESE	3.82E+02	mg/kg	5.29E-06	mg/kg-day		1/(mg/kg-day)		3.70E-04	mg/kg-day	1.40E-01	mg/kg-day	3.E-03
				MERCURY	3.68E+00	mg/kg	5.09E-08	mg/kg-day		1/(mg/kg-day)		3.56E-06	mg/kg-day	3.00E-04	mg/kg-day	1.E-02
				VANADIUM	1.13E+01	mg/kg	1.56E-07	mg/kg-day		1/(mg/kg-day)		1.09E-05	mg/kg-day	9.00E-03	mg/kg-day	1.E-03
				HIGHLY CHLORINATED PCBs	6.17E+01	mg/kg	8.53E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2.E-06	5.97E-05	mg/kg-day	2.00E-05	mg/kg-day	3.E+00
				ACENAPHTHYLENE	2.71E-01	mg/kg	3.75E-09	mg/kg-day		1/(mg/kg-day)		2.63E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.70E+01	mg/kg	2.35E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2.E-07	1.65E-05	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.18E+00	mg/kg	9.94E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	7.E-07	6.96E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.07E+01	mg/kg	1.48E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1.E-07	1.04E-05	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.49E+00	mg/kg	7.59E-08	mg/kg-day		1/(mg/kg-day)		5.32E-06	mg/kg-day	3.00E-02	mg/kg-day	2.E-04
				BENZO(K)FLUORANTHENE	5.63E+00	mg/kg	7.78E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	6.E-09	5.45E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.96E+00	mg/kg	2.72E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2.E-07	1.90E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.66E+00	mg/kg	5.06E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	8.E-08	3.54E-06	mg/kg-day	8.00E-04	mg/kg-day	4.E-03
				INDENO(1,2,3-CD)PYRENE	4.66E+00	mg/kg	6.45E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5.E-08	4.51E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.61E+01	mg/kg	2.23E-07	mg/kg-day		1/(mg/kg-day)		1.56E-05	mg/kg-day	3.00E-02	mg/kg-day	5.E-04
				1,2,4-TRICHLOROBENZENE	2.59E+03	mg/kg	3.58E-05	mg/kg-day	3.60E-03	1/(mg/kg-day)	1.E-07	2.51E-03	mg/kg-day	1.00E-02	mg/kg-day	3.E-01
				1,2-DICHLOROBENZENE	1.20E+03	mg/kg	1.66E-05	mg/kg-day		1/(mg/kg-day)		1.16E-03	mg/kg-day	9.00E-02	mg/kg-day	1.E-02
				1,3-DICHLOROBENZENE	6.30E+01	mg/kg	8.72E-07	mg/kg-day		1/(mg/kg-day)		6.10E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.70E+03	mg/kg	2.36E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	1.E-07	1.65E-03	mg/kg-day	7.00E-02	mg/kg-day	2.E-02
				BENZENE	5.37E-01	mg/kg	7.43E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	4.E-10	5.20E-07	mg/kg-day	4.00E-03	mg/kg-day	1.E-04
				CHLOROBENZENE	4.79E+01	mg/kg	6.63E-07	mg/kg-day		1/(mg/kg-day)		4.64E-05	mg/kg-day	2.00E-02	mg/kg-day	2.E-03
			Exp. Route Total								**4.E-06**					**3.E+00**
		Exp. Point Total									**7.E-06**					**7.E+00**
	Exp. Medium Total										**7.E-06**					**7.E+00**
Medium Total											**7.E-06**					**7.E+00**

TABLE 7.7g RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Shallow Groundwater (0-10 ft)	Chlorobenzene Hot-Spot Area	Dermal	ALUMINUM	2.91E+04	ug/L	3.23E-05	mg/kg-day		1/(mg/kg-day)		2.26E-03	mg/kg-day	1.00E+00	mg/kg-day	2.E-03
				ARSENIC	1.78E+02	ug/L	1.97E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	3.E-07	1.38E-05	mg/kg-day	3.00E-04	mg/kg-day	5.E-02
				BARIUM	4.44E+02	ug/L	4.92E-07	mg/kg-day		1/(mg/kg-day)		3.44E-05	mg/kg-day	1.40E-02	mg/kg-day	2.E-03
				CHROMIUM	4.49E+02	ug/L	9.94E-07	mg/kg-day		1/(mg/kg-day)		6.96E-05	mg/kg-day	7.50E-05	mg/kg-day	9.E-01
				COBALT	2.94E+01	ug/L	1.30E-08	mg/kg-day		1/(mg/kg-day)		9.11E-07	mg/kg-day		mg/kg-day	
				COPPER	1.54E+02	ug/L	1.70E-07	mg/kg-day		1/(mg/kg-day)		1.19E-05	mg/kg-day	4.00E-02	mg/kg-day	3.E-04
				CYANIDE	4.27E+02	ug/L	4.73E-07	mg/kg-day		1/(mg/kg-day)		3.31E-05	mg/kg-day	2.00E-02	mg/kg-day	2.E-03
				IRON	8.60E+04	ug/L	9.52E-05	mg/kg-day		1/(mg/kg-day)		6.66E-03	mg/kg-day	7.00E-01	mg/kg-day	1.E-02
				LEAD	8.75E+01	ug/L	9.69E-09	mg/kg-day		1/(mg/kg-day)		6.78E-07	mg/kg-day		mg/kg-day	
				MANGANESE	1.70E+03	ug/L	1.89E-06	mg/kg-day		1/(mg/kg-day)		1.32E-04	mg/kg-day	5.60E-03	mg/kg-day	2.E-02
				MERCURY	2.48E+00	ug/L	2.75E-09	mg/kg-day		1/(mg/kg-day)		1.92E-07	mg/kg-day	2.10E-05	mg/kg-day	9.E-03
				NICKEL	4.03E+02	ug/L	8.92E-08	mg/kg-day		1/(mg/kg-day)		6.25E-06	mg/kg-day	8.00E-04	mg/kg-day	8.E-03
				VANADIUM	1.29E+02	ug/L	1.43E-07	mg/kg-day		1/(mg/kg-day)		1.00E-05	mg/kg-day	2.34E-04	mg/kg-day	4.E-02
				HEXACHLOROBENZENE	2.00E+00	ug/L	5.20E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	8.E-07	3.64E-05	mg/kg-day	8.00E-04	mg/kg-day	5.E-02
				NAPHTHALENE	5.38E+00	ug/L	2.80E-07	mg/kg-day		1/(mg/kg-day)		1.96E-05	mg/kg-day	2.00E-02	mg/kg-day	1.E-03
				PHENANTHRENE	2.00E+00	ug/L	3.12E-07	mg/kg-day		1/(mg/kg-day)		2.19E-05	mg/kg-day	3.00E-02	mg/kg-day	7.E-04
				1,2,3-TRICHLOROBENZENE	1.50E+02	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.33E+02	ug/L	1.10E-05	mg/kg-day	3.60E-03	1/(mg/kg-day)	4.E-08	7.67E-04	mg/kg-day	1.00E-02	mg/kg-day	8.E-02
				1,2-DICHLOROBENZENE	1.11E+03	ug/L	5.25E-05	mg/kg-day		1/(mg/kg-day)		3.67E-03	mg/kg-day	9.00E-02	mg/kg-day	4.E-02
				1,3-DICHLOROBENZENE	4.10E+01	ug/L	2.62E-06	mg/kg-day		1/(mg/kg-day)		1.84E-04	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.05E+03	ug/L	9.98E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	5.E-07	6.99E-03	mg/kg-day	7.00E-02	mg/kg-day	1.E-01
				BENZENE	3.29E+03	ug/L	5.41E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	3.E-06	3.79E-03	mg/kg-day	4.00E-03	mg/kg-day	9.E-01
				CHLOROBENZENE	4.01E+03	ug/L	1.29E-04	mg/kg-day		1/(mg/kg-day)		9.02E-03	mg/kg-day	2.00E-02	mg/kg-day	5.E-01
				CHLOROFORM	1.00E+00	ug/L	8.47E-09	mg/kg-day		1/(mg/kg-day)		5.93E-07	mg/kg-day	1.00E-02	mg/kg-day	6.E-05
			Exp. Route Total								**5.E-06**					**3.E+00**
			Ingestion	ALUMINUM	2.91E+04	ug/L	3.67E-05	mg/kg-day		1/(mg/kg-day)		2.57E-03	mg/kg-day	1.00E+00	mg/kg-day	3.E-03
				ARSENIC	1.78E+02	ug/L	2.24E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	3.E-07	1.57E-05	mg/kg-day	3.00E-04	mg/kg-day	5.E-02
				BARIUM	4.44E+02	ug/L	5.59E-07	mg/kg-day		1/(mg/kg-day)		3.91E-05	mg/kg-day	2.00E-01	mg/kg-day	2.E-04
				CHROMIUM	4.49E+02	ug/L	5.65E-07	mg/kg-day		1/(mg/kg-day)		3.95E-05	mg/kg-day	3.00E-03	mg/kg-day	1.E-02
				COBALT	2.94E+01	ug/L	3.70E-08	mg/kg-day		1/(mg/kg-day)		2.59E-06	mg/kg-day		mg/kg-day	
				COPPER	1.54E+02	ug/L	1.94E-07	mg/kg-day		1/(mg/kg-day)		1.36E-05	mg/kg-day	4.00E-02	mg/kg-day	3.E-04
				CYANIDE	4.27E+02	ug/L	5.37E-07	mg/kg-day		1/(mg/kg-day)		3.76E-05	mg/kg-day	2.00E-02	mg/kg-day	2.E-03
				IRON	8.60E+04	ug/L	1.08E-04	mg/kg-day		1/(mg/kg-day)		7.57E-03	mg/kg-day	7.00E-01	mg/kg-day	1.E-02
				LEAD	8.75E+01	ug/L	1.10E-07	mg/kg-day		1/(mg/kg-day)		7.71E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.70E+03	ug/L	2.14E-06	mg/kg-day		1/(mg/kg-day)		1.50E-04	mg/kg-day	1.40E-01	mg/kg-day	1.E-03
				MERCURY	2.48E+00	ug/L	3.12E-09	mg/kg-day		1/(mg/kg-day)		2.18E-07	mg/kg-day	3.00E-04	mg/kg-day	7.E-04
				NICKEL	4.03E+02	ug/L	5.07E-07	mg/kg-day		1/(mg/kg-day)		3.55E-05	mg/kg-day	2.00E-02	mg/kg-day	2.E-03
				VANADIUM	1.29E+02	ug/L	1.62E-07	mg/kg-day		1/(mg/kg-day)		1.14E-05	mg/kg-day	9.00E-03	mg/kg-day	1.E-03
				HEXACHLOROBENZENE	2.00E+00	ug/L	2.52E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	4.E-09	1.76E-07	mg/kg-day	8.00E-04	mg/kg-day	2.E-04
				NAPHTHALENE	5.38E+00	ug/L	6.76E-09	mg/kg-day		1/(mg/kg-day)		4.74E-07	mg/kg-day	2.00E-02	mg/kg-day	2.E-05
				PHENANTHRENE	2.00E+00	ug/L	2.52E-09	mg/kg-day		1/(mg/kg-day)		1.76E-07	mg/kg-day	3.00E-02	mg/kg-day	6.E-06
				1,2,3-TRICHLOROBENZENE	1.50E+02	ug/L	1.89E-07	mg/kg-day		1/(mg/kg-day)		1.32E-05	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.33E+02	ug/L	1.68E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	6.E-10	1.17E-05	mg/kg-day	1.00E-02	mg/kg-day	1.E-03
				1,2-DICHLOROBENZENE	1.11E+03	ug/L	1.39E-06	mg/kg-day		1/(mg/kg-day)		9.74E-05	mg/kg-day	9.00E-02	mg/kg-day	1.E-03
				1,3-DICHLOROBENZENE	4.10E+01	ug/L	5.16E-08	mg/kg-day		1/(mg/kg-day)		3.61E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.05E+03	ug/L	2.58E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	1.E-08	1.81E-04	mg/kg-day	7.00E-02	mg/kg-day	3.E-03
				BENZENE	3.29E+03	ug/L	4.14E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	2.E-07	2.90E-04	mg/kg-day	4.00E-03	mg/kg-day	7.E-02
				CHLOROBENZENE	4.01E+03	ug/L	5.05E-06	mg/kg-day		1/(mg/kg-day)		3.53E-04	mg/kg-day	2.00E-02	mg/kg-day	2.E-02
				CHLOROFORM	1.00E+00	ug/L	1.26E-09	mg/kg-day		1/(mg/kg-day)		8.81E-08	mg/kg-day	1.00E-02	mg/kg-day	9.E-06
			Exp. Route Total								**6.E-07**					**2.E-01**
		Exp. Point Total									**5.E-06**					**3.E+00**
	Exp. Medium Total										**5.E-06**					**3.E+00**
Medium Total											**5.E-06**					**3.E+00**
										Total of Receptor Risks Across All Media	**1.E-05**			Total of Receptor Hazards Across All Media		**1.E+01**

TABLE 7.7h RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Upper Sediment (0-10 ft bgs)	Tributary 5A	Dermal	2,3,7,8-TCDD Equivalent	2.66E-05	mg/kg	9.94E-14	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-08	6.96E-12	mg/kg-day	1.00E-09	mg/kg-day	7E-03
				ALUMINUM	8.08E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ANTIMONY	2.56E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-05	mg/kg-day	
				ARSENIC	3.36E+01	mg/kg	1.26E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	8.79E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				BARIUM	9.29E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.24E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COBALT	5.46E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				COPPER	2.88E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	1.58E+05	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	4.10E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	1.24E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				NICKEL	1.71E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				SELENIUM	2.33E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.00E-03	mg/kg-day	
				VANADIUM	9.67E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.60E+00	mg/kg	9.76E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	6.84E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				ACENAPHTHYLENE	4.63E-01	mg/kg	7.50E-09	mg/kg-day		1/(mg/kg-day)		5.25E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.26E+00	mg/kg	5.28E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.70E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	4.60E+00	mg/kg	7.45E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	5.21E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	9.29E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	6.50E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.25E+00	mg/kg	3.65E-08	mg/kg-day		1/(mg/kg-day)		2.55E-06	mg/kg-day	3.00E-02	mg/kg-day	9E-05
				BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	3.68E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-09	2.58E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	1.78E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.25E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	3.39E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.37E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.86E+00	mg/kg	7.87E-08	mg/kg-day		1/(mg/kg-day)		5.51E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZENE	1.30E+01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**1E-06**					**4E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	2.66E-05	mg/kg	3.68E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	6E-08	2.58E-11	mg/kg-day	1.00E-09	mg/kg-day	3E-02
				ALUMINUM	8.08E+03	mg/kg	1.12E-04	mg/kg-day		1/(mg/kg-day)		7.83E-03	mg/kg-day	1.00E+00	mg/kg-day	8E-03
				ANTIMONY	2.56E+01	mg/kg	3.55E-07	mg/kg-day		1/(mg/kg-day)		2.48E-05	mg/kg-day	4.00E-04	mg/kg-day	6E-02
				ARSENIC	3.36E+01	mg/kg	4.65E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-07	3.25E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				BARIUM	9.29E+02	mg/kg	1.29E-05	mg/kg-day		1/(mg/kg-day)		9.00E-04	mg/kg-day	2.00E-01	mg/kg-day	4E-03
				CHROMIUM	1.24E+04	mg/kg	1.72E-04	mg/kg-day		1/(mg/kg-day)		1.20E-02	mg/kg-day	3.00E-03	mg/kg-day	4E+00
				COBALT	5.46E+03	mg/kg	7.56E-05	mg/kg-day		1/(mg/kg-day)		5.29E-03	mg/kg-day		mg/kg-day	
				COPPER	2.88E+02	mg/kg	3.98E-06	mg/kg-day		1/(mg/kg-day)		2.78E-04	mg/kg-day	4.00E-02	mg/kg-day	7E-03
				IRON	1.58E+05	mg/kg	2.19E-03	mg/kg-day		1/(mg/kg-day)		1.53E-01	mg/kg-day	7.00E-01	mg/kg-day	2E-01
				LEAD	4.10E+03	mg/kg	5.67E-05	mg/kg-day		1/(mg/kg-day)		3.97E-03	mg/kg-day		mg/kg-day	
				MANGANESE	1.24E+03	mg/kg	1.72E-05	mg/kg-day		1/(mg/kg-day)		1.21E-03	mg/kg-day	1.40E-01	mg/kg-day	9E-03
				NICKEL	1.71E+03	mg/kg	2.37E-05	mg/kg-day		1/(mg/kg-day)		1.66E-03	mg/kg-day	2.00E-02	mg/kg-day	8E-02
				SELENIUM	2.33E+01	mg/kg	3.23E-07	mg/kg-day		1/(mg/kg-day)		2.26E-05	mg/kg-day	5.00E-03	mg/kg-day	5E-03
				VANADIUM	9.67E+03	mg/kg	1.34E-04	mg/kg-day		1/(mg/kg-day)		9.37E-03	mg/kg-day	9.00E-03	mg/kg-day	1E+00
				HIGHLY CHLORINATED PCBs	5.60E+00	mg/kg	7.75E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	5.42E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				ACENAPHTHYLENE	4.63E-01	mg/kg	6.41E-09	mg/kg-day		1/(mg/kg-day)		4.49E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.26E+00	mg/kg	4.51E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.16E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	4.60E+00	mg/kg	6.37E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	4.46E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	7.94E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	5.56E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.25E+00	mg/kg	3.12E-08	mg/kg-day		1/(mg/kg-day)		2.18E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05

TABLE 7.7h RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Upper Sediment (0-10 ft bgs)	Tributary 5A	Ingestion	BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	3.15E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-09	2.20E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	1.52E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.07E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	2.89E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.03E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.86E+00	mg/kg	6.73E-08	mg/kg-day		1/(mg/kg-day)		4.71E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZENE	1.30E+01	mg/kg	1.80E-07	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-08	1.26E-05	mg/kg-day	4.00E-03	mg/kg-day	3E-03
			Exp. Route Total								**2E-06**					**6E+00**
		Exp. Point Total									**3E-06**					**6E+00**
	Exp. Medium Total										**3E-06**					**6E+00**
Medium Total											**3E-06**					**6E+00**
Water	Surface Water	Tributary 5A	Dermal	ANTIMONY	2.77E+00	ug/L	3.07E-09	mg/kg-day		1/(mg/kg-day)		2.15E-07	mg/kg-day	6.00E-05	mg/kg-day	4E-03
				ARSENIC	4.61E+00	ug/L	5.10E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-09	3.57E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				BARIUM	1.80E+02	ug/L	1.99E-07	mg/kg-day		1/(mg/kg-day)		1.39E-05	mg/kg-day	1.40E-02	mg/kg-day	1E-03
				CHROMIUM	3.31E+01	ug/L	7.33E-08	mg/kg-day		1/(mg/kg-day)		5.13E-06	mg/kg-day	7.50E-05	mg/kg-day	7E-02
				COBALT	3.60E+02	ug/L	1.59E-07	mg/kg-day		1/(mg/kg-day)		1.12E-05	mg/kg-day		mg/kg-day	
				MANGANESE	1.03E+02	ug/L	1.14E-07	mg/kg-day		1/(mg/kg-day)		7.98E-06	mg/kg-day	5.60E-03	mg/kg-day	1E-03
				NICKEL	5.26E+02	ug/L	1.16E-07	mg/kg-day		1/(mg/kg-day)		8.15E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-02
				VANADIUM	3.52E+02	ug/L	3.90E-07	mg/kg-day		1/(mg/kg-day)		2.73E-05	mg/kg-day	2.34E-04	mg/kg-day	1E-01
				DELTA-BHC	5.40E-03	ug/L		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	1.70E-02	ug/L	6.75E-10	mg/kg-day	1.60E+01	1/(mg/kg-day)	1E-08	4.73E-08	mg/kg-day	5.00E-05	mg/kg-day	9E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	8.70E+02	ug/L	7.68E-05	mg/kg-day	1.40E-02	1/(mg/kg-day)	1E-06	5.38E-03	mg/kg-day	2.00E-02	mg/kg-day	3E-01
				NAPHTHALENE	1.00E+00	ug/L	5.21E-08	mg/kg-day		1/(mg/kg-day)		3.64E-06	mg/kg-day	2.00E-02	mg/kg-day	2E-04
				N-NITROSODIPHENYLAMINE	7.00E+01	ug/L	1.96E-06	mg/kg-day	4.90E-03	1/(mg/kg-day)	1E-08	1.37E-04	mg/kg-day		mg/kg-day	
				PENTACHLOROPHENOL	6.00E+00	ug/L	4.16E-06	mg/kg-day	1.20E-01	1/(mg/kg-day)	5E-07	2.91E-04	mg/kg-day	3.00E-02	mg/kg-day	1E-02
				1,4-DICHLOROBENZENE	2.00E+00	ug/L	9.72E-08	mg/kg-day	5.40E-03	1/(mg/kg-day)	5E-10	6.80E-06	mg/kg-day	7.00E-02	mg/kg-day	1E-04
				BENZENE	5.41E+01	ug/L	8.88E-07	mg/kg-day	5.50E-02	1/(mg/kg-day)	5E-08	6.22E-05	mg/kg-day	4.00E-03	mg/kg-day	2E-02
				BROMODICHLOROMETHANE	2.00E+00	ug/L	1.24E-08	mg/kg-day	6.20E-02	1/(mg/kg-day)	8E-10	8.70E-07	mg/kg-day	2.00E-02	mg/kg-day	4E-05
				CHLOROFORM	1.11E+01	ug/L	9.39E-08	mg/kg-day		1/(mg/kg-day)		6.57E-06	mg/kg-day	1.00E-02	mg/kg-day	7E-04
			Exp. Route Total								**2E-06**					**5E-01**
			Ingestion	ANTIMONY	2.77E+00	ug/L	3.48E-09	mg/kg-day		1/(mg/kg-day)		2.44E-07	mg/kg-day	4.00E-04	mg/kg-day	6E-04
				ARSENIC	4.61E+00	ug/L	5.80E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	9E-09	4.06E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				BARIUM	1.80E+02	ug/L	2.26E-07	mg/kg-day		1/(mg/kg-day)		1.59E-05	mg/kg-day	2.00E-01	mg/kg-day	8E-05
				CHROMIUM	3.31E+01	ug/L	4.16E-08	mg/kg-day		1/(mg/kg-day)		2.91E-06	mg/kg-day	3.00E-03	mg/kg-day	1E-03
				COBALT	3.60E+02	ug/L	4.53E-07	mg/kg-day		1/(mg/kg-day)		3.17E-05	mg/kg-day		mg/kg-day	
				MANGANESE	1.03E+02	ug/L	1.30E-07	mg/kg-day		1/(mg/kg-day)		9.07E-06	mg/kg-day	1.40E-01	mg/kg-day	6E-05
				NICKEL	5.26E+02	ug/L	6.62E-07	mg/kg-day		1/(mg/kg-day)		4.63E-05	mg/kg-day	2.00E-02	mg/kg-day	2E-03
				VANADIUM	3.52E+02	ug/L	4.43E-07	mg/kg-day		1/(mg/kg-day)		3.10E-05	mg/kg-day	9.00E-03	mg/kg-day	3E-03
				DELTA-BHC	5.40E-03	ug/L	6.79E-12	mg/kg-day	6.30E+00	1/(mg/kg-day)	4E-11	4.76E-10	mg/kg-day		mg/kg-day	
				DIELDRIN	1.70E-02	ug/L	2.14E-11	mg/kg-day	1.60E+01	1/(mg/kg-day)	3E-10	1.50E-09	mg/kg-day	5.00E-05	mg/kg-day	3E-05
				BIS(2-ETHYLHEXYL)PHTHALATE	8.70E+02	ug/L	1.09E-06	mg/kg-day	1.40E-02	1/(mg/kg-day)	2E-08	7.66E-05	mg/kg-day	2.00E-02	mg/kg-day	4E-03
				NAPHTHALENE	1.00E+00	ug/L	1.26E-09	mg/kg-day		1/(mg/kg-day)		8.81E-08	mg/kg-day	2.00E-02	mg/kg-day	4E-06
				N-NITROSODIPHENYLAMINE	7.00E+01	ug/L	8.81E-08	mg/kg-day	4.90E-03	1/(mg/kg-day)	4E-10	6.16E-06	mg/kg-day		mg/kg-day	
				PENTACHLOROPHENOL	6.00E+00	ug/L	7.55E-09	mg/kg-day	1.20E-01	1/(mg/kg-day)	9E-10	5.28E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				1,4-DICHLOROBENZENE	2.00E+00	ug/L	2.52E-09	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-11	1.76E-07	mg/kg-day	7.00E-02	mg/kg-day	3E-06
				BENZENE	5.41E+01	ug/L	6.81E-08	mg/kg-day	5.50E-02	1/(mg/kg-day)	4E-09	4.77E-06	mg/kg-day	4.00E-03	mg/kg-day	1E-03
				BROMODICHLOROMETHANE	2.00E+00	ug/L	2.52E-09	mg/kg-day	6.20E-02	1/(mg/kg-day)	2E-10	1.76E-07	mg/kg-day	2.00E-02	mg/kg-day	9E-06
				CHLOROFORM	1.11E+01	ug/L	1.40E-08	mg/kg-day		1/(mg/kg-day)		9.77E-07	mg/kg-day	1.00E-02	mg/kg-day	1E-04
			Exp. Route Total								**3E-08**					**1E-02**
		Exp. Point Total									**2E-06**					**5E-01**
	Exp. Medium Total										**2E-06**					**5E-01**
Medium Total											**2E-06**					**5E-01**
									Total of Receptor Risks Across All Media		**4E-06**			Total of Receptor Hazards Across All Media		**7E+00**

TABLE 7.8 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
POTABLE WATER - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	Ingestion	ALUMINUM	2.89E+04	ug/l	3.40E-01	mg/kg-day		1/(mg/kg-day)		7.92E-01	mg/kg-day	1.00E+00	mg/kg-day	8E-01
				ARSENIC	1.23E+02	ug/l	1.44E-03	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-03	3.37E-03	mg/kg-day	3.00E-04	mg/kg-day	1E+01
				BARIUM	1.30E+03	ug/l	1.53E-02	mg/kg-day		1/(mg/kg-day)		3.57E-02	mg/kg-day	2.00E-01	mg/kg-day	2E-01
				BERYLLIUM	5.56E+00	ug/l	6.53E-05	mg/kg-day		1/(mg/kg-day)		1.52E-04	mg/kg-day	2.00E-03	mg/kg-day	8E-02
				CHROMIUM	3.82E+02	ug/l	4.49E-03	mg/kg-day		1/(mg/kg-day)		1.05E-02	mg/kg-day	3.00E-03	mg/kg-day	3E+00
				COBALT	2.88E+01	ug/l	3.38E-04	mg/kg-day		1/(mg/kg-day)		7.89E-04	mg/kg-day		mg/kg-day	
				COPPER	8.16E+01	ug/l	9.58E-04	mg/kg-day		1/(mg/kg-day)		2.24E-03	mg/kg-day	4.00E-02	mg/kg-day	6E-02
				CYANIDE	9.20E+01	ug/l	1.08E-03	mg/kg-day		1/(mg/kg-day)		2.52E-03	mg/kg-day	2.00E-02	mg/kg-day	1E-01
				IRON	6.15E+04	ug/l	7.22E-01	mg/kg-day		1/(mg/kg-day)		1.68E+00	mg/kg-day	7.00E-01	mg/kg-day	2E+00
				LEAD	5.90E+01	ug/l	8.71E-04	mg/kg-day		1/(mg/kg-day)		2.03E-03	mg/kg-day		mg/kg-day	
				MANGANESE	2.85E+03	ug/l	3.35E-02	mg/kg-day		1/(mg/kg-day)		7.82E-02	mg/kg-day	1.40E-01	mg/kg-day	6E-01
				MERCURY	2.02E+01	ug/l	2.37E-04	mg/kg-day		1/(mg/kg-day)		5.53E-04	mg/kg-day	3.00E-04	mg/kg-day	2E+00
				NICKEL	1.49E+02	ug/l	1.75E-03	mg/kg-day		1/(mg/kg-day)		4.08E-03	mg/kg-day	2.00E-02	mg/kg-day	2E-01
				SELENIUM	4.75E+00	ug/l	5.58E-05	mg/kg-day		1/(mg/kg-day)		1.30E-04	mg/kg-day	5.00E-03	mg/kg-day	3E-02
				SILVER	5.75E+00	ug/l	6.75E-05	mg/kg-day		1/(mg/kg-day)		1.58E-04	mg/kg-day	5.00E-03	mg/kg-day	3E-02
				VANADIUM	5.94E+02	ug/l	6.97E-03	mg/kg-day		1/(mg/kg-day)		1.63E-02	mg/kg-day	9.00E-03	mg/kg-day	2E+00
				ZINC	3.78E+02	ug/l	4.44E-03	mg/kg-day		1/(mg/kg-day)		1.04E-02	mg/kg-day	3.00E-01	mg/kg-day	3E-02
				2,4,6-TRICHLOROPHENOL	3.00E+00	ug/l	3.52E-05	mg/kg-day	1.10E-02	1/(mg/kg-day)	4E-07	8.22E-05	mg/kg-day	1.00E-03	mg/kg-day	8E-02
				2,4-DICHLOROPHENOL	8.11E+00	ug/l	9.52E-05	mg/kg-day		1/(mg/kg-day)		2.22E-04	mg/kg-day	3.00E-03	mg/kg-day	7E-02
				2-CHLOROPHENOL	2.67E+01	ug/l	3.13E-04	mg/kg-day		1/(mg/kg-day)		7.30E-04	mg/kg-day	5.00E-03	mg/kg-day	1E-01
				2-METHYLNAPHTHALENE	6.62E+00	ug/l	7.78E-05	mg/kg-day		1/(mg/kg-day)		1.81E-04	mg/kg-day	4.00E-03	mg/kg-day	5E-02
				2-NITROPHENOL	6.00E+00	ug/l	7.05E-05	mg/kg-day		1/(mg/kg-day)		1.64E-04	mg/kg-day		mg/kg-day	
				4-CHLORO-3-METHYLPHENOL	4.00E+00	ug/l	4.70E-05	mg/kg-day		1/(mg/kg-day)		1.10E-04	mg/kg-day		mg/kg-day	
				4-METHYLPHENOL	8.83E+01	ug/l	1.04E-03	mg/kg-day		1/(mg/kg-day)		2.42E-03	mg/kg-day		mg/kg-day	
				4-NITROPHENOL	6.00E+00	ug/l	7.05E-05	mg/kg-day		1/(mg/kg-day)		1.64E-04	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.00E+00	ug/l	5.87E-05	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-05	1.37E-04	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.00E+00	ug/l	1.17E-05	mg/kg-day		1/(mg/kg-day)		2.74E-05	mg/kg-day	3.00E-02	mg/kg-day	9E-04
				BENZO(K)FLUORANTHENE	2.00E+00	ug/l	2.35E-05	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-06	5.48E-05	mg/kg-day		mg/kg-day	
				BIS(2-ETHYLHEXYL)PHTHALATE	3.90E+01	ug/l	4.58E-04	mg/kg-day	1.40E-02	1/(mg/kg-day)	6E-06	1.07E-03	mg/kg-day	2.00E-02	mg/kg-day	5E-02
				CHRYSENE	4.00E+00	ug/l	4.70E-05	mg/kg-day	7.30E-03	1/(mg/kg-day)	3E-07	1.10E-04	mg/kg-day		mg/kg-day	
				DIBENZOFURAN	5.00E+00	ug/l	5.87E-05	mg/kg-day		1/(mg/kg-day)		1.37E-04	mg/kg-day	1.00E-03	mg/kg-day	1E-01
				HEXACHLOROBENZENE	2.00E+00	ug/l	2.35E-05	mg/kg-day	1.60E+00	1/(mg/kg-day)	4E-05	5.48E-05	mg/kg-day	8.00E-04	mg/kg-day	7E-02
				INDENO(1,2,3-CD)PYRENE	2.00E+00	ug/l	2.35E-05	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-05	5.48E-05	mg/kg-day		mg/kg-day	
				NAPHTHALENE	1.15E+02	ug/l	1.35E-03	mg/kg-day		1/(mg/kg-day)		3.16E-03	mg/kg-day	2.00E-02	mg/kg-day	2E-01
				PHENANTHRENE	1.23E+01	ug/l	1.44E-04	mg/kg-day		1/(mg/kg-day)		3.37E-04	mg/kg-day	3.00E-02	mg/kg-day	1E-02
				1,1,2,2-TETRACHLOROETHANE	1.00E+00	ug/l	1.17E-05	mg/kg-day	2.00E-01	1/(mg/kg-day)	2E-06	2.74E-05	mg/kg-day		mg/kg-day	
				1,2,3-TRICHLOROBENZENE	1.50E+02	ug/l	1.76E-03	mg/kg-day		1/(mg/kg-day)		4.11E-03	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.15E+02	ug/l	1.35E-03	mg/kg-day	3.60E-03	1/(mg/kg-day)	5E-06	3.14E-03	mg/kg-day	1.00E-02	mg/kg-day	3E-01
				1,2-DICHLOROBENZENE	2.09E+03	ug/l	2.45E-02	mg/kg-day		1/(mg/kg-day)		5.72E-02	mg/kg-day	9.00E-02	mg/kg-day	6E-01
				1,2-DICHLOROETHANE	3.00E+00	ug/l	3.52E-05	mg/kg-day	9.10E-02	1/(mg/kg-day)	3E-06	8.22E-05	mg/kg-day	2.00E-02	mg/kg-day	4E-03
				1,2-DICHLOROPROPANE	2.17E+00	ug/l	2.55E-05	mg/kg-day	3.60E-02	1/(mg/kg-day)	9E-07	5.96E-05	mg/kg-day	9.00E-02	mg/kg-day	7E-04
				1,3-DICHLOROBENZENE	4.79E+02	ug/l	5.63E-03	mg/kg-day		1/(mg/kg-day)		1.31E-02	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	5.58E+03	ug/l	6.55E-02	mg/kg-day	5.40E-03	1/(mg/kg-day)	4E-04	1.53E-01	mg/kg-day	7.00E-02	mg/kg-day	2E+00
				ACETONE	3.90E+02	ug/l	4.58E-03	mg/kg-day		1/(mg/kg-day)		1.07E-02	mg/kg-day	9.00E-01	mg/kg-day	1E-02
				BENZENE	1.75E+04	ug/l	2.05E-01	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-02	4.79E-01	mg/kg-day	4.00E-03	mg/kg-day	1E+02
				CARBON DISULFIDE	5.21E+01	ug/l	6.12E-04	mg/kg-day		1/(mg/kg-day)		1.43E-03	mg/kg-day	1.00E-01	mg/kg-day	1E-02
				CHLOROBENZENE	1.70E+04	ug/l	2.00E-01	mg/kg-day		1/(mg/kg-day)		4.66E-01	mg/kg-day	2.00E-02	mg/kg-day	2E+01
				CHLOROFORM	8.04E+00	ug/l	9.44E-05	mg/kg-day		1/(mg/kg-day)		2.20E-04	mg/kg-day	1.00E-02	mg/kg-day	2E-02
				METHYLENE CHLORIDE	7.41E+01	ug/l	8.69E-04	mg/kg-day	7.50E-03	1/(mg/kg-day)	7E-06	2.03E-03	mg/kg-day	6.00E-02	mg/kg-day	3E-02
				TETRACHLOROETHENE	4.00E+00	ug/l	4.70E-05	mg/kg-day	5.40E-01	1/(mg/kg-day)	3E-05	1.10E-04	mg/kg-day	1.00E-02	mg/kg-day	1E-02
				TOLUENE	1.47E+04	ug/l	1.72E-01	mg/kg-day		1/(mg/kg-day)		4.01E-01	mg/kg-day	8.00E-02	mg/kg-day	5E+00
				XYLENES, TOTAL	7.16E+00	ug/l	8.40E-05	mg/kg-day		1/(mg/kg-day)		1.96E-04	mg/kg-day	2.00E-01	mg/kg-day	1E-03
			Exp. Route Total								**1E-02**					**2E+02**
		Exp. Point Total									**1E-02**					**2E+02**
	Exp. Medium Total										**1E-02**					**2E+02**
Medium Total											**1E-02**					**2E+02**
									Total of Receptor Risks Across All Media		**1E-02**	Total of Receptor Hazards Across All Media				**2E+02**

TABLE 7.9 RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
POTABLE WATER - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Child (Age 0-6 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	Ingestion	ALUMINUM	2.89E+04	ug/l	1.58E-01	mg/kg-day		1/(mg/kg-day)		1.85E+00	mg/kg-day	1.00E+00	mg/kg-day	2E+00
				ARSENIC	1.23E+02	ug/l	6.74E-04	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-03	7.86E-03	mg/kg-day	3.00E-04	mg/kg-day	3E+01
				BARIUM	1.30E+03	ug/l	7.14E-03	mg/kg-day		1/(mg/kg-day)		8.33E-02	mg/kg-day	2.00E-01	mg/kg-day	4E-01
				BERYLLIUM	5.56E+00	ug/l	3.05E-05	mg/kg-day		1/(mg/kg-day)		3.55E-04	mg/kg-day	2.00E-03	mg/kg-day	2E-01
				CHROMIUM	3.82E+02	ug/l	2.09E-03	mg/kg-day		1/(mg/kg-day)		2.44E-02	mg/kg-day	3.00E-03	mg/kg-day	8E+00
				COBALT	2.88E+01	ug/l	1.58E-04	mg/kg-day		1/(mg/kg-day)		1.84E-03	mg/kg-day		mg/kg-day	
				COPPER	8.16E+01	ug/l	4.47E-04	mg/kg-day		1/(mg/kg-day)		5.22E-03	mg/kg-day	4.00E-02	mg/kg-day	1E-01
				CYANIDE	9.20E+01	ug/l	5.04E-04	mg/kg-day		1/(mg/kg-day)		5.88E-03	mg/kg-day	2.00E-02	mg/kg-day	3E-01
				IRON	6.15E+04	ug/l	3.37E-01	mg/kg-day		1/(mg/kg-day)		3.93E+00	mg/kg-day	7.00E-01	mg/kg-day	6E+00
				LEAD	5.90E+01	ug/l	4.07E-04	mg/kg-day		1/(mg/kg-day)		4.74E-03	mg/kg-day		mg/kg-day	
				MANGANESE	2.85E+03	ug/l	1.56E-02	mg/kg-day		1/(mg/kg-day)		1.82E-01	mg/kg-day	1.40E-01	mg/kg-day	1E+00
				MERCURY	2.02E+01	ug/l	1.11E-04	mg/kg-day		1/(mg/kg-day)		1.29E-03	mg/kg-day	3.00E-04	mg/kg-day	4E+00
				NICKEL	1.49E+02	ug/l	8.16E-04	mg/kg-day		1/(mg/kg-day)		9.53E-03	mg/kg-day	2.00E-02	mg/kg-day	5E-01
				SELENIUM	4.75E+00	ug/l	2.60E-05	mg/kg-day		1/(mg/kg-day)		3.04E-04	mg/kg-day	5.00E-03	mg/kg-day	6E-02
				SILVER	5.75E+00	ug/l	3.15E-05	mg/kg-day		1/(mg/kg-day)		3.68E-04	mg/kg-day	5.00E-03	mg/kg-day	7E-02
				VANADIUM	5.94E+02	ug/l	3.25E-03	mg/kg-day		1/(mg/kg-day)		3.80E-02	mg/kg-day	9.00E-03	mg/kg-day	4E+00
				ZINC	3.78E+02	ug/l	2.07E-03	mg/kg-day		1/(mg/kg-day)		2.42E-02	mg/kg-day	3.00E-01	mg/kg-day	8E-02
				2,4,6-TRICHLOROPHENOL	3.00E+00	ug/l	1.64E-05	mg/kg-day	1.10E-02	1/(mg/kg-day)	2E-07	1.92E-04	mg/kg-day	1.00E-03	mg/kg-day	2E-01
				2,4-DICHLOROPHENOL	8.11E+00	ug/l	4.44E-05	mg/kg-day		1/(mg/kg-day)		5.18E-04	mg/kg-day	3.00E-03	mg/kg-day	2E-01
				2-CHLOROPHENOL	2.67E+01	ug/l	1.46E-04	mg/kg-day		1/(mg/kg-day)		1.70E-03	mg/kg-day	5.00E-03	mg/kg-day	3E-01
				2-METHYLNAPHTHALENE	6.62E+00	ug/l	3.63E-05	mg/kg-day		1/(mg/kg-day)		4.23E-04	mg/kg-day	4.00E-03	mg/kg-day	1E-01
				2-NITROPHENOL	6.00E+00	ug/l	3.29E-05	mg/kg-day		1/(mg/kg-day)		3.84E-04	mg/kg-day		mg/kg-day	
				4-CHLORO-3-METHYLPHENOL	4.00E+00	ug/l	2.19E-05	mg/kg-day		1/(mg/kg-day)		2.56E-04	mg/kg-day		mg/kg-day	
				4-METHYLPHENOL	8.83E+01	ug/l	4.84E-04	mg/kg-day		1/(mg/kg-day)		5.64E-03	mg/kg-day		mg/kg-day	
				4-NITROPHENOL	6.00E+00	ug/l	3.29E-05	mg/kg-day		1/(mg/kg-day)		3.84E-04	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.00E+00	ug/l	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-04	3.20E-04	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.00E+00	ug/l	5.48E-06	mg/kg-day		1/(mg/kg-day)		6.39E-05	mg/kg-day	3.00E-02	mg/kg-day	2E-03
				BENZO(K)FLUORANTHENE	2.00E+00	ug/l	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-06	1.28E-04	mg/kg-day		mg/kg-day	
				BIS(2-ETHYLHEXYL)PHTHALATE	3.90E+01	ug/l	2.14E-04	mg/kg-day	1.40E-02	1/(mg/kg-day)	3E-06	2.49E-03	mg/kg-day	2.00E-02	mg/kg-day	1E-01
				CHRYSENE	4.00E+00	ug/l	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	2.56E-04	mg/kg-day		mg/kg-day	
				DIBENZOFURAN	5.00E+00	ug/l	2.74E-05	mg/kg-day		1/(mg/kg-day)		3.20E-04	mg/kg-day	1.00E-03	mg/kg-day	3E-01
				HEXACHLOROBENZENE	2.00E+00	ug/l	1.10E-05	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-05	1.28E-04	mg/kg-day	8.00E-04	mg/kg-day	2E-01
				INDENO(1,2,3-CD)PYRENE	2.00E+00	ug/l	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-05	1.28E-04	mg/kg-day		mg/kg-day	
				NAPHTHALENE	1.15E+02	ug/l	6.31E-04	mg/kg-day		1/(mg/kg-day)		7.36E-03	mg/kg-day	2.00E-02	mg/kg-day	4E-01
				PHENANTHRENE	1.23E+01	ug/l	6.73E-05	mg/kg-day		1/(mg/kg-day)		7.86E-04	mg/kg-day	3.00E-02	mg/kg-day	3E-02
				1,1,2,2-TETRACHLOROETHANE	1.00E+00	ug/l	5.48E-06	mg/kg-day	2.00E-01	1/(mg/kg-day)	1E-06	6.39E-05	mg/kg-day		mg/kg-day	
				1,2,3-TRICHLOROBENZENE	1.50E+02	ug/l	8.22E-04	mg/kg-day		1/(mg/kg-day)		9.59E-03	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.15E+02	ug/l	6.28E-04	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-06	7.33E-03	mg/kg-day	1.00E-02	mg/kg-day	7E-01
				1,2-DICHLOROBENZENE	2.09E+03	ug/l	1.14E-02	mg/kg-day		1/(mg/kg-day)		1.33E-01	mg/kg-day	9.00E-02	mg/kg-day	1E+00
				1,2-DICHLOROETHANE	3.00E+00	ug/l	1.64E-05	mg/kg-day	9.10E-02	1/(mg/kg-day)	1E-06	1.92E-04	mg/kg-day	2.00E-02	mg/kg-day	1E-02
				1,2-DICHLOROPROPANE	2.17E+00	ug/l	1.19E-05	mg/kg-day	3.60E-02	1/(mg/kg-day)	4E-07	1.39E-04	mg/kg-day	9.00E-02	mg/kg-day	2E-03
				1,3-DICHLOROBENZENE	4.79E+02	ug/l	2.63E-03	mg/kg-day		1/(mg/kg-day)		3.06E-02	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	5.58E+03	ug/l	3.06E-02	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-04	3.57E-01	mg/kg-day	7.00E-02	mg/kg-day	5E+00
				ACETONE	3.90E+02	ug/l	2.14E-03	mg/kg-day		1/(mg/kg-day)		2.49E-02	mg/kg-day	9.00E-01	mg/kg-day	3E-02
				BENZENE	1.75E+04	ug/l	9.59E-02	mg/kg-day	5.50E-02	1/(mg/kg-day)	5E-03	1.12E+00	mg/kg-day	4.00E-03	mg/kg-day	3E+02
				CARBON DISULFIDE	5.21E+01	ug/l	2.85E-04	mg/kg-day		1/(mg/kg-day)		3.33E-03	mg/kg-day	1.00E-01	mg/kg-day	3E-02
				CHLOROBENZENE	1.70E+04	ug/l	9.31E-02	mg/kg-day		1/(mg/kg-day)		1.09E+00	mg/kg-day	2.00E-02	mg/kg-day	5E+01
				CHLOROFORM	8.04E+00	ug/l	4.41E-05	mg/kg-day		1/(mg/kg-day)		5.14E-04	mg/kg-day	1.00E-02	mg/kg-day	5E-02
				METHYLENE CHLORIDE	7.41E+01	ug/l	4.06E-04	mg/kg-day	7.50E-03	1/(mg/kg-day)	3E-06	4.73E-03	mg/kg-day	6.00E-02	mg/kg-day	8E-02
				TETRACHLOROETHENE	4.00E+00	ug/l	2.19E-05	mg/kg-day	5.40E-01	1/(mg/kg-day)	1E-05	2.56E-04	mg/kg-day	1.00E-02	mg/kg-day	3E-02
				TOLUENE	1.47E+04	ug/l	8.03E-02	mg/kg-day		1/(mg/kg-day)		9.37E-01	mg/kg-day	8.00E-02	mg/kg-day	1E+01
				XYLENES, TOTAL	7.16E+00	ug/l	3.92E-05	mg/kg-day		1/(mg/kg-day)		4.58E-04	mg/kg-day	2.00E-01	mg/kg-day	2E-03
			Exp. Route Total								**7E-03**					**4E+02**
		Exp. Point Total									**7E-03**					**4E+02**
	Exp. Medium Total										**7E-03**					**4E+02**
Medium Total											**7E-03**					**4E+02**
										Total of Receptor Risks Across All Media	**7E-03**			Total of Receptor Hazards Across All Media		**4E+02**

Notes:
(a) See Table 7.9 RME Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.9.RME Supplement A
CALCULATION OF CHEMICAL CANCER RISKS FOR COPC WITH A MUTAGENIC MODE OF ACTION
REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NY

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child (Age 0-6 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					
							Intake (1)			CSF/Unit Risk		
							Value		Units	Value		Units	Cancer Risk
					Value	Units	0-2 yrs	2-6 yrs		0-2 yrs (ADAF=10)	2-6 yrs (ADAF=3)		
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	Ingestion	BENZO(B)FLUORANTHENE	5.00E+00	µg/L	1.51E-05	2.53E-05	mg/kg/day	7.30E+00	2.19E+00	1/(mg/kg-day)	2E-04
				BENZO(K)FLUORANTHENE	2.00E+00	µg/L	6.03E-06	1.01E-05	mg/kg/day	7.30E-01	2.19E-01	1/(mg/kg-day)	7E-06
				CHRYSENE	4.00E+00	µg/L	1.21E-05	2.03E-05	mg/kg/day	7.30E-02	2.19E-02	1/(mg/kg-day)	1E-06
				INDENO(1,2,3-CD)PYRENE	2.00E+00	µg/L	6.03E-06	1.01E-05	mg/kg/day	7.30E+00	2.19E+00	1/(mg/kg-day)	7E-05

(1) - Intake equations derived from Table 4 Series.

Attachment A
RAGS Table 7 CT Series

TABLE 7.1a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Dermal	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	3.22E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-07	2.51E-11	mg/kg-day	1.00E-09	mg/kg-day	3E-02
				ALUMINUM	8.34E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.63E+01	mg/kg	1.26E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	9.81E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				BARIUM	3.36E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.88E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.27E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.47E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	9.52E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.69E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	2.25E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	6.93E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-07	5.39E-07	mg/kg-day	2.00E-05	mg/kg-day	3E-02
				DELTA-BHC	1.90E+00	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg		mg/kg-day	1.60E+01	1/(mg/kg-day)			mg/kg-day	5.00E-05	mg/kg-day	
				ACENAPHTHYLENE	2.09E-01	mg/kg	4.34E-09	mg/kg-day		1/(mg/kg-day)		3.37E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-07	1.46E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-06	1.87E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-07	2.02E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	2.16E-07	mg/kg-day		1/(mg/kg-day)		1.68E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-08	9.20E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	3.65E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	1.14E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-07	8.86E-07	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	2.87E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	2E-09	2.24E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-07	1.65E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	3.06E-07	mg/kg-day		1/(mg/kg-day)		2.38E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	6.03E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	1.39E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**9E-06**					**6E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	1.69E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-06	1.31E-10	mg/kg-day	1.00E-09	mg/kg-day	1E-01
				ALUMINUM	8.34E+03	mg/kg	2.09E-04	mg/kg-day		1/(mg/kg-day)		1.63E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				ARSENIC	2.63E+01	mg/kg	6.59E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	5.13E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				BARIUM	3.36E+02	mg/kg	8.42E-06	mg/kg-day		1/(mg/kg-day)		6.55E-05	mg/kg-day	2.00E-01	mg/kg-day	3E-04
				CHROMIUM	1.88E+01	mg/kg	4.72E-07	mg/kg-day		1/(mg/kg-day)		3.67E-06	mg/kg-day	3.00E-03	mg/kg-day	1E-03
				IRON	2.27E+04	mg/kg	5.70E-04	mg/kg-day		1/(mg/kg-day)		4.43E-03	mg/kg-day	7.00E-01	mg/kg-day	6E-03
				MANGANESE	3.47E+02	mg/kg	8.69E-06	mg/kg-day		1/(mg/kg-day)		6.76E-05	mg/kg-day	1.40E-01	mg/kg-day	5E-04
				MERCURY	9.52E+02	mg/kg	2.38E-05	mg/kg-day		1/(mg/kg-day)		1.85E-04	mg/kg-day	3.00E-04	mg/kg-day	6E-01
				NICKEL	3.69E+03	mg/kg	9.24E-05	mg/kg-day		1/(mg/kg-day)		7.19E-04	mg/kg-day	2.00E-02	mg/kg-day	4E-02
				VANADIUM	2.25E+01	mg/kg	5.63E-07	mg/kg-day		1/(mg/kg-day)		4.38E-06	mg/kg-day	9.00E-03	mg/kg-day	5E-04
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	7.77E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	6.04E-07	mg/kg-day	2.00E-05	mg/kg-day	3E-02
				DELTA-BHC	1.90E+00	mg/kg	4.76E-08	mg/kg-day	6.30E+00	1/(mg/kg-day)	3E-07	3.70E-07	mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg	9.27E-08	mg/kg-day	1.60E+01	1/(mg/kg-day)	1E-06	7.21E-07	mg/kg-day	5.00E-05	mg/kg-day	1E-02
				ACENAPHTHYLENE	2.09E-01	mg/kg	5.24E-09	mg/kg-day		1/(mg/kg-day)		4.07E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-07	1.77E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-06	2.26E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-07	2.44E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	2.60E-07	mg/kg-day		1/(mg/kg-day)		2.02E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-08	1.11E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	4.40E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	1.79E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	3E-07	1.39E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	4.51E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	4E-09	3.51E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-07	1.99E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	3.69E-07	mg/kg-day		1/(mg/kg-day)		2.87E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg	1.05E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	4E-10	8.14E-07	mg/kg-day	1.00E-02	mg/kg-day	8E-05

TABLE 7.1a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Ingestion	1,2-DICHLOROBENZENE	3.90E+02	mg/kg	9.77E-06	mg/kg-day		1/(mg/kg-day)		7.60E-05	mg/kg-day	9.00E-02	mg/kg-day	8E-04
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg	2.10E-07	mg/kg-day		1/(mg/kg-day)		1.64E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg	6.11E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	3E-07	4.75E-04	mg/kg-day	7.00E-02	mg/kg-day	7E-03
				BENZENE	6.03E-03	mg/kg	1.51E-10	mg/kg-day	5.50E-02	1/(mg/kg-day)	8E-12	1.17E-09	mg/kg-day	4.00E-03	mg/kg-day	3E-07
				CHLOROBENZENE	1.39E+02	mg/kg	3.48E-06	mg/kg-day		1/(mg/kg-day)		2.70E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
			Exp. Route Total								**2E-05**					**9E-01**
		Exp. Point Total									**2E-05**					**9E-01**
	Exp. Medium Total										**2E-05**					**9E-01**
Medium Total											**2E-05**					**9E-01**
										Total of Receptor Risks Across All Media	**2E-05**				Total of Receptor Hazards Across All Media	**9E-01**

Notes:
(a) See Table 7.1 CT Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1b CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	On-Site Ditches
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	On-Site Ditches	Dermal	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	3.61E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-06	2.81E-10	mg/kg-day	1.00E-09	mg/kg-day	3E-01
				ARSENIC	3.99E+01	mg/kg	1.91E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-07	1.49E-06	mg/kg-day	3.00E-04	mg/kg-day	5E-03
				CHROMIUM	1.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COPPER	3.26E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	5.39E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	6.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.56E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	6.39E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	3.13E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	6E-07	2.43E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	3.53E-09	mg/kg-day		1/(mg/kg-day)		2.74E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-07	3.39E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	9E-07	3.23E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-07	4.84E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	2.91E-08	mg/kg-day		1/(mg/kg-day)		2.26E-07	mg/kg-day	3.00E-02	mg/kg-day	8E-06
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	7.10E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-08	1.94E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	4.15E-08	mg/kg-day		1/(mg/kg-day)		3.23E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				METHYL MERCURY	6.86E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-04	mg/kg-day	
			Exp. Route Total								**8E-06**					**4E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	1.89E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-05	1.47E-09	mg/kg-day	1.00E-09	mg/kg-day	1E+00
				ARSENIC	3.99E+01	mg/kg	9.99E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	7.77E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				CHROMIUM	1.92E+02	mg/kg	4.81E-06	mg/kg-day		1/(mg/kg-day)		3.74E-05	mg/kg-day	3.00E-03	mg/kg-day	1E-02
				COPPER	3.26E+02	mg/kg	8.17E-06	mg/kg-day		1/(mg/kg-day)		6.35E-05	mg/kg-day	4.00E-02	mg/kg-day	2E-03
				IRON	5.39E+04	mg/kg	1.35E-03	mg/kg-day		1/(mg/kg-day)		1.05E-02	mg/kg-day	7.00E-01	mg/kg-day	2E-02
				LEAD	6.92E+02	mg/kg	1.73E-05	mg/kg-day		1/(mg/kg-day)		1.35E-04	mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg	1.08E-05	mg/kg-day		1/(mg/kg-day)		8.42E-05	mg/kg-day	1.40E-01	mg/kg-day	6E-04
				MERCURY	3.56E+03	mg/kg	8.92E-05	mg/kg-day		1/(mg/kg-day)		6.94E-04	mg/kg-day	3.00E-04	mg/kg-day	2E+00
				NICKEL	3.01E+02	mg/kg	7.54E-06	mg/kg-day		1/(mg/kg-day)		5.86E-05	mg/kg-day	2.00E-02	mg/kg-day	3E-03
				VANADIUM	6.39E+01	mg/kg	1.60E-06	mg/kg-day		1/(mg/kg-day)		1.24E-05	mg/kg-day	9.00E-03	mg/kg-day	1E-03
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	3.51E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	7E-07	2.73E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	4.26E-09	mg/kg-day		1/(mg/kg-day)		3.31E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-07	4.09E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	3.90E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	5.84E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	3.51E-08	mg/kg-day		1/(mg/kg-day)		2.73E-07	mg/kg-day	3.00E-02	mg/kg-day	9E-06
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	8.57E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-08	2.34E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	5.01E-08	mg/kg-day		1/(mg/kg-day)		3.90E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				METHYL MERCURY	6.86E-01	mg/kg	1.72E-08	mg/kg-day		1/(mg/kg-day)		1.34E-07	mg/kg-day	1.00E-04	mg/kg-day	1E-03
			Exp. Route Total								**3E-05**					**4E+00**
		Exp. Point Total									**4E-05**					**4E+00**
	Exp. Medium Total										**4E-05**					**4E+00**
Medium Total											**4E-05**					**4E+00**
									Total of Receptor Risks Across All Media		**4E-05**			Total of Receptor Hazards Across All Media		**4E+00**

Notes:
(a) See Table 7.1 CT Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1c CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Former Chlorination Building
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	Dermal	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	3.00E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-05	2.33E-09	mg/kg-day	1.00E-09	mg/kg-day	2E+00
				ARSENIC	1.04E+01	mg/kg	4.98E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-08	3.88E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				CHROMIUM	1.35E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	8.57E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.38E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	8.20E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	1.23E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	9.56E-07	mg/kg-day	2.00E-05	mg/kg-day	5E-02
				ACENAPHTHYLENE	4.00E-02	mg/kg	8.30E-10	mg/kg-day		1/(mg/kg-day)		6.46E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-08	2.58E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-07	2.42E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-07	4.52E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	2.28E-08	mg/kg-day		1/(mg/kg-day)		1.78E-07	mg/kg-day	3.00E-02	mg/kg-day	6E-06
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-07	5.01E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-08	1.42E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	3.94E-08	mg/kg-day		1/(mg/kg-day)		3.07E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
			Exp. Route Total								**5E-05**					**2E+00**
			Ingestion	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	1.57E-09	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-04	1.22E-08	mg/kg-day	1.00E-09	mg/kg-day	1E+01
				ARSENIC	1.04E+01	mg/kg	2.61E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-07	2.03E-06	mg/kg-day	3.00E-04	mg/kg-day	7E-03
				CHROMIUM	1.35E+01	mg/kg	3.38E-07	mg/kg-day		1/(mg/kg-day)		2.63E-06	mg/kg-day	3.00E-03	mg/kg-day	9E-04
				IRON	8.57E+03	mg/kg	2.15E-04	mg/kg-day		1/(mg/kg-day)		1.67E-03	mg/kg-day	7.00E-01	mg/kg-day	2E-03
				MANGANESE	3.38E+02	mg/kg	8.47E-06	mg/kg-day		1/(mg/kg-day)		6.59E-05	mg/kg-day	1.40E-01	mg/kg-day	5E-04
				MERCURY	8.20E+00	mg/kg	2.05E-07	mg/kg-day		1/(mg/kg-day)		1.60E-06	mg/kg-day	3.00E-04	mg/kg-day	5E-03
				VANADIUM	1.24E+01	mg/kg	3.11E-07	mg/kg-day		1/(mg/kg-day)		2.42E-06	mg/kg-day	9.00E-03	mg/kg-day	3E-04
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	1.38E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-07	1.07E-06	mg/kg-day	2.00E-05	mg/kg-day	5E-02
				ACENAPHTHYLENE	4.00E-02	mg/kg	1.00E-09	mg/kg-day		1/(mg/kg-day)		7.79E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	9E-08	3.12E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	8E-07	2.92E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	5.46E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	2.76E-08	mg/kg-day		1/(mg/kg-day)		2.14E-07	mg/kg-day	3.00E-02	mg/kg-day	7E-06
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	6.04E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-08	1.71E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	4.76E-08	mg/kg-day		1/(mg/kg-day)		3.70E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg	5.01E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-09	3.90E-06	mg/kg-day	1.00E-02	mg/kg-day	4E-04
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg	1.95E-06	mg/kg-day		1/(mg/kg-day)		1.52E-05	mg/kg-day	9.00E-02	mg/kg-day	2E-04
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg	4.51E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-09	3.51E-06	mg/kg-day	7.00E-02	mg/kg-day	5E-05
			Exp. Route Total								**2E-04**					**1E+01**
		Exp. Point Total									**3E-04**					**1E+01**
	Exp. Medium Total										**3E-04**					**1E+01**
Medium Total											**3E-04**					**1E+01**
										Total of Receptor Risks Across All Media	**3E-04**			Total of Receptor Hazards Across All Media		**1E+01**

Notes:
(a) See Table 7.1 CT Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1d CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	3.34E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-07	2.59E-11	mg/kg-day	1.00E-09	mg/kg-day	3E-02
				ALUMINUM	7.77E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.76E+01	mg/kg	1.32E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	1.03E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				BARIUM	6.73E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.83E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.64E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	5.66E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.11E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.06E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	7.82E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	6.09E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				ALDRIN	1.08E-01	mg/kg		mg/kg-day	1.70E+01	1/(mg/kg-day)			mg/kg-day	3.00E-05	mg/kg-day	
				DELTA-BHC	3.60E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ENDOSULFAN I	3.20E-03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-03	mg/kg-day	
				HEPTACHLOR	1.20E-01	mg/kg		mg/kg-day	4.50E+00	1/(mg/kg-day)			mg/kg-day	5.00E-04	mg/kg-day	
				ACENAPHTHYLENE	4.90E-01	mg/kg	1.02E-08	mg/kg-day		1/(mg/kg-day)		7.91E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	1.08E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-06	1.26E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-07	2.10E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.80E+00	mg/kg	1.20E-07	mg/kg-day		1/(mg/kg-day)		9.36E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-08	5.33E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	3.88E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.72E+00	mg/kg	5.94E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-07	4.62E-07	mg/kg-day	8.00E-04	mg/kg-day	6E-04
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	8.23E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	8.80E+00	mg/kg	1.83E-07	mg/kg-day		1/(mg/kg-day)		1.42E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				BENZENE	2.00E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				TRICHLOROETHENE	3.79E-02	mg/kg		mg/kg-day	4.00E-01	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
			Exp. Route Total								**8E-06**					**3E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	1.74E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-06	1.36E-10	mg/kg-day	1.00E-09	mg/kg-day	1E-01
				ALUMINUM	7.77E+03	mg/kg	1.95E-04	mg/kg-day		1/(mg/kg-day)		1.51E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				ARSENIC	2.76E+01	mg/kg	6.91E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	5.38E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				BARIUM	6.73E+02	mg/kg	1.69E-05	mg/kg-day		1/(mg/kg-day)		1.31E-04	mg/kg-day	2.00E-01	mg/kg-day	7E-04
				CHROMIUM	1.83E+02	mg/kg	4.58E-06	mg/kg-day		1/(mg/kg-day)		3.57E-05	mg/kg-day	3.00E-03	mg/kg-day	1E-02
				IRON	2.64E+04	mg/kg	6.61E-04	mg/kg-day		1/(mg/kg-day)		5.14E-03	mg/kg-day	7.00E-01	mg/kg-day	7E-03
				LEAD	5.66E+02	mg/kg	1.42E-05	mg/kg-day		1/(mg/kg-day)		1.10E-04	mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg	7.41E-06	mg/kg-day		1/(mg/kg-day)		5.77E-05	mg/kg-day	1.40E-01	mg/kg-day	4E-04
				MERCURY	1.11E+03	mg/kg	2.77E-05	mg/kg-day		1/(mg/kg-day)		2.15E-04	mg/kg-day	3.00E-04	mg/kg-day	7E-01
				VANADIUM	1.06E+02	mg/kg	2.66E-06	mg/kg-day		1/(mg/kg-day)		2.07E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	8.77E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	6.82E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				ALDRIN	1.08E-01	mg/kg	2.71E-09	mg/kg-day	1.70E+01	1/(mg/kg-day)	5E-08	2.10E-08	mg/kg-day	3.00E-05	mg/kg-day	7E-04
				DELTA-BHC	3.60E-03	mg/kg	9.02E-11	mg/kg-day	6.30E+00	1/(mg/kg-day)	6E-10	7.01E-10	mg/kg-day		mg/kg-day	
				ENDOSULFAN I	3.20E-03	mg/kg	8.02E-11	mg/kg-day		1/(mg/kg-day)		6.23E-10	mg/kg-day	6.00E-03	mg/kg-day	1E-07
				HEPTACHLOR	1.20E-01	mg/kg	3.01E-09	mg/kg-day	4.50E+00	1/(mg/kg-day)	1E-08	2.34E-08	mg/kg-day	5.00E-04	mg/kg-day	5E-05
				ACENAPHTHYLENE	4.90E-01	mg/kg	1.23E-08	mg/kg-day		1/(mg/kg-day)		9.55E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-07	1.31E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-06	1.52E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-07	2.53E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.80E+00	mg/kg	1.45E-07	mg/kg-day		1/(mg/kg-day)		1.13E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-08	6.43E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	4.68E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.72E+00	mg/kg	9.32E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-07	7.25E-07	mg/kg-day	8.00E-04	mg/kg-day	9E-04
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	9.94E-07	mg/kg-day		mg/kg-day	
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Ingestion	PHENANTHRENE	8.80E+00	mg/kg	2.20E-07	mg/kg-day		1/(mg/kg-day)		1.71E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				BENZENE	2.00E-03	mg/kg	5.01E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-12	3.90E-10	mg/kg-day	4.00E-03	mg/kg-day	1E-07
				TRICHLOROETHENE	3.79E-02	mg/kg	9.49E-10	mg/kg-day	4.00E-01	1/(mg/kg-day)	4E-10	7.38E-09	mg/kg-day		mg/kg-day	
			Exp. Route Total								**1E-05**					**1E+00**
		Exp. Point Total									**2E-05**					**2E+00**
	Exp. Medium Total										**2E-05**					**2E+00**

TABLE 7.1d CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Medium Total											**2E-05**					**2E+00**
										Total of Receptor Risks Across All Media	**2E-05**				Total of Receptor Hazards Across All Media	**2E+00**

Notes:
(a) See Table 7.1 CT Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1e CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	State Fair Blvd/Northwest Off-Site/ Outfall 004 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	2.53E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-07	1.97E-11	mg/kg-day	1.00E-09	mg/kg-day	2E-02
				MERCURY	1.60E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	3.35E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	7E-08	2.61E-07	mg/kg-day	2.00E-05	mg/kg-day	1E-02
				1,2,3-TRICHLOROBENZENE	1.20E-02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				BENZENE	1.40E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**4E-07**					**3E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	1.32E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-06	1.03E-10	mg/kg-day	1.00E-09	mg/kg-day	1E-01
				MERCURY	1.60E+02	mg/kg	4.01E-06	mg/kg-day		1/(mg/kg-day)		3.12E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	3.76E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	8E-08	2.92E-07	mg/kg-day	2.00E-05	mg/kg-day	1E-02
				1,2,3-TRICHLOROBENZENE	1.20E-02	mg/kg	3.01E-10	mg/kg-day		1/(mg/kg-day)		2.34E-09	mg/kg-day		mg/kg-day	
				BENZENE	1.40E-03	mg/kg	3.51E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-12	2.73E-10	mg/kg-day	4.00E-03	mg/kg-day	7E-08
			Exp. Route Total								**2E-06**					**2E-01**
		Exp. Point Total									**3E-06**					**3E-01**
	Exp. Medium Total										**3E-06**					**3E-01**
Medium Total											**3E-06**					**3E-01**
							Total of Receptor Risks Across All Media				**3E-06**	Total of Receptor Hazards Across All Media				**3E-01**

TABLE 7.1f CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
LAKESHORE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Lakeshore Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2ft)	Lakeshore Area	Dermal	2,3,7,8-TCDD Equivalent	5.90E-05	mg/kg	2.83E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-08	2.20E-12	mg/kg-day	1.00E-09	mg/kg-day	2E-03
				ALUMINUM	8.21E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	1.11E+01	mg/kg	5.30E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-08	4.12E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				CHROMIUM	4.42E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	1.75E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.91E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.05E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	2.02E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				ZINC	1.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	3.00E-01	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.70E+00	mg/kg	8.27E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	6.43E-07	mg/kg-day	2.00E-05	mg/kg-day	3E-02
				ENDOSULFAN I	2.50E-02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-03	mg/kg-day	
				ACENAPHTHYLENE	1.38E+00	mg/kg	2.86E-08	mg/kg-day		1/(mg/kg-day)		2.23E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.10E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-07	1.78E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	8.90E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-06	1.44E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-07	1.94E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.36E+00	mg/kg	4.91E-08	mg/kg-day		1/(mg/kg-day)		3.82E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-08	4.87E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-07	1.94E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-07	3.88E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.70E+01	mg/kg	5.61E-07	mg/kg-day		1/(mg/kg-day)		4.36E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
			Exp. Route Total								**6E-06**					**4E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	5.90E-05	mg/kg	1.48E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-07	1.15E-11	mg/kg-day	1.00E-09	mg/kg-day	1E-02
				ALUMINUM	8.21E+03	mg/kg	2.06E-04	mg/kg-day		1/(mg/kg-day)		1.60E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				ARSENIC	1.11E+01	mg/kg	2.77E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-07	2.15E-06	mg/kg-day	3.00E-04	mg/kg-day	7E-03
				CHROMIUM	4.42E+01	mg/kg	1.11E-06	mg/kg-day		1/(mg/kg-day)		8.62E-06	mg/kg-day	3.00E-03	mg/kg-day	3E-03
				IRON	1.75E+04	mg/kg	4.38E-04	mg/kg-day		1/(mg/kg-day)		3.41E-03	mg/kg-day	7.00E-01	mg/kg-day	5E-03
				MANGANESE	3.91E+02	mg/kg	9.79E-06	mg/kg-day		1/(mg/kg-day)		7.61E-05	mg/kg-day	1.40E-01	mg/kg-day	5E-04
				MERCURY	3.05E+00	mg/kg	7.65E-08	mg/kg-day		1/(mg/kg-day)		5.95E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				VANADIUM	2.02E+01	mg/kg	5.06E-07	mg/kg-day		1/(mg/kg-day)		3.93E-06	mg/kg-day	9.00E-03	mg/kg-day	4E-04
				ZINC	1.01E+02	mg/kg	2.52E-06	mg/kg-day		1/(mg/kg-day)		1.96E-05	mg/kg-day	3.00E-01	mg/kg-day	7E-05
				HIGHLY CHLORINATED PCBs	3.70E+00	mg/kg	9.27E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	7.21E-07	mg/kg-day	2.00E-05	mg/kg-day	4E-02
				ENDOSULFAN I	2.50E-02	mg/kg	6.26E-10	mg/kg-day		1/(mg/kg-day)		4.87E-09	mg/kg-day	6.00E-03	mg/kg-day	8E-07
				ACENAPHTHYLENE	1.38E+00	mg/kg	3.46E-08	mg/kg-day		1/(mg/kg-day)		2.69E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.10E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-07	2.14E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	8.90E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-06	1.73E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-07	2.34E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.36E+00	mg/kg	5.92E-08	mg/kg-day		1/(mg/kg-day)		4.60E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-08	5.88E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-07	2.34E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-07	4.69E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.70E+01	mg/kg	6.76E-07	mg/kg-day		1/(mg/kg-day)		5.26E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
			Exp. Route Total								**8E-06**					**7E-02**
		Exp. Point Total									**1E-05**					**1E-01**
	Exp. Medium Total										**1E-05**					**1E-01**
Medium Total											**1E-05**					**1E-01**
										Total of Receptor Risks Across All Media	**1E-05**			Total of Receptor Hazards Across All Media		**1E-01**

Notes:
(a) See Table 7.1 CT Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1g CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Petroleum Storage Area	Dermal	ARSENIC	6.76E+01	mg/kg	3.24E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-07	2.52E-06	mg/kg-day	3.00E-04	mg/kg-day	8E-03
				CHROMIUM	2.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.86E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	4.86E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.42E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	2.01E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	1.61E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-08	1.25E-07	mg/kg-day	2.00E-05	mg/kg-day	6E-03
				DELTA-BHC	1.20E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	6.90E-01	mg/kg	1.43E-08	mg/kg-day		1/(mg/kg-day)		1.11E-07	mg/kg-day		mg/kg-day	
				BENZ(OA)ANTHRACENE	7.30E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	1.18E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.00E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-06	1.13E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-07	1.61E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	6.70E+00	mg/kg	1.39E-07	mg/kg-day		1/(mg/kg-day)		1.08E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-08	4.52E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	8E-07	2.74E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	9.85E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.40E+00	mg/kg	9.13E-08	mg/kg-day		1/(mg/kg-day)		7.10E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZENE	8.60E-02	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**6E-06**					**1E-02**
			Ingestion	ARSENIC	6.76E+01	mg/kg	1.69E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-06	1.32E-05	mg/kg-day	3.00E-04	mg/kg-day	4E-02
				CHROMIUM	2.80E+01	mg/kg	7.01E-07	mg/kg-day		1/(mg/kg-day)		5.46E-06	mg/kg-day	3.00E-03	mg/kg-day	2E-03
				IRON	2.86E+04	mg/kg	7.16E-04	mg/kg-day		1/(mg/kg-day)		5.57E-03	mg/kg-day	7.00E-01	mg/kg-day	8E-03
				MANGANESE	4.86E+02	mg/kg	1.22E-05	mg/kg-day		1/(mg/kg-day)		9.47E-05	mg/kg-day	1.40E-01	mg/kg-day	7E-04
				MERCURY	1.42E+01	mg/kg	3.56E-07	mg/kg-day		1/(mg/kg-day)		2.77E-06	mg/kg-day	3.00E-04	mg/kg-day	9E-03
				VANADIUM	2.01E+01	mg/kg	5.03E-07	mg/kg-day		1/(mg/kg-day)		3.92E-06	mg/kg-day	9.00E-03	mg/kg-day	4E-04
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	1.80E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-08	1.40E-07	mg/kg-day	2.00E-05	mg/kg-day	7E-03
				DELTA-BHC	1.20E-03	mg/kg	3.01E-11	mg/kg-day	6.30E+00	1/(mg/kg-day)	2E-10	2.34E-10	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	6.90E-01	mg/kg	1.73E-08	mg/kg-day		1/(mg/kg-day)		1.34E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	7.30E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-07	1.42E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.00E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-06	1.36E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-07	1.95E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	6.70E+00	mg/kg	1.68E-07	mg/kg-day		1/(mg/kg-day)		1.31E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-08	5.46E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	9E-07	3.31E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	1.19E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.40E+00	mg/kg	1.10E-07	mg/kg-day		1/(mg/kg-day)		8.57E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZENE	8.60E-02	mg/kg	2.15E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-10	1.68E-08	mg/kg-day	4.00E-03	mg/kg-day	4E-06
			Exp. Route Total								**9E-06**					**7E-02**
		Exp. Point Total									**1E-05**					**9E-02**
	Exp. Medium Total										**1E-05**					**9E-02**
Medium Total											**1E-05**					**9E-02**
										Total of Receptor Risks Across All Media	**1E-05**				Total of Receptor Hazards Across All Media	**9E-02**

Notes:
(a) See Table 7.1 CT Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1h CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area	Dermal	ARSENIC	1.37E+01	mg/kg	6.56E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-07	5.10E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				CHROMIUM	2.63E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.35E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	2.77E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.13E+02	mg/kg	2.53E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-06	1.96E-05	mg/kg-day	2.00E-05	mg/kg-day	1E+00
				ACENAPHTHYLENE	3.40E-01	mg/kg	7.06E-09	mg/kg-day		1/(mg/kg-day)		5.49E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.34E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-07	2.17E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-06	1.24E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	8E-07	2.88E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.36E+00	mg/kg	1.11E-07	mg/kg-day		1/(mg/kg-day)		8.66E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-08	8.68E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	8E-07	2.92E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.94E+00	mg/kg	4.69E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	7E-08	3.65E-07	mg/kg-day	8.00E-04	mg/kg-day	5E-04
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	1.01E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.50E+01	mg/kg	5.19E-07	mg/kg-day		1/(mg/kg-day)		4.04E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				1,2,4-TRICHLOROBENZENE	1.35E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	5.94E+00	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	8.00E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**1E-05**					**1E+00**
			Ingestion	ARSENIC	1.37E+01	mg/kg	3.43E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-07	2.67E-06	mg/kg-day	3.00E-04	mg/kg-day	9E-03
				CHROMIUM	2.63E+01	mg/kg	6.58E-07	mg/kg-day		1/(mg/kg-day)		5.11E-06	mg/kg-day	3.00E-03	mg/kg-day	2E-03
				IRON	2.35E+04	mg/kg	5.88E-04	mg/kg-day		1/(mg/kg-day)		4.58E-03	mg/kg-day	7.00E-01	mg/kg-day	7E-03
				MANGANESE	3.32E+02	mg/kg	8.32E-06	mg/kg-day		1/(mg/kg-day)		6.47E-05	mg/kg-day	1.40E-01	mg/kg-day	5E-04
				MERCURY	2.77E+00	mg/kg	6.93E-08	mg/kg-day		1/(mg/kg-day)		5.39E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				VANADIUM	1.24E+01	mg/kg	3.10E-07	mg/kg-day		1/(mg/kg-day)		2.41E-06	mg/kg-day	9.00E-03	mg/kg-day	3E-04
				HIGHLY CHLORINATED PCBs	1.13E+02	mg/kg	2.83E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	6E-06	2.20E-05	mg/kg-day	2.00E-05	mg/kg-day	1E+00
				ACENAPHTHYLENE	3.40E-01	mg/kg	8.52E-09	mg/kg-day		1/(mg/kg-day)		6.62E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.34E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-07	2.62E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.70E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	4E-06	1.50E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	3.47E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.36E+00	mg/kg	1.34E-07	mg/kg-day		1/(mg/kg-day)		1.04E-06	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-08	1.05E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	3.52E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.94E+00	mg/kg	7.35E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-07	5.72E-07	mg/kg-day	8.00E-04	mg/kg-day	7E-04
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	1.21E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.50E+01	mg/kg	6.26E-07	mg/kg-day		1/(mg/kg-day)		4.87E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				1,2,4-TRICHLOROBENZENE	1.35E+01	mg/kg	3.38E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	1E-09	2.63E-06	mg/kg-day	1.00E-02	mg/kg-day	3E-04
				1,4-DICHLOROBENZENE	5.94E+00	mg/kg	1.49E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	8E-10	1.16E-06	mg/kg-day	7.00E-02	mg/kg-day	2E-05
				BENZENE	8.00E-03	mg/kg	2.00E-10	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-11	1.56E-09	mg/kg-day	4.00E-03	mg/kg-day	4E-07
			Exp. Route Total								**1E-05**					**1E+00**
		Exp. Point Total									**2E-05**					**2E+00**
	Exp. Medium Total										**2E-05**					**2E+00**
Medium Total											**2E-05**					**2E+00**
										Total of Receptor Risks Across All Media	**2E-05**				Total of Receptor Hazards Across All Media	**2E+00**

Notes:
(a) See Table 7.1 CT Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1i CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment (0-1 ft bgs)	Tributary 5A	Dermal	2,3,7,8-TCDD Equivalent	2.66E-05	mg/kg	1.27E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-08	9.91E-13	mg/kg-day	1.00E-09	mg/kg-day	1E-03
				ALUMINUM	8.08E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ANTIMONY	2.56E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-05	mg/kg-day	
				ARSENIC	3.36E+01	mg/kg	1.61E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	1.25E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				BARIUM	9.29E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.24E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COBALT	5.46E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				COPPER	2.88E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	1.58E+05	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	4.10E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	1.24E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				NICKEL	1.71E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				SELENIUM	2.33E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.00E-03	mg/kg-day	
				VANADIUM	9.67E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.60E+00	mg/kg	1.25E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-07	9.74E-07	mg/kg-day	2.00E-05	mg/kg-day	5E-02
				ACENAPHTHYLENE	4.63E-01	mg/kg	9.61E-09	mg/kg-day		1/(mg/kg-day)		7.48E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.26E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-07	5.27E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	4.60E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-06	7.43E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	9.26E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.25E+00	mg/kg	4.68E-08	mg/kg-day		1/(mg/kg-day)		3.64E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-08	3.67E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	5E-07	1.78E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-07	3.38E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.86E+00	mg/kg	1.01E-07	mg/kg-day		1/(mg/kg-day)		7.85E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZENE	1.30E+01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**4E-06**					**5E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	2.66E-05	mg/kg	6.67E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-07	5.18E-12	mg/kg-day	1.00E-09	mg/kg-day	5E-03
				ALUMINUM	8.08E+03	mg/kg	2.02E-04	mg/kg-day		1/(mg/kg-day)		1.57E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				ANTIMONY	2.56E+01	mg/kg	6.42E-07	mg/kg-day		1/(mg/kg-day)		5.00E-06	mg/kg-day	4.00E-04	mg/kg-day	1E-02
				ARSENIC	3.36E+01	mg/kg	8.42E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	6.55E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				BARIUM	9.29E+02	mg/kg	2.33E-05	mg/kg-day		1/(mg/kg-day)		1.81E-04	mg/kg-day	2.00E-01	mg/kg-day	9E-04
				CHROMIUM	1.24E+04	mg/kg	3.11E-04	mg/kg-day		1/(mg/kg-day)		2.42E-03	mg/kg-day	3.00E-03	mg/kg-day	8E-01
				COBALT	5.46E+03	mg/kg	1.37E-04	mg/kg-day		1/(mg/kg-day)		1.06E-03	mg/kg-day		mg/kg-day	
				COPPER	2.88E+02	mg/kg	7.20E-06	mg/kg-day		1/(mg/kg-day)		5.60E-05	mg/kg-day	4.00E-02	mg/kg-day	1E-03
				IRON	1.58E+05	mg/kg	3.96E-03	mg/kg-day		1/(mg/kg-day)		3.08E-02	mg/kg-day	7.00E-01	mg/kg-day	4E-02
				LEAD	4.10E+03	mg/kg	1.03E-04	mg/kg-day		1/(mg/kg-day)		7.99E-04	mg/kg-day		mg/kg-day	
				MANGANESE	1.24E+03	mg/kg	3.12E-05	mg/kg-day		1/(mg/kg-day)		2.42E-04	mg/kg-day	1.40E-01	mg/kg-day	2E-03
				NICKEL	1.71E+03	mg/kg	4.28E-05	mg/kg-day		1/(mg/kg-day)		3.33E-04	mg/kg-day	2.00E-02	mg/kg-day	2E-02
				SELENIUM	2.33E+01	mg/kg	5.84E-07	mg/kg-day		1/(mg/kg-day)		4.55E-06	mg/kg-day	5.00E-03	mg/kg-day	9E-04
				VANADIUM	9.67E+03	mg/kg	2.42E-04	mg/kg-day		1/(mg/kg-day)		1.88E-03	mg/kg-day	9.00E-03	mg/kg-day	2E-01
				HIGHLY CHLORINATED PCBs	5.60E+00	mg/kg	1.40E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-07	1.09E-06	mg/kg-day	2.00E-05	mg/kg-day	5E-02
				ACENAPHTHYLENE	4.63E-01	mg/kg	1.16E-08	mg/kg-day		1/(mg/kg-day)		9.02E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.26E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-07	6.36E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	4.60E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-06	8.96E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	3E-07	1.12E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.25E+00	mg/kg	5.64E-08	mg/kg-day		1/(mg/kg-day)		4.39E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-08	4.43E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	6E-07	2.14E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-07	4.07E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.86E+00	mg/kg	1.22E-07	mg/kg-day		1/(mg/kg-day)		9.47E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZENE	1.30E+01	mg/kg	3.26E-07	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-08	2.53E-06	mg/kg-day	4.00E-03	mg/kg-day	6E-04
			Exp. Route Total								**5E-06**					**1E+00**
		Exp. Point Total									**9E-06**					**1E+00**
	Exp. Medium Total										**9E-06**					**1E+00**
Medium Total											**9E-06**					**1E+00**

TABLE 7.1i CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Water	Surface Water	Tributary 5A	Dermal	ANTIMONY	2.77E+00	ug/L	5.90E-09	mg/kg-day		1/(mg/kg-day)		4.59E-08	mg/kg-day	6.00E-05	mg/kg-day	8E-04
				ARSENIC	4.61E+00	ug/L	9.82E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-08	7.63E-08	mg/kg-day	3.00E-04	mg/kg-day	3E-04
				BARIUM	1.80E+02	ug/L	3.83E-07	mg/kg-day		1/(mg/kg-day)		2.98E-06	mg/kg-day	1.40E-02	mg/kg-day	2E-04
				CHROMIUM	3.31E+01	ug/L	1.41E-07	mg/kg-day		1/(mg/kg-day)		1.10E-06	mg/kg-day	7.50E-05	mg/kg-day	1E-02
				COBALT	3.60E+02	ug/L	3.07E-07	mg/kg-day		1/(mg/kg-day)		2.38E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.03E+02	ug/L	2.19E-07	mg/kg-day		1/(mg/kg-day)		1.71E-06	mg/kg-day	5.60E-03	mg/kg-day	3E-04
				NICKEL	5.26E+02	ug/L	2.24E-07	mg/kg-day		1/(mg/kg-day)		1.74E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				VANADIUM	3.52E+02	ug/L	7.49E-07	mg/kg-day		1/(mg/kg-day)		5.83E-06	mg/kg-day	2.34E-04	mg/kg-day	2E-02
				DELTA-BHC	5.40E-03	ug/L		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	1.70E-02	ug/L	2.60E-09	mg/kg-day	1.60E+01	1/(mg/kg-day)	4E-08	2.02E-08	mg/kg-day	5.00E-05	mg/kg-day	4E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	8.70E+02	ug/L	2.95E-04	mg/kg-day	1.40E-02	1/(mg/kg-day)	4E-06	2.30E-03	mg/kg-day	2.00E-02	mg/kg-day	1E-01
				NAPHTHALENE	1.00E+00	ug/L	1.50E-07	mg/kg-day		1/(mg/kg-day)		1.17E-06	mg/kg-day	2.00E-02	mg/kg-day	6E-05
				N-NITROSODIPHENYLAMINE	7.00E+01	ug/L	6.71E-06	mg/kg-day	4.90E-03	1/(mg/kg-day)	3E-08	5.22E-05	mg/kg-day		mg/kg-day	
				PENTACHLOROPHENOL	6.00E+00	ug/L	1.60E-05	mg/kg-day	1.20E-01	1/(mg/kg-day)	2E-06	1.24E-04	mg/kg-day	3.00E-02	mg/kg-day	4E-03
				1,4-DICHLOROBENZENE	2.00E+00	ug/L	3.01E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-09	2.34E-06	mg/kg-day	7.00E-02	mg/kg-day	3E-05
				BENZENE	5.41E+01	ug/L	2.12E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-07	1.65E-05	mg/kg-day	4.00E-03	mg/kg-day	4E-03
				BROMODICHLOROMETHANE	2.00E+00	ug/L	3.59E-08	mg/kg-day	6.20E-02	1/(mg/kg-day)	2E-09	2.79E-07	mg/kg-day	2.00E-02	mg/kg-day	1E-05
				CHLOROFORM	1.11E+01	ug/L	2.41E-07	mg/kg-day		1/(mg/kg-day)		1.87E-06	mg/kg-day	1.00E-02	mg/kg-day	2E-04
			Exp. Route Total								**6E-06**					**2E-01**
			Ingestion	ANTIMONY	2.77E+00	ug/L	6.94E-09	mg/kg-day		1/(mg/kg-day)		5.40E-08	mg/kg-day	4.00E-04	mg/kg-day	1E-04
				ARSENIC	4.61E+00	ug/L	1.15E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-08	8.98E-08	mg/kg-day	3.00E-04	mg/kg-day	3E-04
				BARIUM	1.80E+02	ug/L	4.51E-07	mg/kg-day		1/(mg/kg-day)		3.51E-06	mg/kg-day	2.00E-01	mg/kg-day	2E-05
				CHROMIUM	3.31E+01	ug/L	8.29E-08	mg/kg-day		1/(mg/kg-day)		6.45E-07	mg/kg-day	3.00E-03	mg/kg-day	2E-04
				COBALT	3.60E+02	ug/L	9.02E-07	mg/kg-day		1/(mg/kg-day)		7.01E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.03E+02	ug/L	2.58E-07	mg/kg-day		1/(mg/kg-day)		2.01E-06	mg/kg-day	1.40E-01	mg/kg-day	1E-05
				NICKEL	5.26E+02	ug/L	1.32E-06	mg/kg-day		1/(mg/kg-day)		1.02E-05	mg/kg-day	2.00E-02	mg/kg-day	5E-04
				VANADIUM	3.52E+02	ug/L	8.82E-07	mg/kg-day		1/(mg/kg-day)		6.86E-06	mg/kg-day	9.00E-03	mg/kg-day	8E-04
				DELTA-BHC	5.40E-03	ug/L	1.35E-11	mg/kg-day	6.30E+00	1/(mg/kg-day)	9E-11	1.05E-10	mg/kg-day		mg/kg-day	
				DIELDRIN	1.70E-02	ug/L	4.26E-11	mg/kg-day	1.60E+01	1/(mg/kg-day)	7E-10	3.31E-10	mg/kg-day	5.00E-05	mg/kg-day	7E-06
				BIS(2-ETHYLHEXYL)PHTHALATE	8.70E+02	ug/L	2.18E-06	mg/kg-day	1.40E-02	1/(mg/kg-day)	3E-08	1.69E-05	mg/kg-day	2.00E-02	mg/kg-day	8E-04
				NAPHTHALENE	1.00E+00	ug/L	2.50E-09	mg/kg-day		1/(mg/kg-day)		1.95E-08	mg/kg-day	2.00E-02	mg/kg-day	1E-06
				N-NITROSODIPHENYLAMINE	7.00E+01	ug/L	1.75E-07	mg/kg-day	4.90E-03	1/(mg/kg-day)	9E-10	1.36E-06	mg/kg-day		mg/kg-day	
				PENTACHLOROPHENOL	6.00E+00	ug/L	1.50E-08	mg/kg-day	1.20E-01	1/(mg/kg-day)	2E-09	1.17E-07	mg/kg-day	3.00E-02	mg/kg-day	4E-06
				1,4-DICHLOROBENZENE	2.00E+00	ug/L	5.01E-09	mg/kg-day	5.40E-03	1/(mg/kg-day)	3E-11	3.90E-08	mg/kg-day	7.00E-02	mg/kg-day	6E-07
				BENZENE	5.41E+01	ug/L	1.36E-07	mg/kg-day	5.50E-02	1/(mg/kg-day)	7E-09	1.05E-06	mg/kg-day	4.00E-03	mg/kg-day	3E-04
				BROMODICHLOROMETHANE	2.00E+00	ug/L	5.01E-09	mg/kg-day	6.20E-02	1/(mg/kg-day)	3E-10	3.90E-08	mg/kg-day	2.00E-02	mg/kg-day	2E-06
				CHLOROFORM	1.11E+01	ug/L	2.78E-08	mg/kg-day		1/(mg/kg-day)		2.16E-07	mg/kg-day	1.00E-02	mg/kg-day	2E-05
			Exp. Route Total								**6E-08**					**3E-03**
		Exp. Point Total									**6E-06**					**2E-01**
	Exp. Medium Total										**6E-06**					**2E-01**
Medium Total											**6E-06**					**2E-01**
									Total of Receptor Risks Across All Media		**2E-05**			Total of Receptor Hazards Across All Media		**1E+00**

Notes:
(a) See Table 7.1 CT Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.1 CT SUPPLEMENT A
CALCULATION OF CHEMICAL CANCER RISKS FOR COPC WITH A MUTAGENIC MODE OF ACTION
CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake (1) Value	Intake (1) Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Cancer Risk
							7-16 yrs		7-16 yrs (ADAF=3)		
Soil	Surface Soil (0-2 ft bgs)	Plant Area	Ingestion	BENZO(A)ANTHRACENE	9.06E+00	mg/kg	2.27E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	5E-07
				BENZO(A)PYRENE	1.16E+01	mg/kg	2.91E-07	mg/kg/day	2.19E+01	1/(mg/kg-day)	6E-06
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	3.14E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	7E-07
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	1.43E-07	mg/kg/day	2.19E-01	1/(mg/kg-day)	3E-08
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	5.66E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	1E-06
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	2.56E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	6E-07
			Dermal	BENZO(A)ANTHRACENE	9.06E+00	mg/kg	1.88E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	4E-07
				BENZO(A)PYRENE	1.16E+01	mg/kg	2.41E-07	mg/kg/day	2.19E+01	1/(mg/kg-day)	5E-06
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	2.60E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	6E-07
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	1.18E-07	mg/kg/day	2.19E-01	1/(mg/kg-day)	3E-08
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	4.69E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	1E-06
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	2.12E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	5E-07
		On-Site Ditches	Ingestion	BENZO(A)ANTHRACENE	2.10E+00	mg/kg	5.26E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	1E-07
				BENZO(A)PYRENE	2.00E+00	mg/kg	5.01E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	1E-06
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	7.51E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	2E-07
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	1.10E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	2E-07
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	3.01E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	7E-08
			Dermal	BENZO(A)ANTHRACENE	2.10E+00	mg/kg	4.36E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	1E-07
				BENZO(A)PYRENE	2.00E+00	mg/kg	4.15E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	9E-07
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	6.23E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	1E-07
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	9.13E-09	mg/kg/day	2.19E+01	1/(mg/kg-day)	2E-07
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	2.49E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	5E-08
		Former Chlorination Building	Ingestion	BENZO(A)ANTHRACENE	1.60E+00	mg/kg	4.01E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	9E-08
				BENZO(A)PYRENE	1.50E+00	mg/kg	3.76E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	8E-07
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	7.01E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	2E-07
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	7.77E-09	mg/kg/day	2.19E+01	1/(mg/kg-day)	2E-07
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	2.20E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	5E-08
		Former Chlorination Building	Dermal	BENZO(A)ANTHRACENE	1.60E+00	mg/kg	3.32E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	7E-08
				BENZO(A)PYRENE	1.50E+00	mg/kg	3.11E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	7E-07
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	5.81E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	1E-07
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	6.44E-09	mg/kg/day	2.19E+01	1/(mg/kg-day)	1E-07
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	1.83E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	4E-08
		Southwest Off-Site/ Outfall 006 Exposure Area	Ingestion	BENZO(A)ANTHRACENE	6.70E+00	mg/kg	1.68E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	4E-07
				BENZO(A)PYRENE	7.80E+00	mg/kg	1.95E-07	mg/kg/day	2.19E+01	1/(mg/kg-day)	4E-06
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	3.26E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	7E-07
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	8.27E-08	mg/kg/day	2.19E-01	1/(mg/kg-day)	2E-08
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	6.01E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	1E-06
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	1.28E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	3E-07

TABLE 7.1 CT SUPPLEMENT A
CALCULATION OF CHEMICAL CANCER RISKS FOR COPC WITH A MUTAGENIC MODE OF ACTION
CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
					Value	Units	Intake (1) Value	Intake (1) Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Cancer Risk
							7-16 yrs		7-16 yrs (ADAF=3)		
Soil	Surface Soil (0-2 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	Dermal	BENZO(A)ANTHRACENE	6.70E+00	mg/kg	1.39E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	3E-07
				BENZO(A)PYRENE	7.80E+00	mg/kg	1.62E-07	mg/kg/day	2.19E+01	1/(mg/kg-day)	4E-06
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	2.70E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	6E-07
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	6.85E-08	mg/kg/day	2.19E-01	1/(mg/kg-day)	2E-08
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	4.98E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	1E-06
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	1.06E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	2E-07
		Lakeshore Area	Ingestion	BENZO(A)ANTHRACENE	1.10E+01	mg/kg	2.76E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	6E-07
				BENZO(A)PYRENE	8.90E+00	mg/kg	2.23E-07	mg/kg/day	2.19E+01	1/(mg/kg-day)	5E-06
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	3.01E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	7E-07
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	7.55E-08	mg/kg/day	2.19E-01	1/(mg/kg-day)	2E-08
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	3.01E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	7E-07
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	6.03E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	1E-07
			Dermal	BENZO(A)ANTHRACENE	1.10E+01	mg/kg	2.28E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	5E-07
				BENZO(A)PYRENE	8.90E+00	mg/kg	1.85E-07	mg/kg/day	2.19E+01	1/(mg/kg-day)	4E-06
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	2.49E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	5E-07
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	6.26E-08	mg/kg/day	2.19E-01	1/(mg/kg-day)	1E-08
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	2.49E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	5E-07
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	4.99E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	1E-07
		Petroleum Storage Area	Ingestion	BENZO(A)ANTHRACENE	7.30E+00	mg/kg	1.83E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	4E-07
				BENZO(A)PYRENE	7.00E+00	mg/kg	1.75E-07	mg/kg/day	2.19E+01	1/(mg/kg-day)	4E-06
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	2.50E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	5E-07
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	7.01E-08	mg/kg/day	2.19E-01	1/(mg/kg-day)	2E-08
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	4.26E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	9E-07
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	1.53E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	3E-07
			Dermal	BENZO(A)ANTHRACENE	7.30E+00	mg/kg	1.52E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	3E-07
				BENZO(A)PYRENE	7.00E+00	mg/kg	1.45E-07	mg/kg/day	2.19E+01	1/(mg/kg-day)	3E-06
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	2.08E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	5E-07
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	5.81E-08	mg/kg/day	2.19E-01	1/(mg/kg-day)	1E-08
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	3.53E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	8E-07
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	1.27E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	3E-07
		Chlorobenzene Hot-Spot Area	Ingestion	BENZO(A)ANTHRACENE	1.34E+01	mg/kg	3.36E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	7E-07
				BENZO(A)PYRENE	7.70E+00	mg/kg	1.93E-07	mg/kg/day	2.19E+01	1/(mg/kg-day)	4E-06
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	4.46E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	1E-06
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	1.35E-07	mg/kg/day	2.19E-01	1/(mg/kg-day)	3E-08
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	4.53E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	1E-06
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	1.56E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	3E-07

TABLE 7.1 CT SUPPLEMENT A
CALCULATION OF CHEMICAL CANCER RISKS FOR COPC WITH A MUTAGENIC MODE OF ACTION
CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				
							Intake (1)		CSF/Unit Risk		Cancer Risk
					Value	Units	Value	Units	Value	Units	
							7-16 yrs		7-16 yrs (ADAF=3)		
Soil	Surface Soil (0-2 ft bgs)	Chlorobenzene Hot-Spot Area	Dermal	BENZO(A)ANTHRACENE	1.34E+01	mg/kg	2.79E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	6E-07
				BENZO(A)PYRENE	7.70E+00	mg/kg	1.60E-07	mg/kg/day	2.19E+01	1/(mg/kg-day)	3E-06
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	3.70E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	8E-07
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	1.12E-07	mg/kg/day	2.19E-01	1/(mg/kg-day)	2E-08
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	3.75E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	8E-07
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	1.29E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	3E-07
Sediment	Sediment (0-1 ft)	Tributary 5A	Ingestion	BENZO(A)ANTHRACENE	3.26E+00	mg/kg	8.17E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	2E-07
				BENZO(A)PYRENE	4.60E+00	mg/kg	1.15E-07	mg/kg/day	2.19E+01	1/(mg/kg-day)	3E-06
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	1.44E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	3E-07
				BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	5.70E-08	mg/kg/day	2.19E-01	1/(mg/kg-day)	1E-08
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	2.76E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	6E-07
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	5.24E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	1E-07
			Dermal	BENZO(A)ANTHRACENE	3.26E+00	mg/kg	6.77E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	1E-07
				BENZO(A)PYRENE	4.60E+00	mg/kg	9.55E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	2E-06
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	1.19E-07	mg/kg/day	2.19E+00	1/(mg/kg-day)	3E-07
				BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	4.72E-08	mg/kg/day	2.19E-01	1/(mg/kg-day)	1E-08
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	2.28E-08	mg/kg/day	2.19E+01	1/(mg/kg-day)	5E-07
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	4.34E-08	mg/kg/day	2.19E+00	1/(mg/kg-day)	1E-07

(1) - Intake equations derived from Table 4 Series.

TABLE 7.2a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Dermal	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	2.78E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-07	2.16E-11	mg/kg-day	1.00E-09	mg/kg-day	2E-02
				ALUMINUM	8.34E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.63E+01	mg/kg	1.09E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	8.46E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				BARIUM	3.36E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.88E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.27E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.47E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	9.52E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.69E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	2.25E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	5.98E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-07	4.65E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				DELTA-BHC	1.90E+00	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg		mg/kg-day	1.60E+01	1/(mg/kg-day)			mg/kg-day	5.00E-05	mg/kg-day	
				ACENAPHTHYLENE	2.09E-01	mg/kg	3.74E-09	mg/kg-day		1/(mg/kg-day)		2.91E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	1.62E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.26E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	2.08E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	1.61E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	2.24E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	1.74E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	1.86E-07	mg/kg-day		1/(mg/kg-day)		1.45E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	1.02E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	7E-09	7.93E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	4.04E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	3.14E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	9.82E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-07	7.64E-07	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	2.48E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	2E-09	1.93E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	1.83E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.42E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	2.64E-07	mg/kg-day		1/(mg/kg-day)		2.05E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	6.03E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	1.39E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**3E-06**					**5E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	5.42E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	8E-07	4.21E-11	mg/kg-day	1.00E-09	mg/kg-day	4E-02
				ALUMINUM	8.34E+03	mg/kg	6.72E-05	mg/kg-day		1/(mg/kg-day)		5.22E-04	mg/kg-day	1.00E+00	mg/kg-day	5E-04
				ARSENIC	2.63E+01	mg/kg	2.12E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-07	1.65E-06	mg/kg-day	3.00E-04	mg/kg-day	5E-03
				BARIUM	3.36E+02	mg/kg	2.71E-06	mg/kg-day		1/(mg/kg-day)		2.10E-05	mg/kg-day	2.00E-01	mg/kg-day	1E-04
				CHROMIUM	1.88E+01	mg/kg	1.52E-07	mg/kg-day		1/(mg/kg-day)		1.18E-06	mg/kg-day	3.00E-03	mg/kg-day	4E-04
				IRON	2.27E+04	mg/kg	1.83E-04	mg/kg-day		1/(mg/kg-day)		1.42E-03	mg/kg-day	7.00E-01	mg/kg-day	2E-03
				MANGANESE	3.47E+02	mg/kg	2.79E-06	mg/kg-day		1/(mg/kg-day)		2.17E-05	mg/kg-day	1.40E-01	mg/kg-day	2E-04
				MERCURY	9.52E+02	mg/kg	7.67E-06	mg/kg-day		1/(mg/kg-day)		5.96E-05	mg/kg-day	3.00E-04	mg/kg-day	2E-01
				NICKEL	3.69E+03	mg/kg	2.97E-05	mg/kg-day		1/(mg/kg-day)		2.31E-04	mg/kg-day	2.00E-02	mg/kg-day	1E-02
				VANADIUM	2.25E+01	mg/kg	1.81E-07	mg/kg-day		1/(mg/kg-day)		1.41E-06	mg/kg-day	9.00E-03	mg/kg-day	2E-04
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	2.50E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-08	1.94E-07	mg/kg-day	2.00E-05	mg/kg-day	1E-02
				DELTA-BHC	1.90E+00	mg/kg	1.53E-08	mg/kg-day	6.30E+00	1/(mg/kg-day)	1E-07	1.19E-07	mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg	2.98E-08	mg/kg-day	1.60E+01	1/(mg/kg-day)	5E-07	2.32E-07	mg/kg-day	5.00E-05	mg/kg-day	5E-03
				ACENAPHTHYLENE	2.09E-01	mg/kg	1.68E-09	mg/kg-day		1/(mg/kg-day)		1.31E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	7.30E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	5.68E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	9.34E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-07	7.26E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	1.01E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	7.85E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	8.37E-08	mg/kg-day		1/(mg/kg-day)		6.51E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	4.59E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-09	3.57E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	1.82E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.41E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	5.74E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	9E-08	4.47E-07	mg/kg-day	8.00E-04	mg/kg-day	6E-04
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	1.45E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	1E-09	1.13E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	8.24E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	6.41E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	1.19E-07	mg/kg-day		1/(mg/kg-day)		9.22E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05

TABLE 7.2a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Ingestion	1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg	3.36E-08	mg/kg-day	3.60E-03	1/(mg/kg-day)	1E-10	2.62E-07	mg/kg-day	1.00E-02	mg/kg-day	3E-05
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg	3.14E-06	mg/kg-day		1/(mg/kg-day)		2.44E-05	mg/kg-day	9.00E-02	mg/kg-day	3E-04
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg	6.76E-08	mg/kg-day		1/(mg/kg-day)		5.26E-07	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg	1.96E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-07	1.53E-04	mg/kg-day	7.00E-02	mg/kg-day	2E-03
				BENZENE	6.03E-03	mg/kg	4.86E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-12	3.78E-10	mg/kg-day	4.00E-03	mg/kg-day	9E-08
				CHLOROBENZENE	1.39E+02	mg/kg	1.12E-06	mg/kg-day		1/(mg/kg-day)		8.69E-06	mg/kg-day	2.00E-02	mg/kg-day	4E-04
			Exp. Route Total								**3E-06**					**3E-01**
		Exp. Point Total									**6E-06**					**3E-01**
	Exp. Medium Total										**6E-06**					**3E-01**
Medium Total											**6E-06**					**3E-01**
										Total of Receptor Risks Across All Media	**6E-06**				Total of Receptor Hazards Across All Media	**3E-01**

TABLE 7.2b CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	On-Site Ditches	Dermal	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	3.11E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-06	2.42E-10	mg/kg-day	1.00E-09	mg/kg-day	2E-01
				ARSENIC	3.99E+01	mg/kg	1.65E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	1.28E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				CHROMIUM	1.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COPPER	3.26E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	5.39E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	6.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.56E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				METHYL MERCURY	6.86E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-04	mg/kg-day	
				NICKEL	3.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	6.39E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	2.70E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-07	2.10E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	3.04E-09	mg/kg-day		1/(mg/kg-day)		2.37E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	3.76E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.92E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	3.58E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	2.78E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	5.37E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	4.18E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	2.51E-08	mg/kg-day		1/(mg/kg-day)		1.95E-07	mg/kg-day	3.00E-02	mg/kg-day	6E-06
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	7.88E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	6E-08	6.13E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	2.15E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.67E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	3.58E-08	mg/kg-day		1/(mg/kg-day)		2.78E-07	mg/kg-day	3.00E-02	mg/kg-day	9E-06
			Exp. Route Total								**6E-06**					**4E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	6.07E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	9E-06	4.72E-10	mg/kg-day	1.00E-09	mg/kg-day	5E-01
				ARSENIC	3.99E+01	mg/kg	3.21E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-07	2.50E-06	mg/kg-day	3.00E-04	mg/kg-day	8E-03
				CHROMIUM	1.92E+02	mg/kg	1.55E-06	mg/kg-day		1/(mg/kg-day)		1.20E-05	mg/kg-day	3.00E-03	mg/kg-day	4E-03
				COPPER	3.26E+02	mg/kg	2.62E-06	mg/kg-day		1/(mg/kg-day)		2.04E-05	mg/kg-day	4.00E-02	mg/kg-day	5E-04
				IRON	5.39E+04	mg/kg	4.34E-04	mg/kg-day		1/(mg/kg-day)		3.38E-03	mg/kg-day	7.00E-01	mg/kg-day	5E-03
				LEAD	6.92E+02	mg/kg	5.57E-06	mg/kg-day		1/(mg/kg-day)		4.33E-05	mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg	3.48E-06	mg/kg-day		1/(mg/kg-day)		2.71E-05	mg/kg-day	1.40E-01	mg/kg-day	2E-04
				MERCURY	3.56E+03	mg/kg	2.87E-05	mg/kg-day		1/(mg/kg-day)		2.23E-04	mg/kg-day	3.00E-04	mg/kg-day	7E-01
				METHYL MERCURY	6.86E-01	mg/kg	5.52E-09	mg/kg-day		1/(mg/kg-day)		4.30E-08	mg/kg-day	1.00E-04	mg/kg-day	4E-04
				NICKEL	3.01E+02	mg/kg	2.42E-06	mg/kg-day		1/(mg/kg-day)		1.88E-05	mg/kg-day	2.00E-02	mg/kg-day	9E-04
				VANADIUM	6.39E+01	mg/kg	5.14E-07	mg/kg-day		1/(mg/kg-day)		4.00E-06	mg/kg-day	9.00E-03	mg/kg-day	4E-04
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	1.13E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	8.77E-07	mg/kg-day	2.00E-05	mg/kg-day	4E-02
				ACENAPHTHYLENE	1.70E-01	mg/kg	1.37E-09	mg/kg-day		1/(mg/kg-day)		1.06E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	1.69E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.32E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	1.61E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.25E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	2.42E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.88E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	1.13E-08	mg/kg-day		1/(mg/kg-day)		8.77E-08	mg/kg-day	3.00E-02	mg/kg-day	3E-06
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	3.54E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-08	2.76E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	9.66E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-09	7.51E-08	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	1.61E-08	mg/kg-day		1/(mg/kg-day)		1.25E-07	mg/kg-day	3.00E-02	mg/kg-day	4E-06
			Exp. Route Total								**1E-05**					**1E+00**
		Exp. Point Total									**2E-05**					**2E+00**
	Exp. Medium Total										**2E-05**					**2E+00**
Medium Total											**2E-05**					**2E+00**
									Total of Receptor Risks Across All Media		**2E-05**			Total of Receptor Hazards Across All Media		**2E+00**

TABLE 7.2c CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	Dermal	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	2.59E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-05	2.01E-09	mg/kg-day	1.00E-09	mg/kg-day	2E+00
				ARSENIC	1.04E+01	mg/kg	4.30E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	6E-08	3.34E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				CHROMIUM	1.35E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	8.57E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.38E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	8.20E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	1.06E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	8.25E-07	mg/kg-day	2.00E-05	mg/kg-day	4E-02
				ACENAPHTHYLENE	4.00E-02	mg/kg	7.16E-10	mg/kg-day		1/(mg/kg-day)		5.57E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	2.86E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.23E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	2.68E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	2.09E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	5.01E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.90E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	1.97E-08	mg/kg-day		1/(mg/kg-day)		1.53E-07	mg/kg-day	3.00E-02	mg/kg-day	5E-06
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	5.55E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-08	4.32E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	1.58E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.23E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	3.40E-08	mg/kg-day		1/(mg/kg-day)		2.64E-07	mg/kg-day	3.00E-02	mg/kg-day	9E-06
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
			Exp. Route Total								**4E-05**					**2E+00**
			Ingestion	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	5.04E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	8E-05	3.92E-09	mg/kg-day	1.00E-09	mg/kg-day	4E+00
				ARSENIC	1.04E+01	mg/kg	8.37E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-07	6.51E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				CHROMIUM	1.35E+01	mg/kg	1.09E-07	mg/kg-day		1/(mg/kg-day)		8.45E-07	mg/kg-day	3.00E-03	mg/kg-day	3E-04
				IRON	8.57E+03	mg/kg	6.90E-05	mg/kg-day		1/(mg/kg-day)		5.37E-04	mg/kg-day	7.00E-01	mg/kg-day	8E-04
				MANGANESE	3.38E+02	mg/kg	2.72E-06	mg/kg-day		1/(mg/kg-day)		2.12E-05	mg/kg-day	1.40E-01	mg/kg-day	2E-04
				MERCURY	8.20E+00	mg/kg	6.60E-08	mg/kg-day		1/(mg/kg-day)		5.14E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				VANADIUM	1.24E+01	mg/kg	9.98E-08	mg/kg-day		1/(mg/kg-day)		7.77E-07	mg/kg-day	9.00E-03	mg/kg-day	9E-05
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	4.43E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	9E-08	3.44E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				ACENAPHTHYLENE	4.00E-02	mg/kg	3.22E-10	mg/kg-day		1/(mg/kg-day)		2.50E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	1.29E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-09	1.00E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	1.21E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	9E-08	9.39E-08	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	2.25E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.75E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	8.86E-09	mg/kg-day		1/(mg/kg-day)		6.89E-08	mg/kg-day	3.00E-02	mg/kg-day	2E-06
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	2.50E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-08	1.94E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	7.09E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-09	5.51E-08	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	1.53E-08	mg/kg-day		1/(mg/kg-day)		1.19E-07	mg/kg-day	3.00E-02	mg/kg-day	4E-06
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg	1.61E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	6E-10	1.25E-06	mg/kg-day	1.00E-02	mg/kg-day	1E-04
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg	6.28E-07	mg/kg-day		1/(mg/kg-day)		4.88E-06	mg/kg-day	9.00E-02	mg/kg-day	5E-05
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg	1.45E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	8E-10	1.13E-06	mg/kg-day	7.00E-02	mg/kg-day	2E-05
			Exp. Route Total								**8E-05**					**4E+00**
		Exp. Point Total									**1E-04**					**6E+00**
	Exp. Medium Total										**1E-04**					**6E+00**
Medium Total											**1E-04**					**6E+00**
										Total of Receptor Risks Across All Media	**1E-04**				Total of Receptor Hazards Across All Media	**6E+00**

TABLE 7.2d CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	2.88E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-07	2.24E-11	mg/kg-day	1.00E-09	mg/kg-day	2E-02
				ALUMINUM	7.77E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.76E+01	mg/kg	1.14E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	8.87E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				BARIUM	6.73E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.83E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.64E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	5.66E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.11E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.06E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	6.75E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-06	5.25E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				ALDRIN	1.08E-01	mg/kg		mg/kg-day	1.70E+01	1/(mg/kg-day)			mg/kg-day	3.00E-05	mg/kg-day	
				DELTA-BHC	3.60E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ENDOSULFAN I	3.20E-03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-03	mg/kg-day	
				HEPTACHLOR	1.20E-01	mg/kg		mg/kg-day	4.50E+00	1/(mg/kg-day)			mg/kg-day	5.00E-04	mg/kg-day	
				ACENAPHTHYLENE	4.90E-01	mg/kg	8.77E-09	mg/kg-day		1/(mg/kg-day)		6.82E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	1.20E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-08	9.33E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	1.40E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	1.09E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	2.33E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	1.81E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.80E+00	mg/kg	1.04E-07	mg/kg-day		1/(mg/kg-day)		8.07E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	5.91E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	4E-09	4.59E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	4.30E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	3.34E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.72E+00	mg/kg	5.12E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	8E-08	3.98E-07	mg/kg-day	8.00E-04	mg/kg-day	5E-04
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	9.13E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	7.10E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	8.80E+00	mg/kg	1.58E-07	mg/kg-day		1/(mg/kg-day)		1.23E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
				BENZENE	2.00E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				TRICHLOROETHENE	3.79E-02	mg/kg		mg/kg-day	4.00E-01	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
			Exp. Route Total								**4E-06**					**3E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	5.61E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	8E-07	4.36E-11	mg/kg-day	1.00E-09	mg/kg-day	4E-02
				ALUMINUM	7.77E+03	mg/kg	6.26E-05	mg/kg-day		1/(mg/kg-day)		4.87E-04	mg/kg-day	1.00E+00	mg/kg-day	5E-04
				ARSENIC	2.76E+01	mg/kg	2.22E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-07	1.73E-06	mg/kg-day	3.00E-04	mg/kg-day	6E-03
				BARIUM	6.73E+02	mg/kg	5.42E-06	mg/kg-day		1/(mg/kg-day)		4.21E-05	mg/kg-day	2.00E-01	mg/kg-day	2E-04
				CHROMIUM	1.83E+02	mg/kg	1.47E-06	mg/kg-day		1/(mg/kg-day)		1.15E-05	mg/kg-day	3.00E-03	mg/kg-day	4E-03
				IRON	2.64E+04	mg/kg	2.13E-04	mg/kg-day		1/(mg/kg-day)		1.65E-03	mg/kg-day	7.00E-01	mg/kg-day	2E-03
				LEAD	5.66E+02	mg/kg	4.56E-06	mg/kg-day		1/(mg/kg-day)		3.54E-05	mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg	2.38E-06	mg/kg-day		1/(mg/kg-day)		1.85E-05	mg/kg-day	1.40E-01	mg/kg-day	1E-04
				MERCURY	1.11E+03	mg/kg	8.90E-06	mg/kg-day		1/(mg/kg-day)		6.93E-05	mg/kg-day	3.00E-04	mg/kg-day	2E-01
				VANADIUM	1.06E+02	mg/kg	8.53E-07	mg/kg-day		1/(mg/kg-day)		6.64E-06	mg/kg-day	9.00E-03	mg/kg-day	7E-04
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	2.82E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	6E-07	2.19E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ALDRIN	1.08E-01	mg/kg	8.70E-10	mg/kg-day	1.70E+01	1/(mg/kg-day)	1E-08	6.76E-09	mg/kg-day	3.00E-05	mg/kg-day	2E-04
				DELTA-BHC	3.60E-03	mg/kg	2.90E-11	mg/kg-day	6.30E+00	1/(mg/kg-day)	2E-10	2.25E-10	mg/kg-day		mg/kg-day	
				ENDOSULFAN I	3.20E-03	mg/kg	2.58E-11	mg/kg-day		1/(mg/kg-day)		2.00E-10	mg/kg-day	6.00E-03	mg/kg-day	3E-08
				HEPTACHLOR	1.20E-01	mg/kg	9.66E-10	mg/kg-day	4.50E+00	1/(mg/kg-day)	4E-09	7.51E-09	mg/kg-day	5.00E-04	mg/kg-day	2E-05
				ACENAPHTHYLENE	4.90E-01	mg/kg	3.95E-09	mg/kg-day		1/(mg/kg-day)		3.07E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	5.39E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	4.20E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	6.28E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	4.88E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	1.05E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-08	8.14E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.80E+00	mg/kg	4.67E-08	mg/kg-day		1/(mg/kg-day)		3.63E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	2.66E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-09	2.07E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	1.93E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.50E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.72E+00	mg/kg	3.00E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	5E-08	2.33E-07	mg/kg-day	8.00E-04	mg/kg-day	3E-04
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	4.11E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.19E-07	mg/kg-day		mg/kg-day	

TABLE 7.2d CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Ingestion	PHENANTHRENE	8.80E+00	mg/kg	7.09E-08	mg/kg-day		1/(mg/kg-day)		5.51E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZENE	2.00E-03	mg/kg	1.61E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	9E-13	1.25E-10	mg/kg-day	4.00E-03	mg/kg-day	3E-08
				TRICHLOROETHENE	3.79E-02	mg/kg	3.05E-10	mg/kg-day	4.00E-01	1/(mg/kg-day)	1E-10	2.37E-09	mg/kg-day		mg/kg-day	
			Exp. Route Total								**3E-06**					**4E-01**
		Exp. Point Total									**6E-06**					**7E-01**
	Exp. Medium Total										**6E-06**					**7E-01**
Medium Total											**6E-06**					**7E-01**
									Total of Receptor Risks Across All Media		**6E-06**	Total of Receptor Hazards Across All Media				**7E-01**

TABLE 7.2e CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	State Fair Blvd/Northwest Off-Site/ Oufall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	2.18E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-07	1.70E-11	mg/kg-day	1.00E-09	mg/kg-day	2E-02
				MERCURY	1.60E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	2.89E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	6E-08	2.25E-07	mg/kg-day	2.00E-05	mg/kg-day	1E-02
				1,2,3-TRICHLOROBENZENE	1.20E-02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				BENZENE	1.40E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**4E-07**					**3E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	4.25E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	6E-07	3.31E-11	mg/kg-day	1.00E-09	mg/kg-day	3E-02
				MERCURY	1.60E+02	mg/kg	1.29E-06	mg/kg-day		1/(mg/kg-day)		1.00E-05	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	1.21E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-08	9.39E-08	mg/kg-day	2.00E-05	mg/kg-day	5E-03
				1,2,3-TRICHLOROBENZENE	1.20E-02	mg/kg	9.66E-11	mg/kg-day		1/(mg/kg-day)		7.51E-10	mg/kg-day		mg/kg-day	
				BENZENE	1.40E-03	mg/kg	1.13E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	6E-13	8.77E-11	mg/kg-day	4.00E-03	mg/kg-day	2E-08
			Exp. Route Total								**7E-07**					**7E-02**
		Exp. Point Total									**1E-06**					**1E-01**
	Exp. Medium Total										**1E-06**					**1E-01**
Medium Total											**1E-06**					**1E-01**
										Total of Receptor Risks Across All Media	**1E-06**			Total of Receptor Hazards Across All Media		**1E-01**

TABLE 7.2f CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
LAKESHORE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Lakeshore Area	Dermal	2,3,7,8-TCDD Equivalent	5.90E-05	mg/kg	2.44E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-08	1.90E-12	mg/kg-day	1.00E-09	mg/kg-day	2E-03
				ALUMINUM	8.21E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	1.11E+01	mg/kg	4.57E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-08	3.55E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				CHROMIUM	4.42E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	1.75E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.91E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.05E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	2.02E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				ZINC	1.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	3.00E-01	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.70E+00	mg/kg	7.13E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-07	5.55E-07	mg/kg-day	2.00E-05	mg/kg-day	3E-02
				ENDOSULFAN I	2.50E-02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-03	mg/kg-day	
				ACENAPHTHYLENE	1.38E+00	mg/kg	2.47E-08	mg/kg-day		1/(mg/kg-day)		1.92E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.10E+01	mg/kg	1.97E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.53E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	8.90E+00	mg/kg	1.59E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	1.24E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	2.15E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	1.67E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.36E+00	mg/kg	4.23E-08	mg/kg-day		1/(mg/kg-day)		3.29E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	5.40E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	4E-09	4.20E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	2.15E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.67E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	4.31E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.35E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.70E+01	mg/kg	4.83E-07	mg/kg-day		1/(mg/kg-day)		3.76E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
			Exp. Route Total								**2E-06**					**3E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	5.90E-05	mg/kg	4.75E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	7E-08	3.70E-12	mg/kg-day	1.00E-09	mg/kg-day	4E-03
				ALUMINUM	8.21E+03	mg/kg	6.61E-05	mg/kg-day		1/(mg/kg-day)		5.14E-04	mg/kg-day	1.00E+00	mg/kg-day	5E-04
				ARSENIC	1.11E+01	mg/kg	8.90E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-07	6.93E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				CHROMIUM	4.42E+01	mg/kg	3.56E-07	mg/kg-day		1/(mg/kg-day)		2.77E-06	mg/kg-day	3.00E-03	mg/kg-day	9E-04
				IRON	1.75E+04	mg/kg	1.41E-04	mg/kg-day		1/(mg/kg-day)		1.09E-03	mg/kg-day	7.00E-01	mg/kg-day	2E-03
				MANGANESE	3.91E+02	mg/kg	3.15E-06	mg/kg-day		1/(mg/kg-day)		2.45E-05	mg/kg-day	1.40E-01	mg/kg-day	2E-04
				MERCURY	3.05E+00	mg/kg	2.46E-08	mg/kg-day		1/(mg/kg-day)		1.91E-07	mg/kg-day	3.00E-04	mg/kg-day	6E-04
				VANADIUM	2.02E+01	mg/kg	1.63E-07	mg/kg-day		1/(mg/kg-day)		1.26E-06	mg/kg-day	9.00E-03	mg/kg-day	1E-04
				ZINC	1.01E+02	mg/kg	8.11E-07	mg/kg-day		1/(mg/kg-day)		6.31E-06	mg/kg-day	3.00E-01	mg/kg-day	2E-05
				HIGHLY CHLORINATED PCBs	3.70E+00	mg/kg	2.98E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	6E-08	2.32E-07	mg/kg-day	2.00E-05	mg/kg-day	1E-02
				ENDOSULFAN I	2.50E-02	mg/kg	2.01E-10	mg/kg-day		1/(mg/kg-day)		1.57E-09	mg/kg-day	6.00E-03	mg/kg-day	3E-07
				ACENAPHTHYLENE	1.38E+00	mg/kg	1.11E-08	mg/kg-day		1/(mg/kg-day)		8.64E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.10E+01	mg/kg	8.86E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	6.89E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	8.90E+00	mg/kg	7.17E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	5.57E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	9.66E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	7.51E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.36E+00	mg/kg	1.90E-08	mg/kg-day		1/(mg/kg-day)		1.48E-07	mg/kg-day	3.00E-02	mg/kg-day	5E-06
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	2.43E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-09	1.89E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	9.66E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-08	7.51E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	1.94E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.51E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.70E+01	mg/kg	2.17E-07	mg/kg-day		1/(mg/kg-day)		1.69E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
			Exp. Route Total								**1E-06**					**2E-02**
		Exp. Point Total									**3E-06**					**5E-02**
	Exp. Medium Total										**3E-06**					**5E-02**
Medium Total											**3E-06**					**5E-02**
										Total of Receptor Risks Across All Media	**3E-06**				Total of Receptor Hazards Across All Media	**5E-02**

TABLE 7.2g CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Petroleum Storage Area	Dermal	ARSENIC	6.76E+01	mg/kg	2.79E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-07	2.17E-06	mg/kg-day	3.00E-04	mg/kg-day	7E-03
				CHROMIUM	2.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.86E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	4.86E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.42E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	2.01E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	1.39E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-08	1.08E-07	mg/kg-day	2.00E-05	mg/kg-day	5E-03
				DELTA-BHC	1.20E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	6.90E-01	mg/kg	1.23E-08	mg/kg-day		1/(mg/kg-day)		9.61E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	7.30E+00	mg/kg	1.31E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.02E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.00E+00	mg/kg	1.25E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	9E-07	9.74E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	1.79E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.39E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	6.70E+00	mg/kg	1.20E-07	mg/kg-day		1/(mg/kg-day)		9.33E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	5.01E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	4E-09	3.90E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	3.04E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	2.37E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	1.09E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-08	8.49E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.40E+00	mg/kg	7.88E-08	mg/kg-day		1/(mg/kg-day)		6.13E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZENE	8.60E-02	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**2E-06**					**1E-02**
			Ingestion	ARSENIC	6.76E+01	mg/kg	5.44E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-07	4.23E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				CHROMIUM	2.80E+01	mg/kg	2.25E-07	mg/kg-day		1/(mg/kg-day)		1.75E-06	mg/kg-day	3.00E-03	mg/kg-day	6E-04
				IRON	2.86E+04	mg/kg	2.30E-04	mg/kg-day		1/(mg/kg-day)		1.79E-03	mg/kg-day	7.00E-01	mg/kg-day	3E-03
				MANGANESE	4.86E+02	mg/kg	3.91E-06	mg/kg-day		1/(mg/kg-day)		3.04E-05	mg/kg-day	1.40E-01	mg/kg-day	2E-04
				MERCURY	1.42E+01	mg/kg	1.14E-07	mg/kg-day		1/(mg/kg-day)		8.89E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				VANADIUM	2.01E+01	mg/kg	1.62E-07	mg/kg-day		1/(mg/kg-day)		1.26E-06	mg/kg-day	9.00E-03	mg/kg-day	1E-04
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	5.80E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-08	4.51E-08	mg/kg-day	2.00E-05	mg/kg-day	2E-03
				DELTA-BHC	1.20E-03	mg/kg	9.66E-12	mg/kg-day	6.30E+00	1/(mg/kg-day)	6E-11	7.51E-11	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	6.90E-01	mg/kg	5.56E-09	mg/kg-day		1/(mg/kg-day)		4.32E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	7.30E+00	mg/kg	5.88E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	4.57E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.00E+00	mg/kg	5.64E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	4.38E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	8.05E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	6.26E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	6.70E+00	mg/kg	5.39E-08	mg/kg-day		1/(mg/kg-day)		4.20E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	2.25E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-09	1.75E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	1.37E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.06E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	4.91E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.82E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.40E+00	mg/kg	3.54E-08	mg/kg-day		1/(mg/kg-day)		2.76E-07	mg/kg-day	3.00E-02	mg/kg-day	9E-06
				BENZENE	8.60E-02	mg/kg	6.92E-10	mg/kg-day	5.50E-02	1/(mg/kg-day)	4E-11	5.39E-09	mg/kg-day	4.00E-03	mg/kg-day	1E-06
			Exp. Route Total								**1E-06**					**2E-02**
		Exp. Point Total									**3E-06**					**4E-02**
	Exp. Medium Total										**3E-06**					**4E-02**
Medium Total											**3E-06**					**4E-02**
										Total of Receptor Risks Across All Media	**3E-06**			Total of Receptor Hazards Across All Media		**4E-02**

TABLE 7.2h CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area	Dermal	ARSENIC	1.37E+01	mg/kg	5.66E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-08	4.40E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				CHROMIUM	2.63E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.35E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	2.77E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.13E+02	mg/kg	2.18E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-06	1.69E-05	mg/kg-day	2.00E-05	mg/kg-day	8E-01
				ACENAPHTHYLENE	3.40E-01	mg/kg	6.09E-09	mg/kg-day		1/(mg/kg-day)		4.73E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.34E+01	mg/kg	2.40E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	1.87E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.70E+00	mg/kg	1.38E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	1.07E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	3.19E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	2.48E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.36E+00	mg/kg	9.60E-08	mg/kg-day		1/(mg/kg-day)		7.46E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	9.63E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	7E-09	7.49E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	3.23E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	2.52E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.94E+00	mg/kg	4.04E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	6E-08	3.14E-07	mg/kg-day	8.00E-04	mg/kg-day	4E-04
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	1.12E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-08	8.67E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.50E+01	mg/kg	4.47E-07	mg/kg-day		1/(mg/kg-day)		3.48E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				1,2,4-TRICHLOROBENZENE	1.35E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	5.94E+00	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	8.00E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**6E-06**					**8E-01**
			Ingestion	ARSENIC	1.37E+01	mg/kg	1.10E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	8.58E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				CHROMIUM	2.63E+01	mg/kg	2.11E-07	mg/kg-day		1/(mg/kg-day)		1.64E-06	mg/kg-day	3.00E-03	mg/kg-day	5E-04
				IRON	2.35E+04	mg/kg	1.89E-04	mg/kg-day		1/(mg/kg-day)		1.47E-03	mg/kg-day	7.00E-01	mg/kg-day	2E-03
				MANGANESE	3.32E+02	mg/kg	2.68E-06	mg/kg-day		1/(mg/kg-day)		2.08E-05	mg/kg-day	1.40E-01	mg/kg-day	1E-04
				MERCURY	2.77E+00	mg/kg	2.23E-08	mg/kg-day		1/(mg/kg-day)		1.73E-07	mg/kg-day	3.00E-04	mg/kg-day	6E-04
				VANADIUM	1.24E+01	mg/kg	9.96E-08	mg/kg-day		1/(mg/kg-day)		7.75E-07	mg/kg-day	9.00E-03	mg/kg-day	9E-05
				HIGHLY CHLORINATED PCBs	1.13E+02	mg/kg	9.10E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	7.08E-06	mg/kg-day	2.00E-05	mg/kg-day	4E-01
				ACENAPHTHYLENE	3.40E-01	mg/kg	2.74E-09	mg/kg-day		1/(mg/kg-day)		2.13E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.34E+01	mg/kg	1.08E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-08	8.41E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.70E+00	mg/kg	6.20E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	4.82E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	1.43E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.12E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.36E+00	mg/kg	4.32E-08	mg/kg-day		1/(mg/kg-day)		3.36E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	4.33E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-09	3.37E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	1.45E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.13E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.94E+00	mg/kg	2.36E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	4E-08	1.84E-07	mg/kg-day	8.00E-04	mg/kg-day	2E-04
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	5.02E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.90E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.50E+01	mg/kg	2.01E-07	mg/kg-day		1/(mg/kg-day)		1.57E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				1,2,4-TRICHLOROBENZENE	1.35E+01	mg/kg	1.09E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	4E-10	8.45E-07	mg/kg-day	1.00E-02	mg/kg-day	8E-05
				1,4-DICHLOROBENZENE	5.94E+00	mg/kg	4.78E-08	mg/kg-day	5.40E-03	1/(mg/kg-day)	3E-10	3.72E-07	mg/kg-day	7.00E-02	mg/kg-day	5E-06
				BENZENE	8.00E-03	mg/kg	6.44E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	4E-12	5.01E-10	mg/kg-day	4.00E-03	mg/kg-day	1E-07
			Exp. Route Total								**3E-06**					**4E-01**
		Exp. Point Total									**9E-06**					**1E+00**
	Exp. Medium Total										**9E-06**					**1E+00**
Medium Total											**9E-06**					**1E+00**
										Total of Receptor Risks Across All Media	**9E-06**			Total of Receptor Hazards Across All Media		**1E+00**

TABLE 7.2i CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Sediment (0-1 ft bgs)	Tributary 5A	Dermal	2,3,7,8-TCDD Equivalent	2.66E-05	mg/kg	1.10E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-08	8.55E-13	mg/kg-day	1.00E-09	mg/kg-day	9E-04
				ALUMINUM	8.08E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ANTIMONY	2.56E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-05	mg/kg-day	
				ARSENIC	3.36E+01	mg/kg	1.39E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	1.08E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				BARIUM	9.29E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.24E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COBALT	5.46E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				COPPER	2.88E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	1.58E+05	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	4.10E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	1.24E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				NICKEL	1.71E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				SELENIUM	2.33E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.00E-03	mg/kg-day	
				VANADIUM	9.67E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.60E+00	mg/kg	1.08E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	8.40E-07	mg/kg-day	2.00E-05	mg/kg-day	4E-02
				ACENAPHTHYLENE	4.63E-01	mg/kg	8.29E-09	mg/kg-day		1/(mg/kg-day)		6.45E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.26E+00	mg/kg	5.84E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	4.54E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	4.60E+00	mg/kg	8.23E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	6E-07	6.40E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	1.03E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	7.99E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.25E+00	mg/kg	4.03E-08	mg/kg-day		1/(mg/kg-day)		3.14E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	4.07E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-09	3.17E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	1.97E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.53E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	3.74E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.91E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.86E+00	mg/kg	8.70E-08	mg/kg-day		1/(mg/kg-day)		6.77E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZENE	1.30E+01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**1E-06**					**5E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	2.66E-05	mg/kg	2.14E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-08	1.67E-12	mg/kg-day	1.00E-09	mg/kg-day	2E-03
				ALUMINUM	8.08E+03	mg/kg	6.51E-05	mg/kg-day		1/(mg/kg-day)		5.06E-04	mg/kg-day	1.00E+00	mg/kg-day	5E-04
				ANTIMONY	2.56E+01	mg/kg	2.06E-07	mg/kg-day		1/(mg/kg-day)		1.61E-06	mg/kg-day	4.00E-04	mg/kg-day	4E-03
				ARSENIC	3.36E+01	mg/kg	2.71E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-07	2.10E-06	mg/kg-day	3.00E-04	mg/kg-day	7E-03
				BARIUM	9.29E+02	mg/kg	7.48E-06	mg/kg-day		1/(mg/kg-day)		5.82E-05	mg/kg-day	2.00E-01	mg/kg-day	3E-04
				CHROMIUM	1.24E+04	mg/kg	9.98E-05	mg/kg-day		1/(mg/kg-day)		7.77E-04	mg/kg-day	3.00E-03	mg/kg-day	3E-01
				COBALT	5.46E+03	mg/kg	4.40E-05	mg/kg-day		1/(mg/kg-day)		3.42E-04	mg/kg-day		mg/kg-day	
				COPPER	2.88E+02	mg/kg	2.31E-06	mg/kg-day		1/(mg/kg-day)		1.80E-05	mg/kg-day	4.00E-02	mg/kg-day	5E-04
				IRON	1.58E+05	mg/kg	1.27E-03	mg/kg-day		1/(mg/kg-day)		9.89E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				LEAD	4.10E+03	mg/kg	3.30E-05	mg/kg-day		1/(mg/kg-day)		2.57E-04	mg/kg-day		mg/kg-day	
				MANGANESE	1.24E+03	mg/kg	1.00E-05	mg/kg-day		1/(mg/kg-day)		7.79E-05	mg/kg-day	1.40E-01	mg/kg-day	6E-04
				NICKEL	1.71E+03	mg/kg	1.38E-05	mg/kg-day		1/(mg/kg-day)		1.07E-04	mg/kg-day	2.00E-02	mg/kg-day	5E-03
				SELENIUM	2.33E+01	mg/kg	1.88E-07	mg/kg-day		1/(mg/kg-day)		1.46E-06	mg/kg-day	5.00E-03	mg/kg-day	3E-04
				VANADIUM	9.67E+03	mg/kg	7.79E-05	mg/kg-day		1/(mg/kg-day)		6.06E-04	mg/kg-day	9.00E-03	mg/kg-day	7E-02
				HIGHLY CHLORINATED PCBs	5.60E+00	mg/kg	4.51E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	9E-08	3.51E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				ACENAPHTHYLENE	4.63E-01	mg/kg	3.73E-09	mg/kg-day		1/(mg/kg-day)		2.90E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.26E+00	mg/kg	2.63E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.04E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	4.60E+00	mg/kg	3.70E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	2.88E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	4.62E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.59E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.25E+00	mg/kg	1.81E-08	mg/kg-day		1/(mg/kg-day)		1.41E-07	mg/kg-day	3.00E-02	mg/kg-day	5E-06
				BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	1.83E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	1E-09	1.42E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	8.86E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	6E-08	6.89E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	1.68E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.31E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.86E+00	mg/kg	3.91E-08	mg/kg-day		1/(mg/kg-day)		3.04E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZENE	1.30E+01	mg/kg	1.05E-07	mg/kg-day	5.50E-02	1/(mg/kg-day)	6E-09	8.14E-07	mg/kg-day	4.00E-03	mg/kg-day	2E-04
			Exp. Route Total								**9E-07**					**4E-01**
		Exp. Point Total									**2E-06**					**4E-01**
	Exp. Medium Total										**2E-06**					**4E-01**
Medium Total											**2E-06**					**4E-01**

TABLE 7.2i CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				ANTIMONY	2.77E+00	ug/L	5.08E-09	mg/kg-day		1/(mg/kg-day)		3.95E-08	mg/kg-day	6.00E-05	mg/kg-day	7E-04
				ARSENIC	4.61E+00	ug/L	8.46E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-08	6.58E-08	mg/kg-day	3.00E-04	mg/kg-day	2E-04
				BARIUM	1.80E+02	ug/L	3.30E-07	mg/kg-day		1/(mg/kg-day)		2.57E-06	mg/kg-day	1.40E-02	mg/kg-day	2E-04
				CHROMIUM	3.31E+01	ug/L	1.22E-07	mg/kg-day		1/(mg/kg-day)		9.45E-07	mg/kg-day	7.50E-05	mg/kg-day	1E-02
				COBALT	3.60E+02	ug/L	2.64E-07	mg/kg-day		1/(mg/kg-day)		2.06E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.03E+02	ug/L	1.89E-07	mg/kg-day		1/(mg/kg-day)		1.47E-06	mg/kg-day	5.60E-03	mg/kg-day	3E-04
				NICKEL	5.26E+02	ug/L	1.93E-07	mg/kg-day		1/(mg/kg-day)		1.50E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				VANADIUM	3.52E+02	ug/L	6.46E-07	mg/kg-day		1/(mg/kg-day)		5.03E-06	mg/kg-day	2.34E-04	mg/kg-day	2E-02
				DELTA-BHC	5.40E-03	ug/L		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	1.70E-02	ug/L	2.24E-09	mg/kg-day	1.60E+01	1/(mg/kg-day)	4E-08	1.74E-08	mg/kg-day	5.00E-05	mg/kg-day	3E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	8.70E+02	ug/L	2.55E-04	mg/kg-day	1.40E-02	1/(mg/kg-day)	4E-06	1.98E-03	mg/kg-day	2.00E-02	mg/kg-day	1E-01
				NAPHTHALENE	1.00E+00	ug/L	1.30E-07	mg/kg-day		1/(mg/kg-day)		1.01E-06	mg/kg-day	2.00E-02	mg/kg-day	5E-05
				N-NITROSODIPHENYLAMINE	7.00E+01	ug/L	5.78E-06	mg/kg-day	4.90E-03	1/(mg/kg-day)	3E-08	4.50E-05	mg/kg-day		mg/kg-day	
				PENTACHLOROPHENOL	6.00E+00	ug/L	1.38E-05	mg/kg-day	1.20E-01	1/(mg/kg-day)	2E-06	1.07E-04	mg/kg-day	3.00E-02	mg/kg-day	4E-03
				1,4-DICHLOROBENZENE	2.00E+00	ug/L	2.59E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-09	2.02E-06	mg/kg-day	7.00E-02	mg/kg-day	3E-05
				BENZENE	5.41E+01	ug/L	1.83E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-07	1.42E-05	mg/kg-day	4.00E-03	mg/kg-day	4E-03
				BROMODICHLOROMETHANE	2.00E+00	ug/L	3.10E-08	mg/kg-day	6.20E-02	1/(mg/kg-day)	2E-09	2.41E-07	mg/kg-day	2.00E-02	mg/kg-day	1E-05
				CHLOROFORM	1.11E+01	ug/L	2.08E-07	mg/kg-day		1/(mg/kg-day)		1.62E-06	mg/kg-day	1.00E-02	mg/kg-day	2E-04
			Exp. Route Total								**5E-06**					**1E-01**
			Ingestion	ANTIMONY	2.77E+00	ug/L	4.46E-09	mg/kg-day		1/(mg/kg-day)		3.47E-08	mg/kg-day	4.00E-04	mg/kg-day	9E-05
				ARSENIC	4.61E+00	ug/L	7.42E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-08	5.77E-08	mg/kg-day	3.00E-04	mg/kg-day	2E-04
				BARIUM	1.80E+02	ug/L	2.90E-07	mg/kg-day		1/(mg/kg-day)		2.25E-06	mg/kg-day	2.00E-01	mg/kg-day	1E-05
				CHROMIUM	3.31E+01	ug/L	5.33E-08	mg/kg-day		1/(mg/kg-day)		4.15E-07	mg/kg-day	3.00E-03	mg/kg-day	1E-04
				COBALT	3.60E+02	ug/L	5.80E-07	mg/kg-day		1/(mg/kg-day)		4.51E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.03E+02	ug/L	1.66E-07	mg/kg-day		1/(mg/kg-day)		1.29E-06	mg/kg-day	1.40E-01	mg/kg-day	9E-06
				NICKEL	5.26E+02	ug/L	8.47E-07	mg/kg-day		1/(mg/kg-day)		6.59E-06	mg/kg-day	2.00E-02	mg/kg-day	3E-04
				VANADIUM	3.52E+02	ug/L	5.67E-07	mg/kg-day		1/(mg/kg-day)		4.41E-06	mg/kg-day	9.00E-03	mg/kg-day	5E-04
				DELTA-BHC	5.40E-03	ug/L	8.70E-12	mg/kg-day	6.30E+00	1/(mg/kg-day)	5E-11	6.76E-11	mg/kg-day		mg/kg-day	
				DIELDRIN	1.70E-02	ug/L	2.74E-11	mg/kg-day	1.60E+01	1/(mg/kg-day)	4E-10	2.13E-10	mg/kg-day	5.00E-05	mg/kg-day	4E-06
				BIS(2-ETHYLHEXYL)PHTHALATE	8.70E+02	ug/L	1.40E-06	mg/kg-day	1.40E-02	1/(mg/kg-day)	2E-08	1.09E-05	mg/kg-day	2.00E-02	mg/kg-day	5E-04
				NAPHTHALENE	1.00E+00	ug/L	1.61E-09	mg/kg-day		1/(mg/kg-day)		1.25E-08	mg/kg-day	2.00E-02	mg/kg-day	6E-07
				N-NITROSODIPHENYLAMINE	7.00E+01	ug/L	1.13E-07	mg/kg-day	4.90E-03	1/(mg/kg-day)	6E-10	8.77E-07	mg/kg-day		mg/kg-day	
				PENTACHLOROPHENOL	6.00E+00	ug/L	9.66E-09	mg/kg-day	1.20E-01	1/(mg/kg-day)	1E-09	7.51E-08	mg/kg-day	3.00E-02	mg/kg-day	3E-06
				1,4-DICHLOROBENZENE	2.00E+00	ug/L	3.22E-09	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-11	2.50E-08	mg/kg-day	7.00E-02	mg/kg-day	4E-07
				BENZENE	5.41E+01	ug/L	8.71E-08	mg/kg-day	5.50E-02	1/(mg/kg-day)	5E-09	6.78E-07	mg/kg-day	4.00E-03	mg/kg-day	2E-04
				BROMODICHLOROMETHANE	2.00E+00	ug/L	3.22E-09	mg/kg-day	6.20E-02	1/(mg/kg-day)	2E-10	2.50E-08	mg/kg-day	2.00E-02	mg/kg-day	1E-06
				CHLOROFORM	1.11E+01	ug/L	1.79E-08	mg/kg-day		1/(mg/kg-day)		1.39E-07	mg/kg-day	1.00E-02	mg/kg-day	1E-05
			Exp. Route Total								**4E-08**					**2E-03**
		Exp. Point Total									**5E-06**					**1E-01**
	Exp. Medium Total										**5E-06**					**1E-01**
Medium Total											**5E-06**					**1E-01**
									Total of Receptor Risks Across All Media		**8E-06**			Total of Receptor Hazards Across All Media		**6E-01**

TABLE 7.3a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Dermal	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	5.03E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	8E-08	3.91E-12	mg/kg-day	1.00E-09	mg/kg-day	4E-03
				ALUMINUM	8.34E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.63E+01	mg/kg	1.97E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-08	1.53E-07	mg/kg-day	3.00E-04	mg/kg-day	5E-04
				BARIUM	3.36E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.88E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.27E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.47E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	9.52E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.69E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	2.25E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	1.08E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-08	8.41E-08	mg/kg-day	2.00E-05	mg/kg-day	4E-03
				DELTA-BHC	1.90E+00	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg		mg/kg-day	1.60E+01	1/(mg/kg-day)			mg/kg-day	5.00E-05	mg/kg-day	
				ACENAPHTHYLENE	2.09E-01	mg/kg	6.77E-10	mg/kg-day		1/(mg/kg-day)		5.26E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	2.93E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.28E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	3.76E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	2.92E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	4.06E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.16E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	3.36E-08	mg/kg-day		1/(mg/kg-day)		2.62E-07	mg/kg-day	3.00E-02	mg/kg-day	9E-06
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	1.84E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	1E-09	1.43E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	7.32E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-08	5.69E-08	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	1.78E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	3E-08	1.38E-07	mg/kg-day	8.00E-04	mg/kg-day	2E-04
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	4.48E-09	mg/kg-day	7.80E-02	1/(mg/kg-day)	3E-10	3.49E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	3.31E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.58E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	4.77E-08	mg/kg-day		1/(mg/kg-day)		3.71E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	6.03E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	1.39E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**6E-07**					**9E-03**
			Ingestion	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	8.47E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-07	6.58E-12	mg/kg-day	1.00E-09	mg/kg-day	7E-03
				ALUMINUM	8.34E+03	mg/kg	1.05E-05	mg/kg-day		1/(mg/kg-day)		8.16E-05	mg/kg-day	1.00E+00	mg/kg-day	8E-05
				ARSENIC	2.63E+01	mg/kg	3.31E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-08	2.58E-07	mg/kg-day	3.00E-04	mg/kg-day	9E-04
				BARIUM	3.36E+02	mg/kg	4.23E-07	mg/kg-day		1/(mg/kg-day)		3.29E-06	mg/kg-day	2.00E-01	mg/kg-day	2E-05
				CHROMIUM	1.88E+01	mg/kg	2.37E-08	mg/kg-day		1/(mg/kg-day)		1.84E-07	mg/kg-day	3.00E-03	mg/kg-day	6E-05
				IRON	2.27E+04	mg/kg	2.86E-05	mg/kg-day		1/(mg/kg-day)		2.23E-04	mg/kg-day	7.00E-01	mg/kg-day	3E-04
				MANGANESE	3.47E+02	mg/kg	4.37E-07	mg/kg-day		1/(mg/kg-day)		3.40E-06	mg/kg-day	1.40E-01	mg/kg-day	2E-05
				MERCURY	9.52E+02	mg/kg	1.20E-06	mg/kg-day		1/(mg/kg-day)		9.32E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				NICKEL	3.69E+03	mg/kg	4.64E-06	mg/kg-day		1/(mg/kg-day)		3.61E-05	mg/kg-day	2.00E-02	mg/kg-day	2E-03
				VANADIUM	2.25E+01	mg/kg	2.83E-08	mg/kg-day		1/(mg/kg-day)		2.20E-07	mg/kg-day	9.00E-03	mg/kg-day	2E-05
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	3.90E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	8E-09	3.03E-08	mg/kg-day	2.00E-05	mg/kg-day	2E-03
				DELTA-BHC	1.90E+00	mg/kg	2.39E-09	mg/kg-day	6.30E+00	1/(mg/kg-day)	2E-08	1.86E-08	mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg	4.65E-09	mg/kg-day	1.60E+01	1/(mg/kg-day)	7E-08	3.62E-08	mg/kg-day	5.00E-05	mg/kg-day	7E-04
				ACENAPHTHYLENE	2.09E-01	mg/kg	2.63E-10	mg/kg-day		1/(mg/kg-day)		2.05E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	1.14E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-09	8.87E-08	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	1.46E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.14E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	1.58E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.23E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	1.31E-08	mg/kg-day		1/(mg/kg-day)		1.02E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-06
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	7.16E-09	mg/kg-day	7.30E-02	1/(mg/kg-day)	5E-10	5.57E-08	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	2.84E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-08	2.21E-08	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	8.97E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-08	6.98E-08	mg/kg-day	8.00E-04	mg/kg-day	9E-05
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	2.26E-09	mg/kg-day	7.80E-02	1/(mg/kg-day)	2E-10	1.76E-08	mg/kg-day		mg/kg-day	

TABLE 7.3a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Ingestion	INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	1.29E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-09	1.00E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	1.85E-08	mg/kg-day		1/(mg/kg-day)		1.44E-07	mg/kg-day	3.00E-02	mg/kg-day	5E-06
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg	5.25E-09	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-11	4.09E-08	mg/kg-day	1.00E-02	mg/kg-day	4E-06
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg	4.91E-07	mg/kg-day		1/(mg/kg-day)		3.82E-06	mg/kg-day	9.00E-02	mg/kg-day	4E-05
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg	1.06E-08	mg/kg-day		1/(mg/kg-day)		8.21E-08	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg	3.07E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-08	2.39E-05	mg/kg-day	7.00E-02	mg/kg-day	3E-04
				BENZENE	6.03E-03	mg/kg	7.59E-12	mg/kg-day	5.50E-02	1/(mg/kg-day)	4E-13	5.90E-11	mg/kg-day	4.00E-03	mg/kg-day	1E-08
				CHLOROBENZENE	1.39E+02	mg/kg	1.75E-07	mg/kg-day		1/(mg/kg-day)		1.36E-06	mg/kg-day	2.00E-02	mg/kg-day	7E-05
			Exp. Route Total								**5E-07**					**4E-02**
		Exp. Point Total									**1E-06**					**5E-02**
	Exp. Medium Total										**1E-06**					**5E-02**
Medium Total											**1E-06**					**5E-02**
										Total of Receptor Risks Across All Media	**1E-06**				Total of Receptor Hazards Across All Media	**5E-02**

TABLE 7.3b CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure		CSF/Unit Risk		Cancer	Intake/Exposure		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Risk	Value	Units	Value	Units	Quotient
Soil	Surface Soils (0-2 ft)	On-Site Ditches	Dermal	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	5.63E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	8E-07	4.38E-11	mg/kg-day	1.00E-09	mg/kg-day	4E-02
				ARSENIC	3.99E+01	mg/kg	2.98E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-08	2.32E-07	mg/kg-day	3.00E-04	mg/kg-day	8E-04
				CHROMIUM	1.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COPPER	3.26E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	5.39E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	6.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.56E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				METHYL MERCURY	6.86E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-04	mg/kg-day	
				NICKEL	3.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	6.39E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	4.88E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-07	3.80E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				ACENAPHTHYLENE	1.70E-01	mg/kg	5.50E-10	mg/kg-day		1/(mg/kg-day)		4.28E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	6.80E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-09	5.29E-08	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	6.48E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-08	5.04E-08	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	9.71E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-09	7.56E-08	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	4.53E-09	mg/kg-day		1/(mg/kg-day)		3.53E-08	mg/kg-day	3.00E-02	mg/kg-day	1E-06
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	1.42E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-08	1.11E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	3.89E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-09	3.02E-08	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	6.48E-09	mg/kg-day		1/(mg/kg-day)		5.04E-08	mg/kg-day	3.00E-02	mg/kg-day	2E-06
			Exp. Route Total								**1E-06**					**6E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	9.49E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-06	7.38E-11	mg/kg-day	1.00E-09	mg/kg-day	7E-02
				ARSENIC	3.99E+01	mg/kg	5.02E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-08	3.90E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				CHROMIUM	1.92E+02	mg/kg	2.42E-07	mg/kg-day		1/(mg/kg-day)		1.88E-06	mg/kg-day	3.00E-03	mg/kg-day	6E-04
				COPPER	3.26E+02	mg/kg	4.10E-07	mg/kg-day		1/(mg/kg-day)		3.19E-06	mg/kg-day	4.00E-02	mg/kg-day	8E-05
				IRON	5.39E+04	mg/kg	6.78E-05	mg/kg-day		1/(mg/kg-day)		5.27E-04	mg/kg-day	7.00E-01	mg/kg-day	8E-04
				LEAD	6.92E+02	mg/kg	8.71E-07	mg/kg-day		1/(mg/kg-day)		6.77E-06	mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg	5.43E-07	mg/kg-day		1/(mg/kg-day)		4.23E-06	mg/kg-day	1.40E-01	mg/kg-day	3E-05
				MERCURY	3.56E+03	mg/kg	4.48E-06	mg/kg-day		1/(mg/kg-day)		3.48E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				METHYL MERCURY	6.86E-01	mg/kg	8.63E-10	mg/kg-day		1/(mg/kg-day)		6.71E-09	mg/kg-day	1.00E-04	mg/kg-day	7E-05
				NICKEL	3.01E+02	mg/kg	3.79E-07	mg/kg-day		1/(mg/kg-day)		2.95E-06	mg/kg-day	2.00E-02	mg/kg-day	1E-04
				VANADIUM	6.39E+01	mg/kg	8.04E-08	mg/kg-day		1/(mg/kg-day)		6.25E-07	mg/kg-day	9.00E-03	mg/kg-day	7E-05
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	1.76E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-08	1.37E-07	mg/kg-day	2.00E-05	mg/kg-day	7E-03
				ACENAPHTHYLENE	1.70E-01	mg/kg	2.14E-10	mg/kg-day		1/(mg/kg-day)		1.66E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	2.64E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-09	2.05E-08	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	2.52E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-08	1.96E-08	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	3.77E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-09	2.94E-08	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	1.76E-09	mg/kg-day		1/(mg/kg-day)		1.37E-08	mg/kg-day	3.00E-02	mg/kg-day	5E-07
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	5.54E-10	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-09	4.31E-09	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	1.51E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-09	1.17E-08	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	2.52E-09	mg/kg-day		1/(mg/kg-day)		1.96E-08	mg/kg-day	3.00E-02	mg/kg-day	7E-07
			Exp. Route Total								**2E-06**					**2E-01**
		Exp. Point Total									**3E-06**					**3E-01**
	Exp. Medium Total										**3E-06**					**3E-01**
Medium Total											**3E-06**					**3E-01**
										Total of Receptor Risks Across All Media	**3E-06**		Total of Receptor Hazards Across All Media			**3E-01**

TABLE 7.3c CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure		CSF/Unit Risk		Cancer	Intake/Exposure		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Risk	Value	Units	Value	Units	Quotient
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	Dermal	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	4.68E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	7E-06	3.64E-10	mg/kg-day	1.00E-09	mg/kg-day	4E-01
				ARSENIC	1.04E+01	mg/kg	7.77E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-08	6.04E-08	mg/kg-day	3.00E-04	mg/kg-day	2E-04
				CHROMIUM	1.35E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	8.57E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.38E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	8.20E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	1.92E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-08	1.49E-07	mg/kg-day	2.00E-05	mg/kg-day	7E-03
				ACENAPHTHYLENE	4.00E-02	mg/kg	1.30E-10	mg/kg-day		1/(mg/kg-day)		1.01E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	5.18E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-09	4.03E-08	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	4.86E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-08	3.78E-08	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	9.07E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-09	7.05E-08	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	3.56E-09	mg/kg-day		1/(mg/kg-day)		2.77E-08	mg/kg-day	3.00E-02	mg/kg-day	9E-07
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	1.00E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-09	7.81E-09	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	2.85E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-09	2.22E-08	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	6.15E-09	mg/kg-day		1/(mg/kg-day)		4.79E-08	mg/kg-day	3.00E-02	mg/kg-day	2E-06
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
			Exp. Route Total								**7E-06**					**4E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	7.88E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-05	6.13E-10	mg/kg-day	1.00E-09	mg/kg-day	6E-01
				ARSENIC	1.04E+01	mg/kg	1.31E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-08	1.02E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-04
				CHROMIUM	1.35E+01	mg/kg	1.70E-08	mg/kg-day		1/(mg/kg-day)		1.32E-07	mg/kg-day	3.00E-03	mg/kg-day	4E-05
				IRON	8.57E+03	mg/kg	1.08E-05	mg/kg-day		1/(mg/kg-day)		8.39E-05	mg/kg-day	7.00E-01	mg/kg-day	1E-04
				MANGANESE	3.38E+02	mg/kg	4.25E-07	mg/kg-day		1/(mg/kg-day)		3.31E-06	mg/kg-day	1.40E-01	mg/kg-day	2E-05
				MERCURY	8.20E+00	mg/kg	1.03E-08	mg/kg-day		1/(mg/kg-day)		8.02E-08	mg/kg-day	3.00E-04	mg/kg-day	3E-04
				VANADIUM	1.24E+01	mg/kg	1.56E-08	mg/kg-day		1/(mg/kg-day)		1.21E-07	mg/kg-day	9.00E-03	mg/kg-day	1E-05
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	6.92E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-08	5.38E-08	mg/kg-day	2.00E-05	mg/kg-day	3E-03
				ACENAPHTHYLENE	4.00E-02	mg/kg	5.03E-11	mg/kg-day		1/(mg/kg-day)		3.91E-10	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	2.01E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-09	1.57E-08	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	1.89E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-08	1.47E-08	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	3.52E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-09	2.74E-08	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	1.38E-09	mg/kg-day		1/(mg/kg-day)		1.08E-08	mg/kg-day	3.00E-02	mg/kg-day	4E-07
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	3.90E-10	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-09	3.03E-09	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	1.11E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-10	8.61E-09	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	2.39E-09	mg/kg-day		1/(mg/kg-day)		1.86E-08	mg/kg-day	3.00E-02	mg/kg-day	6E-07
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg	2.52E-08	mg/kg-day	3.60E-03	1/(mg/kg-day)	9E-11	1.96E-07	mg/kg-day	1.00E-02	mg/kg-day	2E-05
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg	9.81E-08	mg/kg-day		1/(mg/kg-day)		7.63E-07	mg/kg-day	9.00E-02	mg/kg-day	8E-06
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg	2.26E-08	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-10	1.76E-07	mg/kg-day	7.00E-02	mg/kg-day	3E-06
			Exp. Route Total								**1E-05**					**6E-01**
		Exp. Point Total									**2E-05**					**1E+00**
	Exp. Medium Total										**2E-05**					**1E+00**
Medium Total											**2E-05**					**1E+00**
									Total of Receptor Risks Across All Media		**2E-05**			Total of Receptor Hazards Across All Media		**1E+00**

TABLE 7.4a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Dermal	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	1.10E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-07	8.55E-12	mg/kg-day	1.00E-09	mg/kg-day	9E-03
				ALUMINUM	8.34E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.63E+01	mg/kg	4.30E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	6E-08	3.35E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				BARIUM	3.36E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.88E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.27E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.47E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	9.52E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.69E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	2.25E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	2.36E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-08	1.84E-07	mg/kg-day	2.00E-05	mg/kg-day	9E-03
				DELTA-BHC	1.90E+00	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg		mg/kg-day	1.60E+01	1/(mg/kg-day)			mg/kg-day	5.00E-05	mg/kg-day	
				ACENAPHTHYLENE	2.09E-01	mg/kg	1.48E-09	mg/kg-day		1/(mg/kg-day)		1.15E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	6.42E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	4.99E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	8.21E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	6E-07	6.39E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	8.87E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	6.90E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	7.36E-08	mg/kg-day		1/(mg/kg-day)		5.72E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	4.03E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-09	3.14E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	1.60E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.24E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	3.88E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	6E-08	3.02E-07	mg/kg-day	8.00E-04	mg/kg-day	4E-04
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	9.80E-09	mg/kg-day	7.80E-02	1/(mg/kg-day)	8E-10	7.63E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	7.24E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	5.63E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.47E+01	mg/kg	1.04E-07	mg/kg-day		1/(mg/kg-day)		8.11E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	6.03E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	1.39E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**1E-06**					**2E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	6.73E-04	mg/kg	2.78E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-06	2.16E-10	mg/kg-day	1.00E-09	mg/kg-day	2E-01
				ALUMINUM	8.34E+03	mg/kg	3.44E-04	mg/kg-day		1/(mg/kg-day)		2.68E-03	mg/kg-day	1.00E+00	mg/kg-day	3E-03
				ARSENIC	2.63E+01	mg/kg	1.09E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	8.45E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				BARIUM	3.36E+02	mg/kg	1.39E-05	mg/kg-day		1/(mg/kg-day)		1.08E-04	mg/kg-day	2.00E-01	mg/kg-day	5E-04
				CHROMIUM	1.88E+01	mg/kg	7.77E-07	mg/kg-day		1/(mg/kg-day)		6.04E-06	mg/kg-day	3.00E-03	mg/kg-day	2E-03
				IRON	2.27E+04	mg/kg	9.39E-04	mg/kg-day		1/(mg/kg-day)		7.30E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				MANGANESE	3.47E+02	mg/kg	1.43E-05	mg/kg-day		1/(mg/kg-day)		1.11E-04	mg/kg-day	1.40E-01	mg/kg-day	8E-04
				MERCURY	9.52E+02	mg/kg	3.93E-05	mg/kg-day		1/(mg/kg-day)		3.06E-04	mg/kg-day	3.00E-04	mg/kg-day	1E+00
				NICKEL	3.69E+03	mg/kg	1.52E-04	mg/kg-day		1/(mg/kg-day)		1.18E-03	mg/kg-day	2.00E-02	mg/kg-day	6E-02
				VANADIUM	2.25E+01	mg/kg	9.28E-07	mg/kg-day		1/(mg/kg-day)		7.21E-06	mg/kg-day	9.00E-03	mg/kg-day	8E-04
				HIGHLY CHLORINATED PCBs	3.10E+00	mg/kg	1.28E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-07	9.95E-07	mg/kg-day	2.00E-05	mg/kg-day	5E-02
				DELTA-BHC	1.90E+00	mg/kg	7.84E-08	mg/kg-day	6.30E+00	1/(mg/kg-day)	5E-07	6.10E-07	mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg	1.53E-07	mg/kg-day	1.60E+01	1/(mg/kg-day)	2E-06	1.19E-06	mg/kg-day	5.00E-05	mg/kg-day	2E-02
				ACENAPHTHYLENE	2.09E-01	mg/kg	8.62E-09	mg/kg-day		1/(mg/kg-day)		6.71E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.06E+00	mg/kg	3.74E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	2.91E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.16E+01	mg/kg	4.79E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-06	3.72E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.25E+01	mg/kg	5.17E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-07	4.02E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.04E+01	mg/kg	4.29E-07	mg/kg-day		1/(mg/kg-day)		3.33E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZO(K)FLUORANTHENE	5.70E+00	mg/kg	2.35E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-08	1.83E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	9.32E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-07	7.25E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	7.13E+00	mg/kg	2.94E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	5E-07	2.29E-06	mg/kg-day	8.00E-04	mg/kg-day	3E-03
				HEXACHLOROBUTADIENE	1.80E+00	mg/kg	7.43E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	6E-09	5.78E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.02E+01	mg/kg	4.22E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	3.28E-06	mg/kg-day		mg/kg-day	

TABLE 7.4a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Plant Area	Ingestion	PHENANTHRENE	1.47E+01	mg/kg	6.08E-07	mg/kg-day		1/(mg/kg-day)		4.73E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				1,2,4-TRICHLOROBENZENE	4.18E+00	mg/kg	1.72E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	6E-10	1.34E-06	mg/kg-day	1.00E-02	mg/kg-day	1E-04
				1,2-DICHLOROBENZENE	3.90E+02	mg/kg	1.61E-05	mg/kg-day		1/(mg/kg-day)		1.25E-04	mg/kg-day	9.00E-02	mg/kg-day	1E-03
				1,3-DICHLOROBENZENE	8.40E+00	mg/kg	3.46E-07	mg/kg-day		1/(mg/kg-day)		2.69E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.44E+03	mg/kg	1.01E-04	mg/kg-day	5.40E-03	1/(mg/kg-day)	5E-07	7.82E-04	mg/kg-day	7.00E-02	mg/kg-day	1E-02
				BENZENE	6.03E-03	mg/kg	2.49E-10	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-11	1.94E-09	mg/kg-day	4.00E-03	mg/kg-day	5E-07
				CHLOROBENZENE	1.39E+02	mg/kg	5.73E-06	mg/kg-day		1/(mg/kg-day)		4.45E-05	mg/kg-day	2.00E-02	mg/kg-day	2E-03
			Exp. Route Total								**2E-05**					**1E+00**
		Exp. Point Total									**2E-05**					**1E+00**
	Exp. Medium Total										**2E-05**					**1E+00**
Medium Total											**2E-05**					**1E+00**
									Total of Receptor Risks Across All Media		**2E-05**			Total of Receptor Hazards Across All Media		**1E+00**

TABLE 7.4b CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure		CSF/Unit Risk		Cancer	Intake/Exposure		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Risk	Value	Units	Value	Units	Quotient
Soil	Surface Soils (0-2 ft)	On-Site Ditches	Dermal	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	1.23E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-06	9.58E-11	mg/kg-day	1.00E-09	mg/kg-day	1E-01
				ARSENIC	3.99E+01	mg/kg	6.52E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-07	5.07E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				CHROMIUM	1.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COPPER	3.26E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	5.39E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	6.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.56E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				METHYL MERCURY	6.86E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-04	mg/kg-day	
				NICKEL	3.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	6.39E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	1.07E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	8.30E-07	mg/kg-day	2.00E-05	mg/kg-day	4E-02
				ACENAPHTHYLENE	1.70E-01	mg/kg	1.20E-09	mg/kg-day		1/(mg/kg-day)		9.36E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	1.49E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.16E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	1.42E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.10E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	2.12E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.65E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	9.91E-09	mg/kg-day		1/(mg/kg-day)		7.71E-08	mg/kg-day	3.00E-02	mg/kg-day	3E-06
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	3.12E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-08	2.42E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	8.50E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-09	6.61E-08	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	1.42E-08	mg/kg-day		1/(mg/kg-day)		1.10E-07	mg/kg-day	3.00E-02	mg/kg-day	4E-06
			Exp. Route Total								**2E-06**					**1E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	3.11E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-05	2.42E-09	mg/kg-day	1.00E-09	mg/kg-day	2E+00
				ARSENIC	3.99E+01	mg/kg	1.65E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	1.28E-05	mg/kg-day	3.00E-04	mg/kg-day	4E-02
				CHROMIUM	1.92E+02	mg/kg	7.92E-06	mg/kg-day		1/(mg/kg-day)		6.16E-05	mg/kg-day	3.00E-03	mg/kg-day	2E-02
				COPPER	3.26E+02	mg/kg	1.35E-05	mg/kg-day		1/(mg/kg-day)		1.05E-04	mg/kg-day	4.00E-02	mg/kg-day	3E-03
				IRON	5.39E+04	mg/kg	2.22E-03	mg/kg-day		1/(mg/kg-day)		1.73E-02	mg/kg-day	7.00E-01	mg/kg-day	2E-02
				LEAD	6.92E+02	mg/kg	2.86E-05	mg/kg-day		1/(mg/kg-day)		2.22E-04	mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg	1.78E-05	mg/kg-day		1/(mg/kg-day)		1.39E-04	mg/kg-day	1.40E-01	mg/kg-day	1E-03
				MERCURY	3.56E+03	mg/kg	1.47E-04	mg/kg-day		1/(mg/kg-day)		1.14E-03	mg/kg-day	3.00E-04	mg/kg-day	4E+00
				METHYL MERCURY	6.86E-01	mg/kg	2.83E-08	mg/kg-day		1/(mg/kg-day)		2.20E-07	mg/kg-day	1.00E-04	mg/kg-day	2E-03
				NICKEL	3.01E+02	mg/kg	1.24E-05	mg/kg-day		1/(mg/kg-day)		9.66E-05	mg/kg-day	2.00E-02	mg/kg-day	5E-03
				VANADIUM	6.39E+01	mg/kg	2.64E-06	mg/kg-day		1/(mg/kg-day)		2.05E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				HIGHLY CHLORINATED PCBs	1.40E+01	mg/kg	5.78E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-06	4.49E-06	mg/kg-day	2.00E-05	mg/kg-day	2E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	7.01E-09	mg/kg-day		1/(mg/kg-day)		5.46E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	8.67E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	6.74E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	8.25E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	6E-07	6.42E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	1.24E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-08	9.63E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	5.78E-08	mg/kg-day		1/(mg/kg-day)		4.49E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	1.82E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.41E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	4.95E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.85E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	8.25E-08	mg/kg-day		1/(mg/kg-day)		6.42E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
			Exp. Route Total								**5E-05**					**7E+00**
		Exp. Point Total									**5E-05**					**7E+00**
	Exp. Medium Total										**5E-05**					**7E+00**
Medium Total											**5E-05**					**7E+00**
									Total of Receptor Risks Across All Media		**5E-05**			Total of Receptor Hazards Across All Media		**7E+00**

TABLE 7.4c CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	Dermal	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	1.02E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-05	7.96E-10	mg/kg-day	1.00E-09	mg/kg-day	8E-01
				ARSENIC	1.04E+01	mg/kg	1.70E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-08	1.32E-07	mg/kg-day	3.00E-04	mg/kg-day	4E-04
				CHROMIUM	1.35E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	8.57E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.38E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	8.20E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	4.19E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	8E-08	3.26E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				ACENAPHTHYLENE	4.00E-02	mg/kg	2.83E-10	mg/kg-day		1/(mg/kg-day)		2.20E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	1.13E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-09	8.81E-08	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	1.06E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	8E-08	8.26E-08	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	1.98E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.54E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	7.79E-09	mg/kg-day		1/(mg/kg-day)		6.06E-08	mg/kg-day	3.00E-02	mg/kg-day	2E-06
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	2.20E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-08	1.71E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	6.23E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-09	4.85E-08	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	1.35E-08	mg/kg-day		1/(mg/kg-day)		1.05E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-06
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
			Exp. Route Total								**2E-05**					**8E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	6.26E-02	mg/kg	2.58E-09	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-04	2.01E-08	mg/kg-day	1.00E-09	mg/kg-day	2E+01
				ARSENIC	1.04E+01	mg/kg	4.29E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	6E-07	3.34E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				CHROMIUM	1.35E+01	mg/kg	5.57E-07	mg/kg-day		1/(mg/kg-day)		4.33E-06	mg/kg-day	3.00E-03	mg/kg-day	1E-03
				IRON	8.57E+03	mg/kg	3.54E-04	mg/kg-day		1/(mg/kg-day)		2.75E-03	mg/kg-day	7.00E-01	mg/kg-day	4E-03
				MANGANESE	3.38E+02	mg/kg	1.39E-05	mg/kg-day		1/(mg/kg-day)		1.08E-04	mg/kg-day	1.40E-01	mg/kg-day	8E-04
				MERCURY	8.20E+00	mg/kg	3.38E-07	mg/kg-day		1/(mg/kg-day)		2.63E-06	mg/kg-day	3.00E-04	mg/kg-day	9E-03
				VANADIUM	1.24E+01	mg/kg	5.12E-07	mg/kg-day		1/(mg/kg-day)		3.98E-06	mg/kg-day	9.00E-03	mg/kg-day	4E-04
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	2.27E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-07	1.77E-06	mg/kg-day	2.00E-05	mg/kg-day	9E-02
				ACENAPHTHYLENE	4.00E-02	mg/kg	1.65E-09	mg/kg-day		1/(mg/kg-day)		1.28E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	6.60E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	5.14E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	6.19E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	4.81E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	1.16E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-08	8.99E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	4.54E-08	mg/kg-day		1/(mg/kg-day)		3.53E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	1.28E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	9E-08	9.95E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	3.63E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.82E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	7.84E-08	mg/kg-day		1/(mg/kg-day)		6.10E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg	8.25E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	3E-09	6.42E-06	mg/kg-day	1.00E-02	mg/kg-day	6E-04
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg	3.22E-06	mg/kg-day		1/(mg/kg-day)		2.50E-05	mg/kg-day	9.00E-02	mg/kg-day	3E-04
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg	7.43E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	4E-09	5.78E-06	mg/kg-day	7.00E-02	mg/kg-day	8E-05
			Exp. Route Total								**4E-04**					**2E+01**
		Exp. Point Total									**4E-04**					**2E+01**
	Exp. Medium Total										**4E-04**					**2E+01**
Medium Total											**4E-04**					**2E+01**
									Total of Receptor Risks Across All Media		**4E-04**			Total of Receptor Hazards Across All Media		**2E+01**

TABLE 7.4d CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Exposure Area: Southwest Off-Site/ Outfall 006 Exposure Area
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Expsosure Area	Dermal	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	1.14E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-07	8.85E-12	mg/kg-day	1.00E-09	mg/kg-day	9E-03
				ALUMINUM	7.77E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.76E+01	mg/kg	4.51E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-08	3.51E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				BARIUM	6.73E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.83E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.64E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	5.66E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.11E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.06E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	2.67E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-07	2.08E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ALDRIN	1.08E-01	mg/kg		mg/kg-day	1.70E+01	1/(mg/kg-day)			mg/kg-day	3.00E-05	mg/kg-day	
				DELTA-BHC	3.60E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ENDOSULFAN I	3.20E-03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-03	mg/kg-day	
				HEPTACHLOR	1.20E-01	mg/kg		mg/kg-day	4.50E+00	1/(mg/kg-day)			mg/kg-day	5.00E-04	mg/kg-day	
				ACENAPHTHYLENE	4.90E-01	mg/kg	3.47E-09	mg/kg-day		1/(mg/kg-day)		2.70E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	4.74E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.69E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	5.52E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	4.30E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	9.21E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	7.16E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.80E+00	mg/kg	4.11E-08	mg/kg-day		1/(mg/kg-day)		3.19E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	2.34E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-09	1.82E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	1.70E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.32E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.72E+00	mg/kg	2.03E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	3E-08	1.58E-07	mg/kg-day	8.00E-04	mg/kg-day	2E-04
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	3.61E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.81E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	8.80E+00	mg/kg	6.23E-08	mg/kg-day		1/(mg/kg-day)		4.85E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZENE	2.00E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				TRICHLOROETHENE	3.79E-02	mg/kg		mg/kg-day	4.00E-01	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
			Exp. Route Total								**1E-06**					**1E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	2.87E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	4E-06	2.23E-10	mg/kg-day	1.00E-09	mg/kg-day	2E-01
				ALUMINUM	7.77E+03	mg/kg	3.21E-04	mg/kg-day		1/(mg/kg-day)		2.49E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				ARSENIC	2.76E+01	mg/kg	1.14E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-06	8.86E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				BARIUM	6.73E+02	mg/kg	2.78E-05	mg/kg-day		1/(mg/kg-day)		2.16E-04	mg/kg-day	2.00E-01	mg/kg-day	1E-03
				CHROMIUM	1.83E+02	mg/kg	7.55E-06	mg/kg-day		1/(mg/kg-day)		5.87E-05	mg/kg-day	3.00E-03	mg/kg-day	2E-02
				IRON	2.64E+04	mg/kg	1.09E-03	mg/kg-day		1/(mg/kg-day)		8.47E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				LEAD	5.66E+02	mg/kg	2.34E-05	mg/kg-day		1/(mg/kg-day)		1.82E-04	mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg	1.22E-05	mg/kg-day		1/(mg/kg-day)		9.50E-05	mg/kg-day	1.40E-01	mg/kg-day	7E-04
				MERCURY	1.11E+03	mg/kg	4.56E-05	mg/kg-day		1/(mg/kg-day)		3.55E-04	mg/kg-day	3.00E-04	mg/kg-day	1E+00
				VANADIUM	1.06E+02	mg/kg	4.37E-06	mg/kg-day		1/(mg/kg-day)		3.40E-05	mg/kg-day	9.00E-03	mg/kg-day	4E-03
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	1.44E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-06	1.12E-05	mg/kg-day	2.00E-05	mg/kg-day	6E-01
				ALDRIN	1.08E-01	mg/kg	4.46E-09	mg/kg-day	1.70E+01	1/(mg/kg-day)	8E-08	3.47E-08	mg/kg-day	3.00E-05	mg/kg-day	1E-03
				DELTA-BHC	3.60E-03	mg/kg	1.49E-10	mg/kg-day	6.30E+00	1/(mg/kg-day)	9E-10	1.16E-09	mg/kg-day		mg/kg-day	
				ENDOSULFAN I	3.20E-03	mg/kg	1.32E-10	mg/kg-day		1/(mg/kg-day)		1.03E-09	mg/kg-day	6.00E-03	mg/kg-day	2E-07
				HEPTACHLOR	1.20E-01	mg/kg	4.95E-09	mg/kg-day	4.50E+00	1/(mg/kg-day)	2E-08	3.85E-08	mg/kg-day	5.00E-04	mg/kg-day	8E-05
				ACENAPHTHYLENE	4.90E-01	mg/kg	2.02E-08	mg/kg-day		1/(mg/kg-day)		1.57E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	2.76E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	2.15E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	3.22E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	2.50E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	5.36E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-07	4.17E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.80E+00	mg/kg	2.39E-07	mg/kg-day		1/(mg/kg-day)		1.86E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	1.36E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	1E-08	1.06E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	9.90E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-07	7.70E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.72E+00	mg/kg	1.54E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-07	1.19E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	2.10E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	1.64E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	8.80E+00	mg/kg	3.63E-07	mg/kg-day		1/(mg/kg-day)		2.82E-06	mg/kg-day	3.00E-02	mg/kg-day	9E-05

TABLE 7.4d CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe: Future
Receptor Population: Industrial Worker
Exposure Area: Southwest Off-Site/ Outfall 006 Exposure Area
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Value	Intake/Exposure Units	CSF/Unit Risk Value	CSF/Unit Risk Units	Cancer Risk	Intake/Exposure Value	Intake/Exposure Units	RfD/RfC Value	RfD/RfC Units	Hazard Quotient
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006	Ingestion	BENZENE	2.00E-03	mg/kg	8.25E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	5E-12	6.42E-10	mg/kg-day	4.00E-03	mg/kg-day	2E-07
				TRICHLOROETHENE	3.79E-02	mg/kg	1.56E-09	mg/kg-day	4.00E-01	1/(mg/kg-day)	6E-10	1.22E-08	mg/kg-day			
		Expsosure Area	Exp. Route Total								**1E-05**					**2E+00**
		Exp. Point Total									**1E-05**					**2E+00**
	Exp. Medium Total										**1E-05**					**2E+00**
Medium Total											**1E-05**					**2E+00**
										Total of Receptor Risks Across All Media	**1E-05**				Total of Receptor Hazards Across All Media	**2E+00**

TABLE 7.4e CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure		CSF/Unit Risk		Cancer	Intake/Exposure		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Risk	Value	Units	Value	Units	Quotient
Soil	Surface Soils (0-2 ft)	Petroleum Storage Area	Dermal	ARSENIC	6.76E+01	mg/kg	1.10E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	8.59E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				CHROMIUM	2.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.86E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	4.86E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.42E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	2.01E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	5.49E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-08	4.27E-08	mg/kg-day	2.00E-05	mg/kg-day	2E-03
				DELTA-BHC	1.20E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	6.90E-01	mg/kg	4.89E-09	mg/kg-day		1/(mg/kg-day)		3.80E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	7.30E+00	mg/kg	5.17E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	4.02E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.00E+00	mg/kg	4.96E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	3.86E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	7.08E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	5.51E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	6.70E+00	mg/kg	4.74E-08	mg/kg-day		1/(mg/kg-day)		3.69E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	1.98E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	1E-09	1.54E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	1.20E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	9E-08	9.36E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	4.32E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.36E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.40E+00	mg/kg	3.12E-08	mg/kg-day		1/(mg/kg-day)		2.42E-07	mg/kg-day	3.00E-02	mg/kg-day	8E-06
				BENZENE	8.60E-02	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**7E-07**					**5E-03**
			Ingestion	ARSENIC	6.76E+01	mg/kg	2.79E-06	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-06	2.17E-05	mg/kg-day	3.00E-04	mg/kg-day	7E-02
				CHROMIUM	2.80E+01	mg/kg	1.16E-06	mg/kg-day		1/(mg/kg-day)		8.99E-06	mg/kg-day	3.00E-03	mg/kg-day	3E-03
				IRON	2.86E+04	mg/kg	1.18E-03	mg/kg-day		1/(mg/kg-day)		9.18E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				MANGANESE	4.86E+02	mg/kg	2.01E-05	mg/kg-day		1/(mg/kg-day)		1.56E-04	mg/kg-day	1.40E-01	mg/kg-day	1E-03
				MERCURY	1.42E+01	mg/kg	5.86E-07	mg/kg-day		1/(mg/kg-day)		4.56E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				VANADIUM	2.01E+01	mg/kg	8.29E-07	mg/kg-day		1/(mg/kg-day)		6.45E-06	mg/kg-day	9.00E-03	mg/kg-day	7E-04
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	2.97E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	6E-08	2.31E-07	mg/kg-day	2.00E-05	mg/kg-day	1E-02
				DELTA-BHC	1.20E-03	mg/kg	4.95E-11	mg/kg-day	6.30E+00	1/(mg/kg-day)	3E-10	3.85E-10	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	6.90E-01	mg/kg	2.85E-08	mg/kg-day		1/(mg/kg-day)		2.21E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	7.30E+00	mg/kg	3.01E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	2.34E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.00E+00	mg/kg	2.89E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	2.25E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.00E+01	mg/kg	4.13E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-07	3.21E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	6.70E+00	mg/kg	2.76E-07	mg/kg-day		1/(mg/kg-day)		2.15E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05
				BENZO(K)FLUORANTHENE	2.80E+00	mg/kg	1.16E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	8E-09	8.99E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.70E+00	mg/kg	7.01E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	5.46E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.10E+00	mg/kg	2.52E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	1.96E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.40E+00	mg/kg	1.82E-07	mg/kg-day		1/(mg/kg-day)		1.41E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				BENZENE	8.60E-02	mg/kg	3.55E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-10	2.76E-08	mg/kg-day	4.00E-03	mg/kg-day	7E-06
			Exp. Route Total								**8E-06**					**1E-01**
		Exp. Point Total									**8E-06**					**1E-01**
	Exp. Medium Total										**8E-06**					**1E-01**
Medium Total											**8E-06**					**1E-01**
										Total of Receptor Risks Across All Media	**8E-06**			Total of Receptor Hazards Across All Media		**1E-01**

TABLE 7.4f CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure		CSF/Unit Risk		Cancer	Intake/Exposure		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Risk	Value	Units	Value	Units	Quotient
Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area	Dermal	ARSENIC	1.37E+01	mg/kg	2.24E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-08	1.74E-07	mg/kg-day	3.00E-04	mg/kg-day	6E-04
				CHROMIUM	2.63E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.35E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	2.77E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.13E+02	mg/kg	8.62E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	6.70E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				ACENAPHTHYLENE	3.40E-01	mg/kg	2.41E-09	mg/kg-day		1/(mg/kg-day)		1.87E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.34E+01	mg/kg	9.51E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	7.40E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.70E+00	mg/kg	5.45E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	4.24E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	1.26E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-08	9.81E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.36E+00	mg/kg	3.80E-08	mg/kg-day		1/(mg/kg-day)		2.95E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	3.81E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-09	2.96E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	1.28E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	9E-08	9.95E-08	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.94E+00	mg/kg	1.60E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	3E-08	1.24E-07	mg/kg-day	8.00E-04	mg/kg-day	2E-04
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	4.41E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.43E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.50E+01	mg/kg	1.77E-07	mg/kg-day		1/(mg/kg-day)		1.38E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				1,2,4-TRICHLOROBENZENE	1.35E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	5.94E+00	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	8.00E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**2E-06**					**3E-01**
			Ingestion	ARSENIC	1.37E+01	mg/kg	5.65E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-07	4.40E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				CHROMIUM	2.63E+01	mg/kg	1.08E-06	mg/kg-day		1/(mg/kg-day)		8.42E-06	mg/kg-day	3.00E-03	mg/kg-day	3E-03
				IRON	2.35E+04	mg/kg	9.69E-04	mg/kg-day		1/(mg/kg-day)		7.54E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				MANGANESE	3.32E+02	mg/kg	1.37E-05	mg/kg-day		1/(mg/kg-day)		1.07E-04	mg/kg-day	1.40E-01	mg/kg-day	8E-04
				MERCURY	2.77E+00	mg/kg	1.14E-07	mg/kg-day		1/(mg/kg-day)		8.88E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				VANADIUM	1.24E+01	mg/kg	5.10E-07	mg/kg-day		1/(mg/kg-day)		3.97E-06	mg/kg-day	9.00E-03	mg/kg-day	4E-04
				HIGHLY CHLORINATED PCBs	1.13E+02	mg/kg	4.66E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	9E-06	3.63E-05	mg/kg-day	2.00E-05	mg/kg-day	2E+00
				ACENAPHTHYLENE	3.40E-01	mg/kg	1.40E-08	mg/kg-day		1/(mg/kg-day)		1.09E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.34E+01	mg/kg	5.54E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-07	4.31E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.70E+00	mg/kg	3.18E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-06	2.47E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.78E+01	mg/kg	7.35E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-07	5.72E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.36E+00	mg/kg	2.21E-07	mg/kg-day		1/(mg/kg-day)		1.72E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				BENZO(K)FLUORANTHENE	5.38E+00	mg/kg	2.22E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-08	1.73E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.81E+00	mg/kg	7.46E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	5.80E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.94E+00	mg/kg	1.21E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-07	9.42E-07	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				INDENO(1,2,3-CD)PYRENE	6.23E+00	mg/kg	2.57E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	2.00E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.50E+01	mg/kg	1.03E-06	mg/kg-day		1/(mg/kg-day)		8.02E-06	mg/kg-day	3.00E-02	mg/kg-day	3E-04
				1,2,4-TRICHLOROBENZENE	1.35E+01	mg/kg	5.57E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-09	4.33E-06	mg/kg-day	1.00E-02	mg/kg-day	4E-04
				1,4-DICHLOROBENZENE	5.94E+00	mg/kg	2.45E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-09	1.91E-06	mg/kg-day	7.00E-02	mg/kg-day	3E-05
				BENZENE	8.00E-03	mg/kg	3.30E-10	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-11	2.57E-09	mg/kg-day	4.00E-03	mg/kg-day	6E-07
			Exp. Route Total								**1E-05**					**2E+00**
		Exp. Point Total									**2E-05**					**2E+00**
	Exp. Medium Total										**2E-05**					**2E+00**
Medium Total											**2E-05**					**2E+00**
									Total of Receptor Risks Across All Media		**2E-05**	Total of Receptor Hazards Across All Media				**2E+00**

TABLE 7.5a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Plant Area	Dermal	2,3,7,8-TCDD Equivalent	6.65E-04	mg/kg	3.68E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	6E-08	2.58E-11	mg/kg-day	1.00E-09	mg/kg-day	3E-02
				ALUMINUM	8.77E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.45E+01	mg/kg	1.36E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-08	9.49E-07	mg/kg-day	3.00E-04	mg/kg-day	3E-03
				BARIUM	2.60E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.78E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.09E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.28E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.17E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	2.54E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.93E+00	mg/kg	4.99E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-08	3.49E-07	mg/kg-day	2.00E-05	mg/kg-day	2E-02
				DELTA-BHC	1.90E+00	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg		mg/kg-day	1.60E+01	1/(mg/kg-day)			mg/kg-day	5.00E-05	mg/kg-day	
				ACENAPHTHYLENE	2.08E-01	mg/kg	4.99E-10	mg/kg-day		1/(mg/kg-day)		3.49E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.05E+01	mg/kg	2.51E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.76E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.09E+01	mg/kg	2.61E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.83E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.46E+01	mg/kg	3.49E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.45E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.23E+01	mg/kg	2.95E-08	mg/kg-day		1/(mg/kg-day)		2.06E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05
				BENZO(K)FLUORANTHENE	5.34E+00	mg/kg	1.28E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	9E-10	8.97E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	5.42E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-08	3.80E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.86E+01	mg/kg	3.43E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	5E-08	2.40E-06	mg/kg-day	8.00E-04	mg/kg-day	3E-03
				HEXACHLOROBUTADIENE	1.26E+00	mg/kg	2.33E-09	mg/kg-day	7.80E-02	1/(mg/kg-day)	2E-10	1.63E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	9.58E+00	mg/kg	2.30E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.61E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.38E+01	mg/kg	3.31E-08	mg/kg-day		1/(mg/kg-day)		2.32E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				1,2,3-TRICHLOROBENZENE	3.30E-03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	4.68E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	2.71E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	5.80E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.64E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	2.11E+00	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	1.28E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**4E-07**					**5E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	6.65E-04	mg/kg	1.23E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-06	8.59E-10	mg/kg-day	1.00E-09	mg/kg-day	9E-01
				ALUMINUM	8.77E+03	mg/kg	1.62E-04	mg/kg-day		1/(mg/kg-day)		1.13E-02	mg/kg-day	1.00E+00	mg/kg-day	1E-02
				ARSENIC	2.45E+01	mg/kg	4.52E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-07	3.16E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				BARIUM	2.60E+02	mg/kg	4.79E-06	mg/kg-day		1/(mg/kg-day)		3.36E-04	mg/kg-day	2.00E-01	mg/kg-day	2E-03
				CHROMIUM	1.78E+01	mg/kg	3.28E-07	mg/kg-day		1/(mg/kg-day)		2.30E-05	mg/kg-day	3.00E-03	mg/kg-day	8E-03
				IRON	2.09E+04	mg/kg	3.86E-04	mg/kg-day		1/(mg/kg-day)		2.70E-02	mg/kg-day	7.00E-01	mg/kg-day	4E-02
				MANGANESE	3.32E+02	mg/kg	6.13E-06	mg/kg-day		1/(mg/kg-day)		4.29E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	3.28E+02	mg/kg	6.06E-06	mg/kg-day		1/(mg/kg-day)		4.24E-04	mg/kg-day	3.00E-04	mg/kg-day	1E+00
				NICKEL	3.17E+03	mg/kg	5.84E-05	mg/kg-day		1/(mg/kg-day)		4.09E-03	mg/kg-day	2.00E-02	mg/kg-day	2E-01
				VANADIUM	2.54E+01	mg/kg	4.69E-07	mg/kg-day		1/(mg/kg-day)		3.29E-05	mg/kg-day	9.00E-03	mg/kg-day	4E-03
				HIGHLY CHLORINATED PCBs	1.93E+00	mg/kg	3.56E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	7E-08	2.49E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				DELTA-BHC	1.90E+00	mg/kg	3.51E-08	mg/kg-day	6.30E+00	1/(mg/kg-day)	2E-07	2.45E-06	mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg	6.83E-08	mg/kg-day	1.60E+01	1/(mg/kg-day)	1E-06	4.78E-06	mg/kg-day	5.00E-05	mg/kg-day	1E-01
				ACENAPHTHYLENE	2.08E-01	mg/kg	3.84E-09	mg/kg-day		1/(mg/kg-day)		2.69E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.05E+01	mg/kg	1.93E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.35E-05	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.09E+01	mg/kg	2.01E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	1.41E-05	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.46E+01	mg/kg	2.69E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	1.88E-05	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.23E+01	mg/kg	2.27E-07	mg/kg-day		1/(mg/kg-day)		1.59E-05	mg/kg-day	3.00E-02	mg/kg-day	5E-04
				BENZO(K)FLUORANTHENE	5.34E+00	mg/kg	9.85E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	7E-09	6.90E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.26E+00	mg/kg	4.17E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	2.92E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.86E+01	mg/kg	3.43E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	5E-07	2.40E-05	mg/kg-day	8.00E-04	mg/kg-day	3E-02
				HEXACHLOROBUTADIENE	1.26E+00	mg/kg	2.33E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	2E-09	1.63E-06	mg/kg-day		mg/kg-day	

TABLE 7.5a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Plant Area	Ingestion	INDENO(1,2,3-CD)PYRENE	9.58E+00	mg/kg	1.77E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.24E-05	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.38E+01	mg/kg	2.55E-07	mg/kg-day		1/(mg/kg-day)		1.78E-05	mg/kg-day	3.00E-02	mg/kg-day	6E-04
				1,2,3-TRICHLOROBENZENE	3.30E-03	mg/kg	6.09E-11	mg/kg-day		1/(mg/kg-day)		4.26E-09	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	4.68E+00	mg/kg	8.63E-08	mg/kg-day	3.60E-03	1/(mg/kg-day)	3E-10	6.04E-06	mg/kg-day	1.00E-02	mg/kg-day	6E-04
				1,2-DICHLOROBENZENE	2.71E+02	mg/kg	4.99E-06	mg/kg-day		1/(mg/kg-day)		3.50E-04	mg/kg-day	9.00E-02	mg/kg-day	4E-03
				1,3-DICHLOROBENZENE	5.80E+00	mg/kg	1.07E-07	mg/kg-day		1/(mg/kg-day)		7.48E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.64E+03	mg/kg	3.02E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-07	2.11E-03	mg/kg-day	7.00E-02	mg/kg-day	3E-02
				BENZENE	2.11E+00	mg/kg	3.88E-08	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-09	2.72E-06	mg/kg-day	4.00E-03	mg/kg-day	7E-04
				CHLOROBENZENE	1.28E+02	mg/kg	2.36E-06	mg/kg-day		1/(mg/kg-day)		1.65E-04	mg/kg-day	2.00E-02	mg/kg-day	8E-03
			Exp. Route Total								**7E-06**					**3E+00**
			Inhalation	2,3,7,8-TCDD Equivalent	9.47E-10	mg/m3	6.78E-13	mg/kg-day		1/(mg/kg-day)		4.74E-11	mg/kg-day		mg/kg-day	
				ALUMINUM	1.25E-02	mg/m3	8.94E-06	mg/kg-day		1/(mg/kg-day)		6.26E-04	mg/kg-day	1.43E-03	mg/kg-day	4E-01
				ARSENIC	3.49E-05	mg/m3	2.50E-08	mg/kg-day	1.51E+01	1/(mg/kg-day)	4E-07	1.75E-06	mg/kg-day	1.43E-05	mg/kg-day	1E-01
				BARIUM	3.70E-04	mg/m3	2.65E-07	mg/kg-day		1/(mg/kg-day)		1.85E-05	mg/kg-day	1.40E-04	mg/kg-day	1E-01
				CHROMIUM	2.53E-05	mg/m3	1.81E-08	mg/kg-day	4.20E+01	1/(mg/kg-day)	8E-07	1.27E-06	mg/kg-day	2.86E-05	mg/kg-day	4E-02
				IRON	2.98E-02	mg/m3	2.13E-05	mg/kg-day		1/(mg/kg-day)		1.49E-03	mg/kg-day		mg/kg-day	
				MANGANESE	4.73E-04	mg/m3	3.39E-07	mg/kg-day		1/(mg/kg-day)		2.37E-05	mg/kg-day	1.43E-05	mg/kg-day	2E+00
				MERCURY	4.68E-04	mg/m3	3.35E-07	mg/kg-day		1/(mg/kg-day)		2.34E-05	mg/kg-day	8.57E-05	mg/kg-day	3E-01
				NICKEL	4.51E-03	mg/m3	3.23E-06	mg/kg-day	9.10E-01	1/(mg/kg-day)	3E-06	2.26E-04	mg/kg-day	2.57E-05	mg/kg-day	9E+00
				VANADIUM	3.62E-05	mg/m3	2.59E-08	mg/kg-day		1/(mg/kg-day)		1.82E-06	mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	2.75E-06	mg/m3	1.97E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-09	1.38E-07	mg/kg-day		mg/kg-day	
				DELTA-BHC	2.71E-06	mg/m3	1.94E-09	mg/kg-day	6.30E+00	1/(mg/kg-day)	1E-08	1.36E-07	mg/kg-day		mg/kg-day	
				DIELDRIN	5.27E-06	mg/m3	3.77E-09	mg/kg-day	1.60E+01	1/(mg/kg-day)	6E-08	2.64E-07	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	2.96E-07	mg/m3	2.12E-10	mg/kg-day		1/(mg/kg-day)		1.48E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.49E-05	mg/m3	1.07E-08	mg/kg-day		1/(mg/kg-day)		7.48E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.55E-05	mg/m3	1.11E-08	mg/kg-day		1/(mg/kg-day)		7.77E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.08E-05	mg/m3	1.49E-08	mg/kg-day		1/(mg/kg-day)		1.04E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.75E-05	mg/m3	1.25E-08	mg/kg-day		1/(mg/kg-day)		8.77E-07	mg/kg-day		mg/kg-day	
				BENZO(K)FLUORANTHENE	7.61E-06	mg/m3	5.44E-09	mg/kg-day		1/(mg/kg-day)		3.81E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	3.22E-06	mg/m3	2.30E-09	mg/kg-day		1/(mg/kg-day)		1.61E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	2.65E-05	mg/m3	1.90E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	3E-08	1.33E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBUTADIENE	1.80E-06	mg/m3	1.29E-09	mg/kg-day	7.70E-02	1/(mg/kg-day)	1E-10	9.00E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.36E-05	mg/m3	9.77E-09	mg/kg-day		1/(mg/kg-day)		6.84E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.97E-05	mg/m3	1.41E-08	mg/kg-day		1/(mg/kg-day)		9.85E-07	mg/kg-day		mg/kg-day	
				1,2,3-TRICHLOROBENZENE	9.83E-08	mg/m3	7.04E-11	mg/kg-day		1/(mg/kg-day)		4.93E-09	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.39E-04	mg/m3	9.98E-08	mg/kg-day		1/(mg/kg-day)		6.98E-06	mg/kg-day		mg/kg-day	
				1,2-DICHLOROBENZENE	2.38E-02	mg/m3	1.70E-05	mg/kg-day		1/(mg/kg-day)		1.19E-03	mg/kg-day	4.00E-02	mg/kg-day	3E-02
				1,3-DICHLOROBENZENE	5.64E-04	mg/m3	4.04E-07	mg/kg-day		1/(mg/kg-day)		2.82E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.63E-01	mg/m3	1.16E-04	mg/kg-day	4.00E-02	1/(mg/kg-day)	5E-06	8.15E-03	mg/kg-day	2.29E-01	mg/kg-day	4E-02
				BENZENE	9.91E-04	mg/m3	7.10E-07	mg/kg-day	2.73E-02	1/(mg/kg-day)	2E-08	4.97E-05	mg/kg-day	8.57E-03	mg/kg-day	6E-03
				CHLOROBENZENE	8.79E-02	mg/m3	6.29E-05	mg/kg-day		1/(mg/kg-day)		4.41E-03	mg/kg-day		mg/kg-day	
			Exp. Route Total								**9E-06**					**1E+01**
		Exp. Point Total									**2E-05**					**1E+01**
	Exp. Medium Total										**2E-05**					**1E+01**
Medium Total											**2E-05**					**1E+01**
										Total of Receptor Risks Across All Media	**2E-05**				Total of Receptor Hazards Across All Media	**1E+01**

TABLE 7.5b CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	On-Site Ditches	Dermal	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	4.17E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	6E-07	2.92E-10	mg/kg-day	1.00E-09	mg/kg-day	3E-01
				ARSENIC	3.99E+01	mg/kg	2.21E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-08	1.55E-06	mg/kg-day	3.00E-04	mg/kg-day	5E-03
				CHROMIUM	1.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COPPER	3.26E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	5.39E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	6.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	4.78E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				METHYL MERCURY	6.86E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-04	mg/kg-day	
				NICKEL	3.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	6.39E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	9.88E+00	mg/kg	2.55E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-08	1.79E-06	mg/kg-day	2.00E-05	mg/kg-day	9E-02
				ACENAPHTHYLENE	1.70E-01	mg/kg	4.08E-10	mg/kg-day		1/(mg/kg-day)		2.85E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	5.04E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-09	3.53E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	4.80E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-08	3.36E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	7.20E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-09	5.04E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	3.36E-09	mg/kg-day		1/(mg/kg-day)		2.35E-07	mg/kg-day	3.00E-02	mg/kg-day	8E-06
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	1.06E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	8E-09	7.39E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	2.88E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-09	2.01E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	4.80E-09	mg/kg-day		1/(mg/kg-day)		3.36E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				1,2,3-TRICHLOROBENZENE	2.20E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	7.50E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	1.90E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	7.60E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	4.30E+02	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	1.20E-01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	7.10E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**8E-07**					**4E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	1.39E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-05	9.74E-09	mg/kg-day	1.00E-09	mg/kg-day	1E+01
				ARSENIC	3.99E+01	mg/kg	7.36E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	5.15E-05	mg/kg-day	3.00E-04	mg/kg-day	2E-01
				CHROMIUM	1.92E+02	mg/kg	3.54E-06	mg/kg-day		1/(mg/kg-day)		2.48E-04	mg/kg-day	3.00E-03	mg/kg-day	8E-02
				COPPER	3.26E+02	mg/kg	6.02E-06	mg/kg-day		1/(mg/kg-day)		4.21E-04	mg/kg-day	4.00E-02	mg/kg-day	1E-02
				IRON	5.39E+04	mg/kg	9.95E-04	mg/kg-day		1/(mg/kg-day)		6.96E-02	mg/kg-day	7.00E-01	mg/kg-day	1E-01
				LEAD	6.92E+02	mg/kg	1.28E-05	mg/kg-day		1/(mg/kg-day)		8.94E-04	mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg	7.97E-06	mg/kg-day		1/(mg/kg-day)		5.58E-04	mg/kg-day	1.40E-01	mg/kg-day	4E-03
				MERCURY	4.78E+03	mg/kg	8.82E-05	mg/kg-day		1/(mg/kg-day)		6.17E-03	mg/kg-day	3.00E-04	mg/kg-day	2E+01
				METHYL MERCURY	6.86E-01	mg/kg	1.27E-08	mg/kg-day		1/(mg/kg-day)		8.86E-07	mg/kg-day	1.00E-04	mg/kg-day	9E-03
				NICKEL	3.01E+02	mg/kg	5.55E-06	mg/kg-day		1/(mg/kg-day)		3.89E-04	mg/kg-day	2.00E-02	mg/kg-day	2E-02
				VANADIUM	6.39E+01	mg/kg	1.18E-06	mg/kg-day		1/(mg/kg-day)		8.25E-05	mg/kg-day	9.00E-03	mg/kg-day	9E-03
				HIGHLY CHLORINATED PCBs	9.88E+00	mg/kg	1.82E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-07	1.28E-05	mg/kg-day	2.00E-05	mg/kg-day	6E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	3.14E-09	mg/kg-day		1/(mg/kg-day)		2.20E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	3.87E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.71E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	3.69E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	2.58E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	5.54E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.87E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	2.58E-08	mg/kg-day		1/(mg/kg-day)		1.81E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	8.12E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	6E-08	5.68E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	2.21E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.55E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	3.69E-08	mg/kg-day		1/(mg/kg-day)		2.58E-06	mg/kg-day	3.00E-02	mg/kg-day	9E-05
				1,2,3-TRICHLOROBENZENE	2.20E+00	mg/kg	4.06E-08	mg/kg-day		1/(mg/kg-day)		2.84E-06	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	7.50E+00	mg/kg	1.38E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	5E-10	9.69E-06	mg/kg-day	1.00E-02	mg/kg-day	1E-03
				1,2-DICHLOROBENZENE	1.90E+02	mg/kg	3.51E-06	mg/kg-day		1/(mg/kg-day)		2.45E-04	mg/kg-day	9.00E-02	mg/kg-day	3E-03

TABLE 7.5b CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	On-Site Ditches	Ingestion	1,3-DICHLOROBENZENE	7.60E+01	mg/kg	1.40E-06	mg/kg-day		1/(mg/kg-day)		9.82E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	4.30E+02	mg/kg	7.93E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	4E-08	5.55E-04	mg/kg-day	7.00E-02	mg/kg-day	8E-03
				BENZENE	1.20E-01	mg/kg	2.21E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-10	1.55E-07	mg/kg-day	4.00E-03	mg/kg-day	4E-05
				CHLOROBENZENE	7.10E+01	mg/kg	1.31E-06	mg/kg-day		1/(mg/kg-day)		9.17E-05	mg/kg-day	2.00E-02	mg/kg-day	5E-03
			Exp. Route Total								**2E-05**					**3E+01**
			Inhalation	2,3,7,8-TCDD Equivalent	1.07E-08	mg/m3	7.69E-12	mg/kg-day		1/(mg/kg-day)		5.38E-10	mg/kg-day		mg/kg-day	
				ARSENIC	5.68E-05	mg/m3	4.07E-08	mg/kg-day	1.51E+01	1/(mg/kg-day)	6E-07	2.85E-06	mg/kg-day	1.43E-05	mg/kg-day	2E-01
				CHROMIUM	2.73E-04	mg/m3	1.96E-07	mg/kg-day	4.20E+01	1/(mg/kg-day)	8E-06	1.37E-05	mg/kg-day	2.86E-05	mg/kg-day	5E-01
				COPPER	4.64E-04	mg/m3	3.32E-07	mg/kg-day		1/(mg/kg-day)		2.33E-05	mg/kg-day		mg/kg-day	
				IRON	7.68E-02	mg/m3	5.49E-05	mg/kg-day		1/(mg/kg-day)		3.85E-03	mg/kg-day		mg/kg-day	
				LEAD	9.86E-04	mg/m3	7.05E-07	mg/kg-day		1/(mg/kg-day)		4.94E-05	mg/kg-day		mg/kg-day	
				MANGANESE	6.15E-04	mg/m3	4.40E-07	mg/kg-day		1/(mg/kg-day)		3.08E-05	mg/kg-day	1.43E-05	mg/kg-day	2E+00
				MERCURY	6.81E-03	mg/m3	4.87E-06	mg/kg-day		1/(mg/kg-day)		3.41E-04	mg/kg-day	8.57E-05	mg/kg-day	4E+00
				METHYL MERCURY	9.77E-07	mg/m3	6.99E-10	mg/kg-day		1/(mg/kg-day)		4.90E-08	mg/kg-day	8.57E-05	mg/kg-day	6E-04
				NICKEL	4.29E-04	mg/m3	3.07E-07	mg/kg-day	9.10E-01	1/(mg/kg-day)	3E-07	2.15E-05	mg/kg-day	2.57E-05	mg/kg-day	8E-01
				VANADIUM	9.10E-05	mg/m3	6.51E-08	mg/kg-day		1/(mg/kg-day)		4.56E-06	mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.41E-05	mg/m3	1.01E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-08	7.05E-07	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	2.42E-07	mg/m3	1.73E-10	mg/kg-day		1/(mg/kg-day)		1.21E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.99E-06	mg/m3	2.14E-09	mg/kg-day		1/(mg/kg-day)		1.50E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.85E-06	mg/m3	2.04E-09	mg/kg-day		1/(mg/kg-day)		1.43E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	4.27E-06	mg/m3	3.06E-09	mg/kg-day		1/(mg/kg-day)		2.14E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.99E-06	mg/m3	1.43E-09	mg/kg-day		1/(mg/kg-day)		9.99E-08	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	6.27E-07	mg/m3	4.49E-10	mg/kg-day		1/(mg/kg-day)		3.14E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.71E-06	mg/m3	1.22E-09	mg/kg-day		1/(mg/kg-day)		8.56E-08	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.85E-06	mg/m3	2.04E-09	mg/kg-day		1/(mg/kg-day)		1.43E-07	mg/kg-day		mg/kg-day	
				1,2,3-TRICHLOROBENZENE	6.55E-05	mg/m3	4.69E-08	mg/kg-day		1/(mg/kg-day)		3.28E-06	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	2.23E-04	mg/m3	1.60E-07	mg/kg-day		1/(mg/kg-day)		1.12E-05	mg/kg-day		mg/kg-day	
				1,2-DICHLOROBENZENE	1.67E-02	mg/m3	1.20E-05	mg/kg-day		1/(mg/kg-day)		8.37E-04	mg/kg-day	4.00E-02	mg/kg-day	2E-02
				1,3-DICHLOROBENZENE	7.39E-03	mg/m3	5.29E-06	mg/kg-day		1/(mg/kg-day)		3.70E-04	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	4.27E-02	mg/m3	3.06E-05	mg/kg-day	4.00E-02	1/(mg/kg-day)	1E-06	2.14E-03	mg/kg-day	2.29E-01	mg/kg-day	9E-03
				BENZENE	5.65E-05	mg/m3	4.05E-08	mg/kg-day	2.73E-02	1/(mg/kg-day)	1E-09	2.83E-06	mg/kg-day	8.57E-03	mg/kg-day	3E-04
				CHLOROBENZENE	4.89E-02	mg/m3	3.50E-05	mg/kg-day		1/(mg/kg-day)		2.45E-03	mg/kg-day		mg/kg-day	
			Exp. Route Total								**1E-05**					**8E+00**
		Exp. Point Total									**3E-05**					**4E+01**
	Exp. Medium Total										**3E-05**					**4E+01**
Medium Total											**3E-05**					**4E+01**
										Total of Receptor Risks Across All Media	**3E-05**				Total of Receptor Hazards Across All Media	**4E+01**

TABLE 7.5c CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Former Chlorination Building	Dermal	2,3,7,8-TCDD Equivalent	2.52E-01	mg/kg	1.40E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-05	9.78E-09	mg/kg-day	1.00E-09	mg/kg-day	1E+01
				ARSENIC	1.04E+01	mg/kg	5.76E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	9E-09	4.03E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				CHROMIUM	1.35E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	8.57E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.38E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.50E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	1.42E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-08	9.95E-07	mg/kg-day	2.00E-05	mg/kg-day	5E-02
				LESS CHLORINATED PCBs	1.10E+00	mg/kg	2.84E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	6E-09	1.99E-07	mg/kg-day	7.00E-05	mg/kg-day	3E-03
				ACENAPHTHYLENE	4.00E-02	mg/kg	9.59E-11	mg/kg-day		1/(mg/kg-day)		6.72E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	3.84E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-09	2.69E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	3.60E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-08	2.52E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	6.72E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-09	4.70E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	2.64E-09	mg/kg-day		1/(mg/kg-day)		1.85E-07	mg/kg-day	3.00E-02	mg/kg-day	6E-06
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	7.44E-10	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-09	5.21E-08	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.20E+00	mg/kg	2.21E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	4E-09	1.55E-07	mg/kg-day	8.00E-04	mg/kg-day	2E-04
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	2.11E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-09	1.48E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	4.56E-09	mg/kg-day		1/(mg/kg-day)		3.19E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
			Exp. Route Total								**2E-05**					**1E+01**
			Ingestion	2,3,7,8-TCDD Equivalent	2.52E-01	mg/kg	4.66E-09	mg/kg-day	1.50E+05	1/(mg/kg-day)	7E-04	3.26E-07	mg/kg-day	1.00E-09	mg/kg-day	3E+02
				ARSENIC	1.04E+01	mg/kg	1.92E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-07	1.34E-05	mg/kg-day	3.00E-04	mg/kg-day	4E-02
				CHROMIUM	1.35E+01	mg/kg	2.49E-07	mg/kg-day		1/(mg/kg-day)		1.74E-05	mg/kg-day	3.00E-03	mg/kg-day	6E-03
				IRON	8.57E+03	mg/kg	1.58E-04	mg/kg-day		1/(mg/kg-day)		1.11E-02	mg/kg-day	7.00E-01	mg/kg-day	2E-02
				MANGANESE	3.38E+02	mg/kg	6.24E-06	mg/kg-day		1/(mg/kg-day)		4.37E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	1.50E+02	mg/kg	2.77E-06	mg/kg-day		1/(mg/kg-day)		1.94E-04	mg/kg-day	3.00E-04	mg/kg-day	6E-01
				VANADIUM	1.24E+01	mg/kg	2.29E-07	mg/kg-day		1/(mg/kg-day)		1.60E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	1.01E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	7.10E-06	mg/kg-day	2.00E-05	mg/kg-day	4E-01
				LESS CHLORINATED PCBs	1.10E+00	mg/kg	2.03E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-08	1.42E-06	mg/kg-day	7.00E-05	mg/kg-day	2E-02
				ACENAPHTHYLENE	4.00E-02	mg/kg	7.38E-10	mg/kg-day		1/(mg/kg-day)		5.17E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	2.95E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.07E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	2.77E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.94E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	5.17E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.62E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	2.03E-08	mg/kg-day		1/(mg/kg-day)		1.42E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	5.72E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-08	4.00E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.20E+00	mg/kg	2.21E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	4E-08	1.55E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	1.62E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.14E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	3.51E-08	mg/kg-day		1/(mg/kg-day)		2.45E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg	3.69E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	1E-09	2.58E-05	mg/kg-day	1.00E-02	mg/kg-day	3E-03
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg	1.44E-06	mg/kg-day		1/(mg/kg-day)		1.01E-04	mg/kg-day	9.00E-02	mg/kg-day	1E-03
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg	3.32E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-09	2.32E-05	mg/kg-day	7.00E-02	mg/kg-day	3E-04
			Exp. Route Total								**7E-04**					**3E+02**
			Inhalation	2,3,7,8-TCDD Equivalent	3.59E-07	mg/m3	2.57E-10	mg/kg-day		1/(mg/kg-day)		1.80E-08	mg/kg-day		mg/kg-day	
				ARSENIC	1.48E-05	mg/m3	1.06E-08	mg/kg-day	1.51E+01	1/(mg/kg-day)	2E-07	7.42E-07	mg/kg-day	1.43E-05	mg/kg-day	5E-02
				CHROMIUM	1.92E-05	mg/m3	1.38E-08	mg/kg-day	4.20E+01	1/(mg/kg-day)	6E-07	9.63E-07	mg/kg-day	2.86E-05	mg/kg-day	3E-02
				IRON	1.22E-02	mg/m3	8.74E-06	mg/kg-day		1/(mg/kg-day)		6.12E-04	mg/kg-day		mg/kg-day	
				MANGANESE	4.81E-04	mg/m3	3.45E-07	mg/kg-day		1/(mg/kg-day)		2.41E-05	mg/kg-day	1.43E-05	mg/kg-day	2E+00
				MERCURY	2.14E-04	mg/m3	1.53E-07	mg/kg-day		1/(mg/kg-day)		1.07E-05	mg/kg-day	8.57E-05	mg/kg-day	1E-01
				VANADIUM	1.77E-05	mg/m3	1.26E-08	mg/kg-day		1/(mg/kg-day)		8.85E-07	mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	7.83E-06	mg/m3	5.61E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-08	3.92E-07	mg/kg-day		mg/kg-day	
				LESS CHLORINATED PCBs	1.57E-06	mg/m3	1.12E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-09	7.85E-08	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	5.70E-08	mg/m3	4.08E-11	mg/kg-day		1/(mg/kg-day)		2.85E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.28E-06	mg/m3	1.63E-09	mg/kg-day		1/(mg/kg-day)		1.14E-07	mg/kg-day		mg/kg-day	

TABLE 7.5c CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Former Chlorination Building	Inhalation	BENZO(A)PYRENE	2.14E-06	mg/m3	1.53E-09	mg/kg-day		1/(mg/kg-day)		1.07E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.99E-06	mg/m3	2.85E-09	mg/kg-day		1/(mg/kg-day)		2.00E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.57E-06	mg/m3	1.12E-09	mg/kg-day		1/(mg/kg-day)		7.85E-08	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	4.42E-07	mg/m3	3.16E-10	mg/kg-day		1/(mg/kg-day)		2.21E-08	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.71E-06	mg/m3	1.22E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-09	8.56E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.25E-06	mg/m3	8.97E-10	mg/kg-day		1/(mg/kg-day)		6.28E-08	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.71E-06	mg/m3	1.94E-09	mg/kg-day		1/(mg/kg-day)		1.36E-07	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	5.96E-04	mg/m3	4.26E-07	mg/kg-day		1/(mg/kg-day)		2.99E-05	mg/kg-day		mg/kg-day	
				1,2-DICHLOROBENZENE	6.86E-03	mg/m3	4.91E-06	mg/kg-day		1/(mg/kg-day)		3.43E-04	mg/kg-day	4.00E-02	mg/kg-day	9E-03
				1,4-DICHLOROBENZENE	1.79E-03	mg/m3	1.28E-06	mg/kg-day	4.00E-02	1/(mg/kg-day)	5E-08	8.96E-05	mg/kg-day	2.29E-01	mg/kg-day	4E-04
			Exp. Route Total								**8E-07**					**2E+00**
		Exp. Point Total									**7E-04**					**3E+02**
	Exp. Medium Total										**7E-04**					**3E+02**
Medium Total											**7E-04**					**3E+02**
							Total of Receptor Risks Across All Media				**7E-04**	Total of Receptor Hazards Across All Media				**3E+02**

TABLE 7.5d CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	3.85E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	6E-08	2.70E-11	mg/kg-day	1.00E-09	mg/kg-day	3E-02
				ALUMINUM	7.77E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.76E+01	mg/kg	1.53E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-08	1.07E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				BARIUM	6.73E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.83E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.64E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	5.66E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.88E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.06E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	9.04E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	6.33E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				ALDRIN	8.80E-02	mg/kg		mg/kg-day	1.70E+01	1/(mg/kg-day)			mg/kg-day	3.00E-05	mg/kg-day	
				HEPTACHLOR	1.20E-01	mg/kg		mg/kg-day	4.50E+00	1/(mg/kg-day)			mg/kg-day	5.00E-04	mg/kg-day	
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	1.61E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.12E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	1.87E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.31E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	3.12E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.18E-06	mg/kg-day		mg/kg-day	
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	7.92E-09	mg/kg-day	7.30E-02	1/(mg/kg-day)	6E-10	5.54E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	5.76E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-08	4.03E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.08E+00	mg/kg	5.68E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	9E-09	3.97E-07	mg/kg-day	8.00E-04	mg/kg-day	5E-04
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	1.22E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-09	8.56E-07	mg/kg-day		mg/kg-day	
				NAPHTHALENE	3.20E+03	mg/kg	7.68E-06	mg/kg-day		1/(mg/kg-day)		5.37E-04	mg/kg-day	2.00E-02	mg/kg-day	3E-02
				1,2,4-TRIMETHYLBENZENE	1.40E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,3,5-TRIMETHYLBENZENE	1.00E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	5.99E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	7.60E+03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				ETHYLBENZENE	8.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-01	mg/kg-day	
				SEC-BUTYLBENZENE	1.30E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				TERT-BUTYLBENZENE	4.30E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				TOLUENE	3.10E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-02	mg/kg-day	
				TRICHLOROETHENE	3.36E-02	mg/kg		mg/kg-day	4.00E-01	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				XYLENES, TOTAL	1.70E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-01	mg/kg-day	
			Exp. Route Total								**5E-07**					**4E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	6.96E-04	mg/kg	1.28E-11	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-06	8.99E-10	mg/kg-day	1.00E-09	mg/kg-day	9E-01
				ALUMINUM	7.77E+03	mg/kg	1.43E-04	mg/kg-day		1/(mg/kg-day)		1.00E-02	mg/kg-day	1.00E+00	mg/kg-day	1E-02
				ARSENIC	2.76E+01	mg/kg	5.09E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-07	3.56E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				BARIUM	6.73E+02	mg/kg	1.24E-05	mg/kg-day		1/(mg/kg-day)		8.69E-04	mg/kg-day	2.00E-01	mg/kg-day	4E-03
				CHROMIUM	1.83E+02	mg/kg	3.38E-06	mg/kg-day		1/(mg/kg-day)		2.36E-04	mg/kg-day	3.00E-03	mg/kg-day	8E-02
				IRON	2.64E+04	mg/kg	4.87E-04	mg/kg-day		1/(mg/kg-day)		3.41E-02	mg/kg-day	7.00E-01	mg/kg-day	5E-02
				LEAD	5.66E+02	mg/kg	1.04E-05	mg/kg-day		1/(mg/kg-day)		7.31E-04	mg/kg-day		mg/kg-day	
				MANGANESE	2.96E+02	mg/kg	5.46E-06	mg/kg-day		1/(mg/kg-day)		3.82E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	1.88E+03	mg/kg	3.47E-05	mg/kg-day		1/(mg/kg-day)		2.43E-03	mg/kg-day	3.00E-04	mg/kg-day	8E+00
				VANADIUM	1.06E+02	mg/kg	1.96E-06	mg/kg-day		1/(mg/kg-day)		1.37E-04	mg/kg-day	9.00E-03	mg/kg-day	2E-02
				HIGHLY CHLORINATED PCBs	3.50E+01	mg/kg	6.46E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-06	4.52E-05	mg/kg-day	2.00E-05	mg/kg-day	2E+00
				ALDRIN	8.80E-02	mg/kg	1.62E-09	mg/kg-day	1.70E+01	1/(mg/kg-day)	3E-08	1.14E-07	mg/kg-day	3.00E-05	mg/kg-day	4E-03
				HEPTACHLOR	1.20E-01	mg/kg	2.21E-09	mg/kg-day	4.50E+00	1/(mg/kg-day)	1E-08	1.55E-07	mg/kg-day	5.00E-04	mg/kg-day	3E-04
				BENZO(A)ANTHRACENE	6.70E+00	mg/kg	1.24E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-08	8.65E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.80E+00	mg/kg	1.44E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	1.01E-05	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.30E+01	mg/kg	2.40E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	1.68E-05	mg/kg-day		mg/kg-day	
				BENZO(K)FLUORANTHENE	3.30E+00	mg/kg	6.09E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	4E-09	4.26E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.40E+00	mg/kg	4.43E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	3.10E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.08E+00	mg/kg	5.68E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	9E-08	3.97E-06	mg/kg-day	8.00E-04	mg/kg-day	5E-03
				INDENO(1,2,3-CD)PYRENE	5.10E+00	mg/kg	9.41E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-08	6.59E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	3.20E+03	mg/kg	5.90E-05	mg/kg-day		1/(mg/kg-day)		4.13E-03	mg/kg-day	2.00E-02	mg/kg-day	2E-01

TABLE 7.5d CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	Ingestion	1,2,4-TRIMETHYLBENZENE	1.40E+02	mg/kg	2.58E-06	mg/kg-day		1/(mg/kg-day)		1.81E-04	mg/kg-day		mg/kg-day	
				1,3,5-TRIMETHYLBENZENE	1.00E+02	mg/kg	1.85E-06	mg/kg-day		1/(mg/kg-day)		1.29E-04	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	5.99E+01	mg/kg	1.11E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	6E-09	7.74E-05	mg/kg-day	7.00E-02	mg/kg-day	1E-03
				BENZENE	7.60E+03	mg/kg	1.40E-04	mg/kg-day	5.50E-02	1/(mg/kg-day)	8E-06	9.82E-03	mg/kg-day	4.00E-03	mg/kg-day	2E+00
				ETHYLBENZENE	8.80E+01	mg/kg	1.62E-06	mg/kg-day		1/(mg/kg-day)		1.14E-04	mg/kg-day	1.00E-01	mg/kg-day	1E-03
				SEC-BUTYLBENZENE	1.30E+02	mg/kg	2.40E-06	mg/kg-day		1/(mg/kg-day)		1.68E-04	mg/kg-day		mg/kg-day	
				TERT-BUTYLBENZENE	4.30E+01	mg/kg	7.93E-07	mg/kg-day		1/(mg/kg-day)		5.55E-05	mg/kg-day		mg/kg-day	
				TOLUENE	3.10E+03	mg/kg	5.72E-05	mg/kg-day		1/(mg/kg-day)		4.00E-03	mg/kg-day	8.00E-02	mg/kg-day	5E-02
				TRICHLOROETHENE	3.36E-02	mg/kg	6.20E-10	mg/kg-day	4.00E-01	1/(mg/kg-day)	2E-10	4.34E-08	mg/kg-day		mg/kg-day	
				XYLENES, TOTAL	1.70E+03	mg/kg	3.14E-05	mg/kg-day		1/(mg/kg-day)		2.20E-03	mg/kg-day	2.00E-01	mg/kg-day	1E-02
			Exp. Route Total								**1E-05**					**1E+01**
			Inhalation	2,3,7,8-TCDD Equivalent	9.92E-10	mg/m3	7.10E-13	mg/kg-day		1/(mg/kg-day)		4.97E-11	mg/kg-day		mg/kg-day	
				ALUMINUM	1.11E-02	mg/m3	7.92E-06	mg/kg-day		1/(mg/kg-day)		5.54E-04	mg/kg-day	1.43E-03	mg/kg-day	4E-01
				ARSENIC	3.93E-05	mg/m3	2.81E-08	mg/kg-day	1.51E+01	1/(mg/kg-day)	4E-07	1.97E-06	mg/kg-day	1.43E-05	mg/kg-day	1E-01
				BARIUM	9.59E-04	mg/m3	6.86E-07	mg/kg-day		1/(mg/kg-day)		4.80E-05	mg/kg-day	1.40E-04	mg/kg-day	3E-01
				CHROMIUM	2.61E-04	mg/m3	1.87E-07	mg/kg-day	4.20E+01	1/(mg/kg-day)	8E-06	1.31E-05	mg/kg-day	2.86E-05	mg/kg-day	5E-01
				IRON	3.76E-02	mg/m3	2.69E-05	mg/kg-day		1/(mg/kg-day)		1.88E-03	mg/kg-day		mg/kg-day	
				LEAD	8.06E-04	mg/m3	5.77E-07	mg/kg-day		1/(mg/kg-day)		4.04E-05	mg/kg-day		mg/kg-day	
				MANGANESE	4.22E-04	mg/m3	3.02E-07	mg/kg-day		1/(mg/kg-day)		2.11E-05	mg/kg-day	1.43E-05	mg/kg-day	1E+00
				MERCURY	2.68E-03	mg/m3	1.92E-06	mg/kg-day		1/(mg/kg-day)		1.34E-04	mg/kg-day	8.57E-05	mg/kg-day	2E+00
				VANADIUM	1.51E-04	mg/m3	1.08E-07	mg/kg-day		1/(mg/kg-day)		7.56E-06	mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	4.99E-05	mg/m3	3.57E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	7E-08	2.50E-06	mg/kg-day		mg/kg-day	
				ALDRIN	1.25E-07	mg/m3	8.97E-11	mg/kg-day	1.70E+01	1/(mg/kg-day)	2E-09	6.28E-09	mg/kg-day		mg/kg-day	
				HEPTACHLOR	1.71E-07	mg/m3	1.22E-10	mg/kg-day	4.50E+00	1/(mg/kg-day)	6E-10	8.56E-09	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	9.54E-06	mg/m3	6.83E-09	mg/kg-day		1/(mg/kg-day)		4.78E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.11E-05	mg/m3	7.95E-09	mg/kg-day		1/(mg/kg-day)		5.57E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.85E-05	mg/m3	1.33E-08	mg/kg-day		1/(mg/kg-day)		9.28E-07	mg/kg-day		mg/kg-day	
				BENZO(K)FLUORANTHENE	4.70E-06	mg/m3	3.36E-09	mg/kg-day		1/(mg/kg-day)		2.35E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	3.42E-06	mg/m3	2.45E-09	mg/kg-day		1/(mg/kg-day)		1.71E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	4.38E-06	mg/m3	3.14E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	5E-09	2.20E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	7.26E-06	mg/m3	5.20E-09	mg/kg-day		1/(mg/kg-day)		3.64E-07	mg/kg-day		mg/kg-day	
				NAPHTHALENE	4.56E-03	mg/m3	3.26E-06	mg/kg-day	1.20E-01	1/(mg/kg-day)	4E-07	2.28E-04	mg/kg-day	8.57E-04	mg/kg-day	3E-01
				1,2,4-TRIMETHYLBENZENE	4.17E-03	mg/m3	2.99E-06	mg/kg-day		1/(mg/kg-day)		2.09E-04	mg/kg-day	2.00E-03	mg/kg-day	1E-01
				1,3,5-TRIMETHYLBENZENE	9.52E-03	mg/m3	6.82E-06	mg/kg-day		1/(mg/kg-day)		4.77E-04	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	5.95E-03	mg/m3	4.26E-06	mg/kg-day	4.00E-02	1/(mg/kg-day)	2E-07	2.98E-04	mg/kg-day	2.29E-01	mg/kg-day	1E-03
				BENZENE	3.58E+00	mg/m3	2.56E-03	mg/kg-day	2.73E-02	1/(mg/kg-day)	7E-05	1.79E-01	mg/kg-day	8.57E-03	mg/kg-day	2E+01
				ETHYLBENZENE	2.10E-02	mg/m3	1.50E-05	mg/kg-day		1/(mg/kg-day)		1.05E-03	mg/kg-day	2.86E-01	mg/kg-day	4E-03
				SEC-BUTYLBENZENE		mg/m3		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				TERT-BUTYLBENZENE		mg/m3		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				TOLUENE	1.00E+00	mg/m3	7.17E-04	mg/kg-day		1/(mg/kg-day)		5.02E-02	mg/kg-day	1.43E+00	mg/kg-day	4E-02
				TRICHLOROETHENE	1.33E-05	mg/m3	9.49E-09	mg/kg-day	4.00E-01	1/(mg/kg-day)	4E-09	6.64E-07	mg/kg-day		mg/kg-day	
				XYLENES, TOTAL	2.45E+00	mg/m3	1.76E-03	mg/kg-day		1/(mg/kg-day)		1.23E-01	mg/kg-day	2.86E-02	mg/kg-day	4E+00
			Exp. Route Total								**8E-05**					**3E+01**
		Exp. Point Total									**9E-05**					**4E+01**
	Exp. Medium Total										**9E-05**					**4E+01**
Medium Total											**9E-05**					**4E+01**
										Total of Receptor Risks Across All Media	**9E-05**				Total of Receptor Hazards Across All Media	**4E+01**

TABLE 7.5e CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Petroleum Storage Area	Dermal	ALUMINUM	9.13E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	3.85E+01	mg/kg	2.13E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-08	1.49E-06	mg/kg-day	3.00E-04	mg/kg-day	5E-03
				CHROMIUM	2.06E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.46E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	4.47E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.03E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.73E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	1.86E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-09	1.30E-07	mg/kg-day	2.00E-05	mg/kg-day	7E-03
				DELTA-BHC	1.20E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	3.78E-01	mg/kg	9.07E-10	mg/kg-day		1/(mg/kg-day)		6.35E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.99E+00	mg/kg	9.58E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-09	6.70E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	3.77E+00	mg/kg	9.03E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-08	6.32E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.62E+00	mg/kg	1.35E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	9.44E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	3.66E+00	mg/kg	8.79E-09	mg/kg-day		1/(mg/kg-day)		6.15E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZO(K)FLUORANTHENE	1.73E+00	mg/kg	4.14E-09	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-10	2.90E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	9.50E-01	mg/kg	2.28E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-08	1.60E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	3.15E+00	mg/kg	7.54E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-09	5.28E-07	mg/kg-day		mg/kg-day	
				NAPHTHALENE	2.24E+01	mg/kg	5.38E-08	mg/kg-day		1/(mg/kg-day)		3.77E-06	mg/kg-day	2.00E-02	mg/kg-day	2E-04
				PHENANTHRENE	3.37E+00	mg/kg	8.08E-09	mg/kg-day		1/(mg/kg-day)		5.66E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZENE	1.02E-01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**1E-07**					**1E-02**
			Ingestion	ALUMINUM	9.13E+03	mg/kg	1.68E-04	mg/kg-day		1/(mg/kg-day)		1.18E-02	mg/kg-day	1.00E+00	mg/kg-day	1E-02
				ARSENIC	3.85E+01	mg/kg	7.11E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-06	4.98E-05	mg/kg-day	3.00E-04	mg/kg-day	2E-01
				CHROMIUM	2.06E+01	mg/kg	3.80E-07	mg/kg-day		1/(mg/kg-day)		2.66E-05	mg/kg-day	3.00E-03	mg/kg-day	9E-03
				IRON	2.46E+04	mg/kg	4.55E-04	mg/kg-day		1/(mg/kg-day)		3.18E-02	mg/kg-day	7.00E-01	mg/kg-day	5E-02
				MANGANESE	4.47E+02	mg/kg	8.24E-06	mg/kg-day		1/(mg/kg-day)		5.77E-04	mg/kg-day	1.40E-01	mg/kg-day	4E-03
				MERCURY	1.03E+01	mg/kg	1.90E-07	mg/kg-day		1/(mg/kg-day)		1.33E-05	mg/kg-day	3.00E-04	mg/kg-day	4E-02
				VANADIUM	1.73E+01	mg/kg	3.20E-07	mg/kg-day		1/(mg/kg-day)		2.24E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	1.33E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-08	9.30E-07	mg/kg-day	2.00E-05	mg/kg-day	5E-02
				DELTA-BHC	1.20E-03	mg/kg	2.21E-11	mg/kg-day	6.30E+00	1/(mg/kg-day)	1E-10	1.55E-09	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	3.78E-01	mg/kg	6.97E-09	mg/kg-day		1/(mg/kg-day)		4.88E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.99E+00	mg/kg	7.37E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	5.16E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	3.77E+00	mg/kg	6.95E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	4.86E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.62E+00	mg/kg	1.04E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-08	7.26E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	3.66E+00	mg/kg	6.76E-08	mg/kg-day		1/(mg/kg-day)		4.73E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZO(K)FLUORANTHENE	1.73E+00	mg/kg	3.19E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-09	2.23E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	9.50E-01	mg/kg	1.75E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.23E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	3.15E+00	mg/kg	5.80E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	4.06E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	2.24E+01	mg/kg	4.14E-07	mg/kg-day		1/(mg/kg-day)		2.90E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				PHENANTHRENE	3.37E+00	mg/kg	6.22E-08	mg/kg-day		1/(mg/kg-day)		4.35E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZENE	1.02E-01	mg/kg	1.88E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-10	1.32E-07	mg/kg-day	4.00E-03	mg/kg-day	3E-05
			Exp. Route Total								**2E-06**					**3E-01**
			Inhalation	ALUMINUM	1.30E-02	mg/m3	9.31E-06	mg/kg-day		1/(mg/kg-day)		6.51E-04	mg/kg-day	1.43E-03	mg/kg-day	5E-01
				ARSENIC	5.49E-05	mg/m3	3.93E-08	mg/kg-day	1.51E+01	1/(mg/kg-day)	6E-07	2.75E-06	mg/kg-day	1.43E-05	mg/kg-day	2E-01
				CHROMIUM	2.94E-05	mg/m3	2.10E-08	mg/kg-day	4.20E+01	1/(mg/kg-day)	9E-07	1.47E-06	mg/kg-day	2.86E-05	mg/kg-day	5E-02
				IRON	3.51E-02	mg/m3	2.51E-05	mg/kg-day		1/(mg/kg-day)		1.76E-03	mg/kg-day		mg/kg-day	
				MANGANESE	6.36E-04	mg/m3	4.55E-07	mg/kg-day		1/(mg/kg-day)		3.19E-05	mg/kg-day	1.43E-05	mg/kg-day	2E+00
				MERCURY	1.47E-05	mg/m3	1.05E-08	mg/kg-day		1/(mg/kg-day)		7.35E-07	mg/kg-day	8.57E-05	mg/kg-day	9E-03
				VANADIUM	2.47E-05	mg/m3	1.77E-08	mg/kg-day		1/(mg/kg-day)		1.24E-06	mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.03E-06	mg/m3	7.34E-10	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-09	5.14E-08	mg/kg-day		mg/kg-day	
				DELTA-BHC	1.71E-09	mg/m3	1.22E-12	mg/kg-day	6.30E+00	1/(mg/kg-day)	8E-12	8.56E-11	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	5.38E-07	mg/m3	3.85E-10	mg/kg-day		1/(mg/kg-day)		2.70E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	5.69E-06	mg/m3	4.07E-09	mg/kg-day		1/(mg/kg-day)		2.85E-07	mg/kg-day		mg/kg-day	

TABLE 7.5e CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Petroleum Storage Area	Inhalation	BENZO(A)PYRENE	5.36E-06	mg/m3	3.84E-09	mg/kg-day		1/(mg/kg-day)		2.69E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	8.00E-06	mg/m3	5.73E-09	mg/kg-day		1/(mg/kg-day)		4.01E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.22E-06	mg/m3	3.73E-09	mg/kg-day		1/(mg/kg-day)		2.61E-07	mg/kg-day		mg/kg-day	
				BENZO(K)FLUORANTHENE	2.46E-06	mg/m3	1.76E-09	mg/kg-day		1/(mg/kg-day)		1.23E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.35E-06	mg/m3	9.68E-10	mg/kg-day		1/(mg/kg-day)		6.78E-08	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	4.48E-06	mg/m3	3.21E-09	mg/kg-day		1/(mg/kg-day)		2.24E-07	mg/kg-day		mg/kg-day	
				NAPHTHALENE	3.19E-05	mg/m3	2.29E-08	mg/kg-day	1.20E-01	1/(mg/kg-day)	3E-09	1.60E-06	mg/kg-day	8.57E-04	mg/kg-day	2E-03
				PHENANTHRENE	4.80E-06	mg/m3	3.44E-09	mg/kg-day		1/(mg/kg-day)		2.40E-07	mg/kg-day		mg/kg-day	
				BENZENE	4.80E-05	mg/m3	3.44E-08	mg/kg-day	2.73E-02	1/(mg/kg-day)	9E-10	2.41E-06	mg/kg-day	8.57E-03	mg/kg-day	3E-04
			Exp. Route Total								**1E-06**					**3E+00**
		Exp. Point Total									**4E-06**					**3E+00**
	Exp. Medium Total										**4E-06**					**3E+00**
Medium Total											**4E-06**					**3E+00**
Groundwater	Shallow Groundwater (0-10 ft bgs)	Petroleum Storage Area	Dermal	ALUMINUM	2.64E+04	ug/L	3.90E-05	mg/kg-day		1/(mg/kg-day)		2.73E-03	mg/kg-day	1.00E+00	mg/kg-day	3E-03
				BARIUM	3.28E+02	ug/L	4.84E-07	mg/kg-day		1/(mg/kg-day)		3.39E-05	mg/kg-day	1.40E-02	mg/kg-day	2E-03
				CHROMIUM	5.13E+01	ug/L	1.51E-07	mg/kg-day		1/(mg/kg-day)		1.06E-05	mg/kg-day	7.50E-05	mg/kg-day	1E-01
				COPPER	1.79E+02	ug/L	2.64E-07	mg/kg-day		1/(mg/kg-day)		1.85E-05	mg/kg-day	4.00E-02	mg/kg-day	5E-04
				IRON	4.53E+04	ug/L	6.68E-05	mg/kg-day		1/(mg/kg-day)		4.68E-03	mg/kg-day	7.00E-01	mg/kg-day	7E-03
				LEAD	7.17E+01	ug/L	1.06E-08	mg/kg-day		1/(mg/kg-day)		7.41E-07	mg/kg-day		mg/kg-day	
				MANGANESE	1.73E+03	ug/L	2.55E-06	mg/kg-day		1/(mg/kg-day)		1.78E-04	mg/kg-day	5.60E-03	mg/kg-day	3E-02
				MERCURY	2.44E+00	ug/L	3.60E-09	mg/kg-day		1/(mg/kg-day)		2.52E-07	mg/kg-day	2.10E-05	mg/kg-day	1E-02
				NICKEL	6.91E+01	ug/L	2.04E-08	mg/kg-day		1/(mg/kg-day)		1.43E-06	mg/kg-day	8.00E-04	mg/kg-day	2E-03
				VANADIUM	5.94E+01	ug/L	8.77E-08	mg/kg-day		1/(mg/kg-day)		6.14E-06	mg/kg-day	2.34E-04	mg/kg-day	3E-02
				2-METHYLNAPHTHALENE	2.40E+01	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				DIBENZOFURAN	2.00E+00	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-03	mg/kg-day	
				NAPHTHALENE	2.30E+02	ug/L	1.60E-05	mg/kg-day		1/(mg/kg-day)		1.12E-03	mg/kg-day	2.00E-02	mg/kg-day	6E-02
				PHENANTHRENE	6.00E+00	ug/L	1.25E-06	mg/kg-day		1/(mg/kg-day)		8.74E-05	mg/kg-day	3.00E-02	mg/kg-day	3E-03
				BENZENE	2.89E+03	ug/L	6.33E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-06	4.43E-03	mg/kg-day	4.00E-03	mg/kg-day	1E+00
				XYLENES, TOTAL	4.10E+01	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-01	mg/kg-day	
			Exp. Route Total								**3E-06**					**1E+00**
			Ingestion	ALUMINUM	2.64E+04	ug/L	1.48E-05	mg/kg-day		1/(mg/kg-day)		1.03E-03	mg/kg-day	1.00E+00	mg/kg-day	1E-03
				BARIUM	3.28E+02	ug/L	1.83E-07	mg/kg-day		1/(mg/kg-day)		1.28E-05	mg/kg-day	2.00E-01	mg/kg-day	6E-05
				CHROMIUM	5.13E+01	ug/L	2.87E-08	mg/kg-day		1/(mg/kg-day)		2.01E-06	mg/kg-day	3.00E-03	mg/kg-day	7E-04
				COPPER	1.79E+02	ug/L	1.00E-07	mg/kg-day		1/(mg/kg-day)		7.01E-06	mg/kg-day	4.00E-02	mg/kg-day	2E-04
				IRON	4.53E+04	ug/L	2.53E-05	mg/kg-day		1/(mg/kg-day)		1.77E-03	mg/kg-day	7.00E-01	mg/kg-day	3E-03
				LEAD	7.17E+01	ug/L	4.01E-08	mg/kg-day		1/(mg/kg-day)		2.81E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.73E+03	ug/L	9.65E-07	mg/kg-day		1/(mg/kg-day)		6.76E-05	mg/kg-day	1.40E-01	mg/kg-day	5E-04
				MERCURY	2.44E+00	ug/L	1.36E-09	mg/kg-day		1/(mg/kg-day)		9.55E-08	mg/kg-day	3.00E-04	mg/kg-day	3E-04
				NICKEL	6.91E+01	ug/L	3.86E-08	mg/kg-day		1/(mg/kg-day)		2.70E-06	mg/kg-day	2.00E-02	mg/kg-day	1E-04
				VANADIUM	5.94E+01	ug/L	3.32E-08	mg/kg-day		1/(mg/kg-day)		2.32E-06	mg/kg-day	9.00E-03	mg/kg-day	3E-04
				2-METHYLNAPHTHALENE	2.40E+01	ug/L	1.34E-08	mg/kg-day		1/(mg/kg-day)		9.39E-07	mg/kg-day	4.00E-03	mg/kg-day	2E-04
				DIBENZOFURAN	2.00E+00	ug/L	1.12E-09	mg/kg-day		1/(mg/kg-day)		7.83E-08	mg/kg-day	1.00E-03	mg/kg-day	8E-05
				NAPHTHALENE	2.30E+02	ug/L	1.29E-07	mg/kg-day		1/(mg/kg-day)		9.00E-06	mg/kg-day	2.00E-02	mg/kg-day	5E-04
				PHENANTHRENE	6.00E+00	ug/L	3.35E-09	mg/kg-day		1/(mg/kg-day)		2.35E-07	mg/kg-day	3.00E-02	mg/kg-day	8E-06
				BENZENE	2.89E+03	ug/L	1.62E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	9E-08	1.13E-04	mg/kg-day	4.00E-03	mg/kg-day	3E-02
				XYLENES, TOTAL	4.10E+01	ug/L	2.29E-08	mg/kg-day		1/(mg/kg-day)		1.60E-06	mg/kg-day	2.00E-01	mg/kg-day	8E-06
			Exp. Route Total								**9E-08**					**3E-02**
		Exp. Point Total									**4E-06**					**1E+00**
	Exp. Medium Total										**4E-06**					**1E+00**
Medium Total											**4E-06**					**1E+00**
									Total of Receptor Risks Across All Media		**7E-06**			Total of Receptor Hazards Across All Media		**5E+00**

TABLE 7.5f CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure		CSF/Unit Risk			Intake/Exposure		RfD/RfC		
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Hazard Quotient
Soil	Upper Soils (0-10 ft)	Chlorobenzene Hot-Spot Area	Dermal	ARSENIC	1.02E+01	mg/kg	5.66E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-09	3.96E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				CHROMIUM	2.23E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	1.82E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.82E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.68E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.13E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	6.17E+01	mg/kg	1.59E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-07	1.11E-05	mg/kg-day	2.00E-05	mg/kg-day	6E-01
				ACENAPHTHYLENE	2.71E-01	mg/kg	6.50E-10	mg/kg-day		1/(mg/kg-day)		4.55E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.70E+01	mg/kg	4.08E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.85E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.18E+00	mg/kg	1.72E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.21E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.07E+01	mg/kg	2.57E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.80E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.49E+00	mg/kg	1.32E-08	mg/kg-day		1/(mg/kg-day)		9.21E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZO(K)FLUORANTHENE	5.63E+00	mg/kg	1.35E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	1E-09	9.44E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.96E+00	mg/kg	4.71E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-08	3.29E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.66E+00	mg/kg	6.75E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-08	4.72E-07	mg/kg-day	8.00E-04	mg/kg-day	6E-04
				INDENO(1,2,3-CD)PYRENE	4.66E+00	mg/kg	1.12E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-09	7.82E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.61E+01	mg/kg	3.87E-08	mg/kg-day		1/(mg/kg-day)		2.71E-06	mg/kg-day	3.00E-02	mg/kg-day	9E-05
				1,2,4-TRICHLOROBENZENE	2.59E+03	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	1.20E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	6.30E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.70E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	5.37E-01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	4.79E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**6E-07**					**6E-01**
			Ingestion	ARSENIC	1.02E+01	mg/kg	1.89E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-07	1.32E-05	mg/kg-day	3.00E-04	mg/kg-day	4E-02
				CHROMIUM	2.23E+01	mg/kg	4.11E-07	mg/kg-day		1/(mg/kg-day)		2.87E-05	mg/kg-day	3.00E-03	mg/kg-day	1E-02
				IRON	1.82E+04	mg/kg	3.35E-04	mg/kg-day		1/(mg/kg-day)		2.35E-02	mg/kg-day	7.00E-01	mg/kg-day	3E-02
				MANGANESE	3.82E+02	mg/kg	7.05E-06	mg/kg-day		1/(mg/kg-day)		4.94E-04	mg/kg-day	1.40E-01	mg/kg-day	4E-03
				MERCURY	3.68E+00	mg/kg	6.78E-08	mg/kg-day		1/(mg/kg-day)		4.75E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				VANADIUM	1.13E+01	mg/kg	2.08E-07	mg/kg-day		1/(mg/kg-day)		1.45E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				HIGHLY CHLORINATED PCBs	6.17E+01	mg/kg	1.14E-06	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	7.96E-05	mg/kg-day	2.00E-05	mg/kg-day	4E+00
				ACENAPHTHYLENE	2.71E-01	mg/kg	5.00E-09	mg/kg-day		1/(mg/kg-day)		3.50E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.70E+01	mg/kg	3.14E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	2.20E-05	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.18E+00	mg/kg	1.33E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-06	9.28E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.07E+01	mg/kg	1.98E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.39E-05	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.49E+00	mg/kg	1.01E-07	mg/kg-day		1/(mg/kg-day)		7.09E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZO(K)FLUORANTHENE	5.63E+00	mg/kg	1.04E-07	mg/kg-day	7.30E-02	1/(mg/kg-day)	8E-09	7.27E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.96E+00	mg/kg	3.62E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-07	2.53E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.66E+00	mg/kg	6.75E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-07	4.72E-06	mg/kg-day	8.00E-04	mg/kg-day	6E-03
				INDENO(1,2,3-CD)PYRENE	4.66E+00	mg/kg	8.59E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	6.02E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.61E+01	mg/kg	2.97E-07	mg/kg-day		1/(mg/kg-day)		2.08E-05	mg/kg-day	3.00E-02	mg/kg-day	7E-04
				1,2,4-TRICHLOROBENZENE	2.59E+03	mg/kg	4.78E-05	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-07	3.34E-03	mg/kg-day	1.00E-02	mg/kg-day	3E-01
				1,2-DICHLOROBENZENE	1.20E+03	mg/kg	2.21E-05	mg/kg-day		1/(mg/kg-day)		1.55E-03	mg/kg-day	9.00E-02	mg/kg-day	2E-02
				1,3-DICHLOROBENZENE	6.30E+01	mg/kg	1.16E-06	mg/kg-day		1/(mg/kg-day)		8.14E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.70E+03	mg/kg	3.14E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-07	2.20E-03	mg/kg-day	7.00E-02	mg/kg-day	3E-02
				BENZENE	5.37E-01	mg/kg	9.91E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	5E-10	6.94E-07	mg/kg-day	4.00E-03	mg/kg-day	2E-04
				CHLOROBENZENE	4.79E+01	mg/kg	8.84E-07	mg/kg-day		1/(mg/kg-day)		6.19E-05	mg/kg-day	2.00E-02	mg/kg-day	3E-03
			Exp. Route Total								**5E-06**					**4E+00**
			Inhalation	ARSENIC	1.46E-05	mg/m3	1.04E-08	mg/kg-day	1.51E+01	1/(mg/kg-day)	2E-07	7.29E-07	mg/kg-day	1.43E-05	mg/kg-day	5E-02
				CHROMIUM	3.17E-05	mg/m3	2.27E-08	mg/kg-day	4.20E+01	1/(mg/kg-day)	1E-06	1.59E-06	mg/kg-day	2.86E-05	mg/kg-day	6E-02
				IRON	2.59E-02	mg/m3	1.85E-05	mg/kg-day		1/(mg/kg-day)		1.30E-03	mg/kg-day		mg/kg-day	
				MANGANESE	5.45E-04	mg/m3	3.90E-07	mg/kg-day		1/(mg/kg-day)		2.73E-05	mg/kg-day	1.43E-05	mg/kg-day	2E+00
				MERCURY	5.24E-06	mg/m3	3.75E-09	mg/kg-day		1/(mg/kg-day)		2.62E-07	mg/kg-day	8.57E-05	mg/kg-day	3E-03
				VANADIUM	1.60E-05	mg/m3	1.15E-08	mg/kg-day		1/(mg/kg-day)		8.03E-07	mg/kg-day		mg/kg-day	
				HIGHLY CHLORINATED PCBs	8.78E-05	mg/m3	6.28E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-07	4.40E-06	mg/kg-day		mg/kg-day	

TABLE 7.5f CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure		CSF/Unit Risk		Cancer	Intake/Exposure		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Risk	Value	Units	Value	Units	Quotient
Soil	Upper Soils (0-10 ft)	Chlorobenzene Hot-Spot Area	Inhalation	ACENAPHTHYLENE	3.86E-07	mg/m3	2.76E-10	mg/kg-day		1/(mg/kg-day)		1.93E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.42E-05	mg/m3	1.73E-08	mg/kg-day		1/(mg/kg-day)		1.21E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.02E-05	mg/m3	7.32E-09	mg/kg-day		1/(mg/kg-day)		5.13E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.53E-05	mg/m3	1.09E-08	mg/kg-day		1/(mg/kg-day)		7.66E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	7.82E-06	mg/m3	5.59E-09	mg/kg-day		1/(mg/kg-day)		3.92E-07	mg/kg-day		mg/kg-day	
				BENZO(K)FLUORANTHENE	8.01E-06	mg/m3	5.73E-09	mg/kg-day		1/(mg/kg-day)		4.01E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	2.79E-06	mg/m3	2.00E-09	mg/kg-day		1/(mg/kg-day)		1.40E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	5.21E-06	mg/m3	3.73E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	6E-09	2.61E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	6.63E-06	mg/m3	4.75E-09	mg/kg-day		1/(mg/kg-day)		3.32E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.30E-05	mg/m3	1.64E-08	mg/kg-day		1/(mg/kg-day)		1.15E-06	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	7.71E-02	mg/m3	5.52E-05	mg/kg-day		1/(mg/kg-day)		3.86E-03	mg/kg-day		mg/kg-day	
				1,2-DICHLOROBENZENE	1.05E-01	mg/m3	7.55E-05	mg/kg-day		1/(mg/kg-day)		5.28E-03	mg/kg-day	4.00E-02	mg/kg-day	1E-01
				1,3-DICHLOROBENZENE	6.13E-03	mg/m3	4.39E-06	mg/kg-day		1/(mg/kg-day)		3.07E-04	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.69E-01	mg/m3	1.21E-04	mg/kg-day	4.00E-02	1/(mg/kg-day)	5E-06	8.48E-03	mg/kg-day	2.29E-01	mg/kg-day	4E-02
				BENZENE	2.53E-04	mg/m3	1.81E-07	mg/kg-day	2.73E-02	1/(mg/kg-day)	5E-09	1.27E-05	mg/kg-day	8.57E-03	mg/kg-day	1E-03
				CHLOROBENZENE	3.30E-02	mg/m3	2.36E-05	mg/kg-day		1/(mg/kg-day)		1.65E-03	mg/kg-day		mg/kg-day	
			Exp. Route Total								**6E-06**					**2E+00**
		Exp. Point Total									**1E-05**					**7E+00**
	Exp. Medium Total										**1E-05**					**7E+00**
Medium Total											**1E-05**					**7E+00**
Groundwater	Shallow Groundwater (0-10 ft bgs)	Chlorobenzene Hot Spot Area	Dermal	ALUMINUM	2.91E+04	ug/L	4.30E-05	mg/kg-day		1/(mg/kg-day)		3.01E-03	mg/kg-day	1.00E+00	mg/kg-day	3E-03
				ARSENIC	1.78E+02	ug/L	2.63E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-07	1.84E-05	mg/kg-day	3.00E-04	mg/kg-day	6E-02
				BARIUM	4.44E+02	ug/L	6.55E-07	mg/kg-day		1/(mg/kg-day)		4.59E-05	mg/kg-day	1.40E-02	mg/kg-day	3E-03
				CHROMIUM	4.49E+02	ug/L	1.33E-06	mg/kg-day		1/(mg/kg-day)		9.28E-05	mg/kg-day	7.50E-05	mg/kg-day	1E+00
				COBALT	2.94E+01	ug/L	1.74E-08	mg/kg-day		1/(mg/kg-day)		1.22E-06	mg/kg-day		mg/kg-day	
				COPPER	1.54E+02	ug/L	2.27E-07	mg/kg-day		1/(mg/kg-day)		1.59E-05	mg/kg-day	4.00E-02	mg/kg-day	4E-04
				CYANIDE	4.27E+02	ug/L	6.30E-07	mg/kg-day		1/(mg/kg-day)		4.41E-05	mg/kg-day	2.00E-02	mg/kg-day	2E-03
				IRON	8.60E+04	ug/L	1.27E-04	mg/kg-day		1/(mg/kg-day)		8.89E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				LEAD	8.75E+01	ug/L	1.29E-08	mg/kg-day		1/(mg/kg-day)		9.04E-07	mg/kg-day		mg/kg-day	
				MANGANESE	1.70E+03	ug/L	2.51E-06	mg/kg-day		1/(mg/kg-day)		1.76E-04	mg/kg-day	5.60E-03	mg/kg-day	3E-02
				MERCURY	2.48E+00	ug/L	3.66E-09	mg/kg-day		1/(mg/kg-day)		2.56E-07	mg/kg-day	2.10E-05	mg/kg-day	1E-02
				NICKEL	4.03E+02	ug/L	1.19E-07	mg/kg-day		1/(mg/kg-day)		8.33E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-02
				VANADIUM	1.29E+02	ug/L	1.90E-07	mg/kg-day		1/(mg/kg-day)		1.33E-05	mg/kg-day	2.34E-04	mg/kg-day	6E-02
				HEXACHLOROBENZENE	2.00E+00	ug/L	6.93E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-06	4.85E-05	mg/kg-day	8.00E-04	mg/kg-day	6E-02
				NAPHTHALENE	5.38E+00	ug/L	3.73E-07	mg/kg-day		1/(mg/kg-day)		2.61E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				PHENANTHRENE	2.00E+00	ug/L	4.16E-07	mg/kg-day		1/(mg/kg-day)		2.91E-05	mg/kg-day	3.00E-02	mg/kg-day	1E-03
				1,2,3-TRICHLOROBENZENE	1.50E+02	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.33E+02	ug/L	1.46E-05	mg/kg-day	3.60E-03	1/(mg/kg-day)	5E-08	1.02E-03	mg/kg-day	1.00E-02	mg/kg-day	1E-01
				1,2-DICHLOROBENZENE	1.11E+03	ug/L	7.00E-05	mg/kg-day		1/(mg/kg-day)		4.90E-03	mg/kg-day	9.00E-02	mg/kg-day	5E-02
				1,3-DICHLOROBENZENE	4.10E+01	ug/L	3.50E-06	mg/kg-day		1/(mg/kg-day)		2.45E-04	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.05E+03	ug/L	1.33E-04	mg/kg-day	5.40E-03	1/(mg/kg-day)	7E-07	9.32E-03	mg/kg-day	7.00E-02	mg/kg-day	1E-01
				BENZENE	3.29E+03	ug/L	7.21E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	4E-06	5.05E-03	mg/kg-day	4.00E-03	mg/kg-day	1E+00
				CHLOROBENZENE	4.01E+03	ug/L	1.72E-04	mg/kg-day		1/(mg/kg-day)		1.20E-02	mg/kg-day	2.00E-02	mg/kg-day	6E-01
				CHLOROFORM	1.00E+00	ug/L	1.13E-08	mg/kg-day		1/(mg/kg-day)		7.90E-07	mg/kg-day	1.00E-02	mg/kg-day	8E-05
			Exp. Route Total								**6E-06**					**4E+00**
			Ingestion	ALUMINUM	2.91E+04	ug/L	1.63E-05	mg/kg-day		1/(mg/kg-day)		1.14E-03	mg/kg-day	1.00E+00	mg/kg-day	1E-03
				ARSENIC	1.78E+02	ug/L	9.95E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-07	6.97E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				BARIUM	4.44E+02	ug/L	2.48E-07	mg/kg-day		1/(mg/kg-day)		1.74E-05	mg/kg-day	2.00E-01	mg/kg-day	9E-05
				CHROMIUM	4.49E+02	ug/L	2.51E-07	mg/kg-day		1/(mg/kg-day)		1.76E-05	mg/kg-day	3.00E-03	mg/kg-day	6E-03
				COBALT	2.94E+01	ug/L	1.64E-08	mg/kg-day		1/(mg/kg-day)		1.15E-06	mg/kg-day		mg/kg-day	
				COPPER	1.54E+02	ug/L	8.61E-08	mg/kg-day		1/(mg/kg-day)		6.03E-06	mg/kg-day	4.00E-02	mg/kg-day	2E-04
				CYANIDE	4.27E+02	ug/L	2.39E-07	mg/kg-day		1/(mg/kg-day)		1.67E-05	mg/kg-day	2.00E-02	mg/kg-day	8E-04
				IRON	8.60E+04	ug/L	4.81E-05	mg/kg-day		1/(mg/kg-day)		3.37E-03	mg/kg-day	7.00E-01	mg/kg-day	5E-03
				LEAD	8.75E+01	ug/L	4.89E-08	mg/kg-day		1/(mg/kg-day)		3.42E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.70E+03	ug/L	9.52E-07	mg/kg-day		1/(mg/kg-day)		6.67E-05	mg/kg-day	1.40E-01	mg/kg-day	5E-04

TABLE 7.5f CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
							Intake/Exposure		CSF/Unit Risk		Cancer	Intake/Exposure		RfD/RfC		Hazard
					Value	Units	Value	Units	Value	Units	Risk	Value	Units	Value	Units	Quotient
Groundwater	Shallow Groundwater (0-10 ft bgs)	Chlorobenzene Hot Spot Area	Ingestion	MERCURY	2.48E+00	ug/L	1.39E-09	mg/kg-day		1/(mg/kg-day)		9.71E-08	mg/kg-day	3.00E-04	mg/kg-day	3E-04
				NICKEL	4.03E+02	ug/L	2.25E-07	mg/kg-day		1/(mg/kg-day)		1.58E-05	mg/kg-day	2.00E-02	mg/kg-day	8E-04
				VANADIUM	1.29E+02	ug/L	7.21E-08	mg/kg-day		1/(mg/kg-day)		5.05E-06	mg/kg-day	9.00E-03	mg/kg-day	6E-04
				HEXACHLOROBENZENE	2.00E+00	ug/L	1.12E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-09	7.83E-08	mg/kg-day	8.00E-04	mg/kg-day	1E-04
				NAPHTHALENE	5.38E+00	ug/L	3.01E-09	mg/kg-day		1/(mg/kg-day)		2.10E-07	mg/kg-day	2.00E-02	mg/kg-day	1E-05
				PHENANTHRENE	2.00E+00	ug/L	1.12E-09	mg/kg-day		1/(mg/kg-day)		7.83E-08	mg/kg-day	3.00E-02	mg/kg-day	3E-06
				1,2,3-TRICHLOROBENZENE	1.50E+02	ug/L	8.39E-08	mg/kg-day		1/(mg/kg-day)		5.87E-06	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.33E+02	ug/L	7.45E-08	mg/kg-day	3.60E-03	1/(mg/kg-day)	3E-10	5.22E-06	mg/kg-day	1.00E-02	mg/kg-day	5E-04
				1,2-DICHLOROBENZENE	1.11E+03	ug/L	6.18E-07	mg/kg-day		1/(mg/kg-day)		4.33E-05	mg/kg-day	9.00E-02	mg/kg-day	5E-04
				1,3-DICHLOROBENZENE	4.10E+01	ug/L	2.29E-08	mg/kg-day		1/(mg/kg-day)		1.60E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.05E+03	ug/L	1.15E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	6E-09	8.04E-05	mg/kg-day	7.00E-02	mg/kg-day	1E-03
				BENZENE	3.29E+03	ug/L	1.84E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-07	1.29E-04	mg/kg-day	4.00E-03	mg/kg-day	3E-02
				CHLOROBENZENE	4.01E+03	ug/L	2.24E-06	mg/kg-day		1/(mg/kg-day)		1.57E-04	mg/kg-day	2.00E-02	mg/kg-day	8E-03
				CHLOROFORM	1.00E+00	ug/L	5.59E-10	mg/kg-day		1/(mg/kg-day)		3.91E-08	mg/kg-day	1.00E-02	mg/kg-day	4E-06
			Exp. Route Total								**3E-07**					**8E-02**
		Exp. Point Total									**7E-06**					**4E+00**
	Exp. Medium Total										**7E-06**					**4E+00**
Medium Total											**7E-06**					**4E+00**
									Total of Receptor Risks Across All Media		**2E-05**			Total of Receptor Hazards Across All Media		**1E+01**

TABLE 7.6 CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA- CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Transient*
Exposure Area:	State Fair Blvd/Northwest Off-Site/ Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure		CSF/Unit Risk		Cancer Risk	Intake/Exposure		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	9.09E-15	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-09	7.07E-14	mg/kg-day	1.00E-09	mg/kg-day	7E-05
				MERCURY	1.60E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	1.20E-10	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-10	9.37E-10	mg/kg-day	2.00E-05	mg/kg-day	5E-05
				1,2,3-TRICHLOROBENZENE	1.20E-02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				BENZENE	1.40E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**2E-09**					**1E-04**
			Ingestion	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	5.31E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	8E-08	4.13E-12	mg/kg-day	1.00E-09	mg/kg-day	4E-03
				MERCURY	1.60E+02	mg/kg	1.61E-07	mg/kg-day		1/(mg/kg-day)		1.25E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	1.51E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-09	1.17E-08	mg/kg-day	2.00E-05	mg/kg-day	6E-04
				1,2,3-TRICHLOROBENZENE	1.20E-02	mg/kg	1.21E-11	mg/kg-day		1/(mg/kg-day)		9.39E-11	mg/kg-day		mg/kg-day	
				BENZENE	1.40E-03	mg/kg	1.41E-12	mg/kg-day	5.50E-02	1/(mg/kg-day)	8E-14	1.10E-11	mg/kg-day	4.00E-03	mg/kg-day	3E-09
			Exp. Route Total								**8E-08**					**9E-03**
		Exp. Point Total									**8E-08**					**9E-03**
	Exp. Medium Total										**8E-08**					**9E-03**
Medium Total											**8E-08**					**9E-03**
										Total of Receptor Risks Across All Media	**8E-08**				Total of Receptor Hazards Across All Media	**9E-03**

Notes:
* = refers to an adult walking legally along State Fair Boulevard during the NYS fair.

TABLE 7.7a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Intermediate Soils (0-20 ft)	Plant Area	Dermal	2,3,7,8-TCDD Equivalent	1.21E-06	mg/kg	1.00E-15	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-10	7.03E-14	mg/kg-day	1.00E-09	mg/kg-day	7E-05
				ALUMINUM	1.19E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	2.01E+01	mg/kg	1.66E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-08	1.17E-06	mg/kg-day	3.00E-04	mg/kg-day	4E-03
				BARIUM	3.10E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.69E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	1.78E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.06E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	9.91E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	2.22E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	2.92E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	1.93E+00	mg/kg	7.48E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-08	5.23E-07	mg/kg-day	2.00E-05	mg/kg-day	3E-02
				DELTA-BHC	1.90E+00	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg		mg/kg-day	1.60E+01	1/(mg/kg-day)			mg/kg-day	5.00E-05	mg/kg-day	
				ACENAPHTHYLENE	4.34E+00	mg/kg	1.56E-08	mg/kg-day		1/(mg/kg-day)		1.09E-06	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.21E+00	mg/kg	2.23E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.56E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	6.45E+00	mg/kg	2.32E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.62E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	8.96E+00	mg/kg	3.22E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.26E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	7.14E+00	mg/kg	2.57E-08	mg/kg-day		1/(mg/kg-day)		1.80E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				BENZO(K)FLUORANTHENE	4.38E+00	mg/kg	1.58E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	1E-09	1.10E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.94E+00	mg/kg	6.97E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-08	4.88E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.76E+01	mg/kg	4.87E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	8E-08	3.41E-06	mg/kg-day	8.00E-04	mg/kg-day	4E-03
				HEXACHLOROBUTADIENE	1.19E+00	mg/kg	3.29E-09	mg/kg-day	7.80E-02	1/(mg/kg-day)	3E-10	2.30E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	5.43E+00	mg/kg	1.95E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.37E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	7.18E+00	mg/kg	2.58E-08	mg/kg-day		1/(mg/kg-day)		1.81E-06	mg/kg-day	2.00E-02	mg/kg-day	9E-05
				PHENANTHRENE	1.21E+01	mg/kg	4.36E-08	mg/kg-day		1/(mg/kg-day)		3.06E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				1,2,3-TRICHLOROBENZENE	3.30E-03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	4.78E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	5.42E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	4.25E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.34E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	2.95E+00	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	1.67E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**4E-07**					**3E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	1.21E-06	mg/kg	1.67E-14	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-09	1.17E-12	mg/kg-day	1.00E-09	mg/kg-day	1E-03
				ALUMINUM	1.19E+04	mg/kg	1.65E-04	mg/kg-day		1/(mg/kg-day)		1.15E-02	mg/kg-day	1.00E+00	mg/kg-day	1E-02
				ARSENIC	2.01E+01	mg/kg	2.77E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-07	1.94E-05	mg/kg-day	3.00E-04	mg/kg-day	6E-02
				BARIUM	3.10E+02	mg/kg	4.29E-06	mg/kg-day		1/(mg/kg-day)		3.00E-04	mg/kg-day	2.00E-01	mg/kg-day	2E-03
				CHROMIUM	1.69E+01	mg/kg	2.34E-07	mg/kg-day		1/(mg/kg-day)		1.64E-05	mg/kg-day	3.00E-03	mg/kg-day	5E-03
				IRON	1.78E+04	mg/kg	2.46E-04	mg/kg-day		1/(mg/kg-day)		1.72E-02	mg/kg-day	7.00E-01	mg/kg-day	2E-02
				MANGANESE	3.06E+02	mg/kg	4.23E-06	mg/kg-day		1/(mg/kg-day)		2.96E-04	mg/kg-day	1.40E-01	mg/kg-day	2E-03
				MERCURY	9.91E+02	mg/kg	1.37E-05	mg/kg-day		1/(mg/kg-day)		9.60E-04	mg/kg-day	3.00E-04	mg/kg-day	3E+00
				NICKEL	2.22E+03	mg/kg	3.07E-05	mg/kg-day		1/(mg/kg-day)		2.15E-03	mg/kg-day	2.00E-02	mg/kg-day	1E-01
				VANADIUM	2.92E+01	mg/kg	4.04E-07	mg/kg-day		1/(mg/kg-day)		2.83E-05	mg/kg-day	9.00E-03	mg/kg-day	3E-03
				HIGHLY CHLORINATED PCBs	1.93E+00	mg/kg	2.67E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-08	1.87E-06	mg/kg-day	2.00E-05	mg/kg-day	9E-02
				DELTA-BHC	1.90E+00	mg/kg	2.63E-08	mg/kg-day	6.30E+00	1/(mg/kg-day)	2E-07	1.84E-06	mg/kg-day		mg/kg-day	
				DIELDRIN	3.70E+00	mg/kg	5.12E-08	mg/kg-day	1.60E+01	1/(mg/kg-day)	8E-07	3.58E-06	mg/kg-day	5.00E-05	mg/kg-day	7E-02
				ACENAPHTHYLENE	4.34E+00	mg/kg	6.00E-08	mg/kg-day		1/(mg/kg-day)		4.20E-06	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	6.21E+00	mg/kg	8.59E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	6.01E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	6.45E+00	mg/kg	8.93E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-07	6.25E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	8.96E+00	mg/kg	1.24E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-08	8.68E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	7.14E+00	mg/kg	9.88E-08	mg/kg-day		1/(mg/kg-day)		6.91E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZO(K)FLUORANTHENE	4.38E+00	mg/kg	6.06E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	4E-09	4.24E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.94E+00	mg/kg	2.68E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.88E-06	mg/kg-day		mg/kg-day	

TABLE 7.7a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Intermediate Soils (0-20 ft)	Plant Area	Ingestion	HEXACHLOROBENZENE	1.76E+01	mg/kg	2.44E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	4E-07	1.70E-05	mg/kg-day	8.00E-04	mg/kg-day	2E-02
				HEXACHLOROBUTADIENE	1.19E+00	mg/kg	1.64E-08	mg/kg-day	7.80E-02	1/(mg/kg-day)	1E-09	1.15E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	5.43E+00	mg/kg	7.52E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	5.26E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	7.18E+00	mg/kg	9.94E-08	mg/kg-day		1/(mg/kg-day)		6.96E-06	mg/kg-day	2.00E-02	mg/kg-day	3E-04
				PHENANTHRENE	1.21E+01	mg/kg	1.68E-07	mg/kg-day		1/(mg/kg-day)		1.18E-05	mg/kg-day	3.00E-02	mg/kg-day	4E-04
				1,2,3-TRICHLOROBENZENE	3.30E-03	mg/kg	4.57E-11	mg/kg-day		1/(mg/kg-day)		3.20E-09	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	4.78E+01	mg/kg	6.61E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-09	4.63E-05	mg/kg-day	1.00E-02	mg/kg-day	5E-03
				1,2-DICHLOROBENZENE	5.42E+02	mg/kg	7.50E-06	mg/kg-day		1/(mg/kg-day)		5.25E-04	mg/kg-day	9.00E-02	mg/kg-day	6E-03
				1,3-DICHLOROBENZENE	4.25E+01	mg/kg	5.89E-07	mg/kg-day		1/(mg/kg-day)		4.12E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.34E+03	mg/kg	1.86E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-07	1.30E-03	mg/kg-day	7.00E-02	mg/kg-day	2E-02
				BENZENE	2.95E+00	mg/kg	4.08E-08	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-09	2.86E-06	mg/kg-day	4.00E-03	mg/kg-day	7E-04
				CHLOROBENZENE	1.67E+02	mg/kg	2.31E-06	mg/kg-day		1/(mg/kg-day)		1.62E-04	mg/kg-day	2.00E-02	mg/kg-day	8E-03
			Exp. Route Total								**3E-06**					**4E+00**
		Exp. Point Total									**3E-06**					**4E+00**
	Exp. Medium Total										**3E-06**					**4E+00**
Medium Total											**3E-06**					**4E+00**
Groundwater	Intermediate Ground Water (0-20 ft)	Plant Area	Dermal	ALUMINUM	4.99E+04	ug/l	5.52E-05	mg/kg-day		1/(mg/kg-day)		3.87E-03	mg/kg-day	1.00E+00	mg/kg-day	4E-03
				ARSENIC	1.05E+02	ug/l	1.16E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	8.14E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				BARIUM	1.82E+03	ug/l	2.01E-06	mg/kg-day		1/(mg/kg-day)		1.41E-04	mg/kg-day	1.40E-02	mg/kg-day	1E-02
				COPPER	3.84E+02	ug/l	4.25E-07	mg/kg-day		1/(mg/kg-day)		2.98E-05	mg/kg-day	4.00E-02	mg/kg-day	7E-04
				IRON	4.66E+04	ug/l	5.16E-05	mg/kg-day		1/(mg/kg-day)		3.61E-03	mg/kg-day	7.00E-01	mg/kg-day	5E-03
				LEAD	4.88E+02	ug/l	5.40E-08	mg/kg-day		1/(mg/kg-day)		3.78E-06	mg/kg-day		mg/kg-day	
				MANGANESE	4.23E+02	ug/l	4.68E-07	mg/kg-day		1/(mg/kg-day)		3.28E-05	mg/kg-day	5.60E-03	mg/kg-day	6E-03
				MERCURY	6.60E+00	ug/l	7.31E-09	mg/kg-day		1/(mg/kg-day)		5.11E-07	mg/kg-day	2.10E-05	mg/kg-day	2E-02
				NICKEL	1.46E+02	ug/l	3.23E-08	mg/kg-day		1/(mg/kg-day)		2.26E-06	mg/kg-day	8.00E-04	mg/kg-day	3E-03
				VANADIUM	3.90E+02	ug/l	4.32E-07	mg/kg-day		1/(mg/kg-day)		3.02E-05	mg/kg-day	2.34E-04	mg/kg-day	1E-01
				2,4-DICHLOROPHENOL	1.80E+01	ug/l	4.80E-07	mg/kg-day		1/(mg/kg-day)		3.36E-05	mg/kg-day	3.00E-03	mg/kg-day	1E-02
				2-CHLOROPHENOL	4.00E+00	ug/l	4.04E-08	mg/kg-day		1/(mg/kg-day)		2.83E-06	mg/kg-day	5.00E-03	mg/kg-day	6E-04
				BENZO(G,H,I)PERYLENE	1.00E+00	ug/l		mg/kg-day		1/(mg/kg-day)			mg/kg-day	3.00E-02	mg/kg-day	
				CHRYSENE	4.00E+00	ug/l	2.90E-06	mg/kg-day	7.30E-03	1/(mg/kg-day)	2E-08	2.03E-04	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.00E+00	ug/l	2.52E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-06	1.77E-04	mg/kg-day		mg/kg-day	
				NAPHTHALENE	3.30E+01	ug/l	1.72E-06	mg/kg-day		1/(mg/kg-day)		1.20E-04	mg/kg-day	2.00E-02	mg/kg-day	6E-03
				PHENANTHRENE	6.00E+00	ug/l	9.37E-07	mg/kg-day		1/(mg/kg-day)		6.56E-05	mg/kg-day	3.00E-02	mg/kg-day	2E-03
				1,2,4-TRICHLOROBENZENE	1.90E+01	ug/l	1.56E-06	mg/kg-day	3.60E-03	1/(mg/kg-day)	6E-09	1.09E-04	mg/kg-day	1.00E-02	mg/kg-day	1E-02
				1,2-DICHLOROBENZENE	2.60E+02	ug/l	1.23E-05	mg/kg-day		1/(mg/kg-day)		8.64E-04	mg/kg-day	9.00E-02	mg/kg-day	1E-02
				1,3-DICHLOROBENZENE	1.70E+01	ug/l	1.09E-06	mg/kg-day		1/(mg/kg-day)		7.62E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	6.50E+02	ug/l	3.16E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-07	2.21E-03	mg/kg-day	7.00E-02	mg/kg-day	3E-02
				BENZENE	1.70E+03	ug/l	2.79E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	2E-06	1.95E-03	mg/kg-day	4.00E-03	mg/kg-day	5E-01
				CHLOROBENZENE	5.10E+03	ug/l	1.64E-04	mg/kg-day		1/(mg/kg-day)		1.15E-02	mg/kg-day	2.00E-02	mg/kg-day	6E-01
				CHLOROFORM	5.20E+01	ug/l	4.40E-07	mg/kg-day		1/(mg/kg-day)		3.08E-05	mg/kg-day	1.00E-02	mg/kg-day	3E-03
				METHYLENE CHLORIDE	1.50E+02	ug/l	6.28E-07	mg/kg-day	7.50E-03	1/(mg/kg-day)	5E-09	4.39E-05	mg/kg-day	6.00E-02	mg/kg-day	7E-04
			Exp. Route Total								**4E-06**					**1E+00**
			Ingestion	ALUMINUM	4.99E+04	ug/l	2.09E-05	mg/kg-day		1/(mg/kg-day)		1.46E-03	mg/kg-day	1.00E+00	mg/kg-day	1E-03
				ARSENIC	1.05E+02	ug/l	4.40E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-08	3.08E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				BARIUM	1.82E+03	ug/l	7.63E-07	mg/kg-day		1/(mg/kg-day)		5.34E-05	mg/kg-day	2.00E-01	mg/kg-day	3E-04
				COPPER	3.84E+02	ug/l	1.61E-07	mg/kg-day		1/(mg/kg-day)		1.13E-05	mg/kg-day	4.00E-02	mg/kg-day	3E-04
				IRON	4.66E+04	ug/l	1.95E-05	mg/kg-day		1/(mg/kg-day)		1.37E-03	mg/kg-day	7.00E-01	mg/kg-day	2E-03
				LEAD	4.88E+02	ug/l	2.05E-07	mg/kg-day		1/(mg/kg-day)		1.43E-05	mg/kg-day		mg/kg-day	
				MANGANESE	4.23E+02	ug/l	1.77E-07	mg/kg-day		1/(mg/kg-day)		1.24E-05	mg/kg-day	1.40E-01	mg/kg-day	9E-05
				MERCURY	6.60E+00	ug/l	2.77E-09	mg/kg-day		1/(mg/kg-day)		1.94E-07	mg/kg-day	3.00E-04	mg/kg-day	6E-04
				NICKEL	1.46E+02	ug/l	6.12E-08	mg/kg-day		1/(mg/kg-day)		4.29E-06	mg/kg-day	2.00E-02	mg/kg-day	2E-04
				VANADIUM	3.90E+02	ug/l	1.64E-07	mg/kg-day		1/(mg/kg-day)		1.14E-05	mg/kg-day	9.00E-03	mg/kg-day	1E-03

TABLE 7.7a CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Intermediate Ground Water (0-20 ft)	Plant Area	Ingestion	2,4-DICHLOROPHENOL	1.80E+01	ug/l	7.55E-09	mg/kg-day		1/(mg/kg-day)		5.28E-07	mg/kg-day	3.00E-03	mg/kg-day	2E-04
				2-CHLOROPHENOL	4.00E+00	ug/l	1.68E-09	mg/kg-day		1/(mg/kg-day)		1.17E-07	mg/kg-day	5.00E-03	mg/kg-day	2E-05
				BENZO(G,H,I)PERYLENE	1.00E+00	ug/l	4.19E-10	mg/kg-day		1/(mg/kg-day)		2.94E-08	mg/kg-day	3.00E-02	mg/kg-day	1E-06
				CHRYSENE	4.00E+00	ug/l	1.68E-09	mg/kg-day	7.30E-03	1/(mg/kg-day)	1E-11	1.17E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.00E+00	ug/l	8.39E-10	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-10	5.87E-08	mg/kg-day		mg/kg-day	
				NAPHTHALENE	3.30E+01	ug/l	1.38E-08	mg/kg-day		1/(mg/kg-day)		9.69E-07	mg/kg-day	2.00E-02	mg/kg-day	5E-05
				PHENANTHRENE	6.00E+00	ug/l	2.52E-09	mg/kg-day		1/(mg/kg-day)		1.76E-07	mg/kg-day	3.00E-02	mg/kg-day	6E-06
				1,2,4-TRICHLOROBENZENE	1.90E+01	ug/l	7.97E-09	mg/kg-day	3.60E-03	1/(mg/kg-day)	3E-11	5.58E-07	mg/kg-day	1.00E-02	mg/kg-day	6E-05
				1,2-DICHLOROBENZENE	2.60E+02	ug/l	1.09E-07	mg/kg-day		1/(mg/kg-day)		7.63E-06	mg/kg-day	9.00E-02	mg/kg-day	8E-05
				1,3-DICHLOROBENZENE	1.70E+01	ug/l	7.13E-09	mg/kg-day		1/(mg/kg-day)		4.99E-07	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	6.50E+02	ug/l	2.73E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-09	1.91E-05	mg/kg-day	7.00E-02	mg/kg-day	3E-04
				BENZENE	1.70E+03	ug/l	7.13E-07	mg/kg-day	5.50E-02	1/(mg/kg-day)	4E-08	4.99E-05	mg/kg-day	4.00E-03	mg/kg-day	1E-02
				CHLOROBENZENE	5.10E+03	ug/l	2.14E-06	mg/kg-day		1/(mg/kg-day)		1.50E-04	mg/kg-day	2.00E-02	mg/kg-day	7E-03
				CHLOROFORM	5.20E+01	ug/l	2.18E-08	mg/kg-day		1/(mg/kg-day)		1.53E-06	mg/kg-day	1.00E-02	mg/kg-day	2E-04
				METHYLENE CHLORIDE	1.50E+02	ug/l	6.29E-08	mg/kg-day	7.50E-03	1/(mg/kg-day)	5E-10	4.40E-06	mg/kg-day	6.00E-02	mg/kg-day	7E-05
			Exp. Route Total								**1E-07**					**4E-02**
		Exp. Point Total									**4E-06**					**1E+00**
	Exp. Medium Total										**4E-06**					**1E+00**
Medium Total											**4E-06**					**1E+00**
										Total of Receptor Risks Across All Media	**7E-06**				Total of Receptor Hazards Across All Media	**5E+00**

TABLE 7.7b CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Intermediate Soils (0-20 ft)	On-Site Ditches	Dermal	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	6.26E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	9E-07	4.38E-10	mg/kg-day	1.00E-09	mg/kg-day	4E-01
				ARSENIC	3.99E+01	mg/kg	3.31E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-08	2.32E-06	mg/kg-day	3.00E-04	mg/kg-day	8E-03
				CHROMIUM	1.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COPPER	3.26E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	5.39E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	6.92E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	4.78E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				NICKEL	3.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				VANADIUM	6.39E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				METHYL MERCURY	6.86E-01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	9.88E+00	mg/kg	3.83E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	8E-08	2.68E-06	mg/kg-day	2.00E-05	mg/kg-day	1E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	6.12E-10	mg/kg-day		1/(mg/kg-day)		4.28E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	7.56E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-09	5.29E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	7.20E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-08	5.04E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	1.08E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-09	7.56E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	5.04E-09	mg/kg-day		1/(mg/kg-day)		3.53E-07	mg/kg-day	3.00E-02	mg/kg-day	1E-05
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	1.58E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-08	1.11E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	4.32E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-09	3.02E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.00E+00	mg/kg	7.20E-09	mg/kg-day		1/(mg/kg-day)		5.04E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				1,2,3-TRICHLOROBENZENE	2.20E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	7.50E+00	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	1.90E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	7.60E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	4.30E+02	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	1.20E-01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	7.10E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**1E-06**					**6E-01**
			Ingestion	2,3,7,8-TCDD Equivalent	7.54E-03	mg/kg	1.04E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-05	7.30E-09	mg/kg-day	1.00E-09	mg/kg-day	7E+00
				ARSENIC	3.99E+01	mg/kg	5.52E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-07	3.87E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				CHROMIUM	1.92E+02	mg/kg	2.66E-06	mg/kg-day		1/(mg/kg-day)		1.86E-04	mg/kg-day	3.00E-03	mg/kg-day	6E-02
				COPPER	3.26E+02	mg/kg	4.51E-06	mg/kg-day		1/(mg/kg-day)		3.16E-04	mg/kg-day	4.00E-02	mg/kg-day	8E-03
				IRON	5.39E+04	mg/kg	7.46E-04	mg/kg-day		1/(mg/kg-day)		5.22E-02	mg/kg-day	7.00E-01	mg/kg-day	7E-02
				LEAD	6.92E+02	mg/kg	9.58E-06	mg/kg-day		1/(mg/kg-day)		6.70E-04	mg/kg-day		mg/kg-day	
				MANGANESE	4.32E+02	mg/kg	5.98E-06	mg/kg-day		1/(mg/kg-day)		4.18E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	4.78E+03	mg/kg	6.61E-05	mg/kg-day		1/(mg/kg-day)		4.63E-03	mg/kg-day	3.00E-04	mg/kg-day	2E+01
				NICKEL	3.01E+02	mg/kg	4.17E-06	mg/kg-day		1/(mg/kg-day)		2.92E-04	mg/kg-day	2.00E-02	mg/kg-day	1E-02
				VANADIUM	6.39E+01	mg/kg	8.84E-07	mg/kg-day		1/(mg/kg-day)		6.19E-05	mg/kg-day	9.00E-03	mg/kg-day	7E-03
				METHYL MERCURY	6.86E-01	mg/kg	9.49E-09	mg/kg-day		1/(mg/kg-day)		6.65E-07	mg/kg-day	1.00E-04	mg/kg-day	7E-03
				HIGHLY CHLORINATED PCBs	9.88E+00	mg/kg	1.37E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-07	9.57E-06	mg/kg-day	2.00E-05	mg/kg-day	5E-01
				ACENAPHTHYLENE	1.70E-01	mg/kg	2.35E-09	mg/kg-day		1/(mg/kg-day)		1.65E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	2.10E+00	mg/kg	2.91E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.03E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	2.00E+00	mg/kg	2.77E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.94E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	3.00E+00	mg/kg	4.15E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.91E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.40E+00	mg/kg	1.94E-08	mg/kg-day		1/(mg/kg-day)		1.36E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				DIBENZO(A,H)ANTHRACENE	4.40E-01	mg/kg	6.09E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-08	4.26E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	1.20E+00	mg/kg	1.66E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.16E-06	mg/kg-day		mg/kg-day	

TABLE 7.7b CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Intermediate Soils (0-20 ft)	On-Site Ditches	Ingestion	PHENANTHRENE	2.00E+00	mg/kg	2.77E-08	mg/kg-day		1/(mg/kg-day)		1.94E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				1,2,3-TRICHLOROBENZENE	2.20E+00	mg/kg	3.04E-08	mg/kg-day		1/(mg/kg-day)		2.13E-06	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	7.50E+00	mg/kg	1.04E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	4E-10	7.27E-06	mg/kg-day	1.00E-02	mg/kg-day	7E-04
				1,2-DICHLOROBENZENE	1.90E+02	mg/kg	2.63E-06	mg/kg-day		1/(mg/kg-day)		1.84E-04	mg/kg-day	9.00E-02	mg/kg-day	2E-03
				1,3-DICHLOROBENZENE	7.60E+01	mg/kg	1.05E-06	mg/kg-day		1/(mg/kg-day)		7.36E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	4.30E+02	mg/kg	5.95E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	3E-08	4.17E-04	mg/kg-day	7.00E-02	mg/kg-day	6E-03
				BENZENE	1.20E-01	mg/kg	1.66E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	9E-11	1.16E-07	mg/kg-day	4.00E-03	mg/kg-day	3E-05
				CHLOROBENZENE	7.10E+01	mg/kg	9.83E-07	mg/kg-day		1/(mg/kg-day)		6.88E-05	mg/kg-day	2.00E-02	mg/kg-day	3E-03
			Exp. Route Total								**2E-05**					**2E+01**
		Exp. Point Total									**2E-05**					**2E+01**
	Exp. Medium Total										**2E-05**					**2E+01**
Medium Total											**2E-05**					**2E+01**
										Total of Receptor Risks Across All Media	**2E-05**				Total of Receptor Hazards Across All Media	**2E+01**

TABLE 7.7c CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Intermediate Soils (0-20 ft)	Former Chlorination Building	Dermal	2,3,7,8-TCDD Equivalent	2.52E-01	mg/kg	2.09E-10	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-05	1.47E-08	mg/kg-day	1.00E-09	mg/kg-day	1E+01
				ARSENIC	1.04E+01	mg/kg	8.64E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-08	6.04E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				CHROMIUM	1.35E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	8.57E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.38E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.50E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.24E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	2.13E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-08	1.49E-06	mg/kg-day	2.00E-05	mg/kg-day	7E-02
				LESS CHLORINATED PCBs	1.10E+00	mg/kg	4.26E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	9E-09	2.98E-07	mg/kg-day	7.00E-05	mg/kg-day	4E-03
				ALDRIN	2.50E-02	mg/kg		mg/kg-day	1.70E+01	1/(mg/kg-day)			mg/kg-day	3.00E-05	mg/kg-day	
				ACENAPHTHYLENE	4.00E-02	mg/kg	1.44E-10	mg/kg-day		1/(mg/kg-day)		1.01E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	5.76E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-09	4.03E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	5.40E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-08	3.78E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	1.01E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	7E-09	7.05E-07	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	3.96E-09	mg/kg-day		1/(mg/kg-day)		2.77E-07	mg/kg-day	3.00E-02	mg/kg-day	9E-06
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	1.12E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	8E-09	7.81E-08	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.20E+00	mg/kg	3.32E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	5E-09	2.32E-07	mg/kg-day	8.00E-04	mg/kg-day	3E-04
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	3.17E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-09	2.22E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	6.84E-09	mg/kg-day		1/(mg/kg-day)		4.79E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
			Exp. Route Total								**3E-05**					**1E+01**
			Ingestion	2,3,7,8-TCDD Equivalent	2.52E-01	mg/kg	3.49E-09	mg/kg-day	1.50E+05	1/(mg/kg-day)	5E-04	2.44E-07	mg/kg-day	1.00E-09	mg/kg-day	2E+02
				ARSENIC	1.04E+01	mg/kg	1.44E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	1.01E-05	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				CHROMIUM	1.35E+01	mg/kg	1.87E-07	mg/kg-day		1/(mg/kg-day)		1.31E-05	mg/kg-day	3.00E-03	mg/kg-day	4E-03
				IRON	8.57E+03	mg/kg	1.19E-04	mg/kg-day		1/(mg/kg-day)		8.30E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				MANGANESE	3.38E+02	mg/kg	4.68E-06	mg/kg-day		1/(mg/kg-day)		3.27E-04	mg/kg-day	1.40E-01	mg/kg-day	2E-03
				MERCURY	1.50E+02	mg/kg	2.08E-06	mg/kg-day		1/(mg/kg-day)		1.45E-04	mg/kg-day	3.00E-04	mg/kg-day	5E-01
				VANADIUM	1.24E+01	mg/kg	1.72E-07	mg/kg-day		1/(mg/kg-day)		1.20E-05	mg/kg-day	9.00E-03	mg/kg-day	1E-03
				HIGHLY CHLORINATED PCBs	5.50E+00	mg/kg	7.61E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	5.33E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				LESS CHLORINATED PCBs	1.10E+00	mg/kg	1.52E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-08	1.07E-06	mg/kg-day	7.00E-05	mg/kg-day	2E-02
				ALDRIN	2.50E-02	mg/kg	3.46E-10	mg/kg-day	1.70E+01	1/(mg/kg-day)	6E-09	2.42E-08	mg/kg-day	3.00E-05	mg/kg-day	8E-04
				ACENAPHTHYLENE	4.00E-02	mg/kg	5.54E-10	mg/kg-day		1/(mg/kg-day)		3.87E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.60E+00	mg/kg	2.21E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.55E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	1.50E+00	mg/kg	2.08E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.45E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	2.80E+00	mg/kg	3.87E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.71E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.10E+00	mg/kg	1.52E-08	mg/kg-day		1/(mg/kg-day)		1.07E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
				DIBENZO(A,H)ANTHRACENE	3.10E-01	mg/kg	4.29E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-08	3.00E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	1.20E+00	mg/kg	1.66E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	3E-08	1.16E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-03
				INDENO(1,2,3-CD)PYRENE	8.80E-01	mg/kg	1.22E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-09	8.52E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.90E+00	mg/kg	2.63E-08	mg/kg-day		1/(mg/kg-day)		1.84E-06	mg/kg-day	3.00E-02	mg/kg-day	6E-05
				1,2,4-TRICHLOROBENZENE	2.00E+01	mg/kg	2.77E-07	mg/kg-day	3.60E-03	1/(mg/kg-day)	1E-09	1.94E-05	mg/kg-day	1.00E-02	mg/kg-day	2E-03
				1,2-DICHLOROBENZENE	7.80E+01	mg/kg	1.08E-06	mg/kg-day		1/(mg/kg-day)		7.56E-05	mg/kg-day	9.00E-02	mg/kg-day	8E-04
				1,4-DICHLOROBENZENE	1.80E+01	mg/kg	2.49E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-09	1.74E-05	mg/kg-day	7.00E-02	mg/kg-day	2E-04
			Exp. Route Total								**5E-04**					**2E+02**
		Exp. Point Total									**6E-04**					**3E+02**
	Exp. Medium Total										**6E-04**					**3E+02**
Medium Total											**6E-04**					**3E+02**
										Total of Receptor Risks Across All Media	**6E-04**			Total of Receptor Hazards Across All Media		**3E+02**

TABLE 7.7d CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
STATE FAIR BLVD/ NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	State Fair Blvd/ Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	Dermal	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	4.38E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	7E-08	3.07E-11	mg/kg-day	1.00E-09		3E-02
				MERCURY	1.15E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day			
				HIGHLY CHLORINATED	1.50E+00	mg/kg	5.81E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-08	4.07E-07	mg/kg-day	2.00E-05		2E-02
				LESS CHLORINATED	6.90E-01	mg/kg	2.67E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-09	1.87E-07	mg/kg-day	7.00E-05		3E-03
				HEXACHLOROBENZENE	7.30E-01	mg/kg	2.02E-09	mg/kg-day	1.60E+00	1/(mg/kg-day)	3E-09	1.41E-07	mg/kg-day	8.00E-04		2E-04
				1,2,3-TRICHLOROBENZENE	7.40E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day			
				1,4-DICHLOROBENZENE	2.40E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02		
				BENZENE	1.40E-03	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03		
				TRICHLOROETHENE	5.70E-01	mg/kg		mg/kg-day	4.00E-01	1/(mg/kg-day)			mg/kg-day			
			Exp. Route Total								**9E-08**					**5E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	5.28E-04	mg/kg	7.31E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	1E-06	5.11E-10	mg/kg-day	1.00E-09	mg/kg-day	5E-01
				MERCURY	1.15E+02	mg/kg	1.59E-06	mg/kg-day		1/(mg/kg-day)		1.11E-04	mg/kg-day	3.00E-04	mg/kg-day	4E-01
				HIGHLY CHLORINATED PCBs	1.50E+00	mg/kg	2.08E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-08	1.45E-06	mg/kg-day	2.00E-05	mg/kg-day	7E-02
				LESS CHLORINATED PCBs	6.90E-01	mg/kg	9.55E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-08	6.68E-07	mg/kg-day	7.00E-05	mg/kg-day	1E-02
				HEXACHLOROBENZENE	7.30E-01	mg/kg	1.01E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-08	7.07E-07	mg/kg-day	8.00E-04	mg/kg-day	9E-04
				1,2,3-TRICHLOROBENZENE	7.40E+00	mg/kg	1.02E-07	mg/kg-day		1/(mg/kg-day)		7.17E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.40E+03	mg/kg	3.32E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-07	2.32E-03	mg/kg-day	7.00E-02	mg/kg-day	3E-02
				BENZENE	1.40E-03	mg/kg	1.94E-11	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-12	1.36E-09	mg/kg-day	4.00E-03	mg/kg-day	3E-07
				TRICHLOROETHENE	5.70E-01	mg/kg	7.89E-09	mg/kg-day	4.00E-01	1/(mg/kg-day)	3E-09	5.52E-07	mg/kg-day		mg/kg-day	
			Exp. Route Total								**1E-06**					**1E+00**
		Exp. Point Total									**1E-06**					**1E+00**
	Exp. Medium Total										**1E-06**					**1E+00**
Medium Total											**1E-06**					**1E+00**
										Total of Receptor Risks Across All Media	**1E-06**			Total of Receptor Hazards Across All Media		**1E+00**

TABLE 7.7e CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
LAKESHORE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Lakeshore Area	Dermal	2,3,7,8-TCDD Equivalent	7.62E-05	mg/kg	6.33E-14	mg/kg-day	1.50E+05	1/(mg/kg-day)	9E-09	4.43E-12	mg/kg-day	1.00E-09	mg/kg-day	4E-03
				ALUMINUM	8.21E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	1.11E+01	mg/kg	9.18E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-08	6.43E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				CHROMIUM	4.42E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	1.75E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.91E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.05E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	2.02E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				ZINC	1.01E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	3.00E-01	mg/kg-day	
				HIGHLY CHLORINATED PCBs	3.70E+00	mg/kg	1.43E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	3E-08	1.00E-06	mg/kg-day	2.00E-05	mg/kg-day	5E-02
				ENDOSULFAN I	2.50E-02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-03	mg/kg-day	
				ACENAPHTHYLENE	1.38E+00	mg/kg	4.97E-09	mg/kg-day		1/(mg/kg-day)		3.48E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.10E+01	mg/kg	3.96E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.77E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	8.90E+00	mg/kg	3.20E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	2.24E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	4.32E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.02E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.36E+00	mg/kg	8.50E-09	mg/kg-day		1/(mg/kg-day)		5.95E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	1.09E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	8E-10	7.60E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	4.32E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-08	3.02E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	8.66E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-09	6.06E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.70E+01	mg/kg	9.71E-08	mg/kg-day		1/(mg/kg-day)		6.80E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
			Exp. Route Total								**4E-07**					**6E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	7.62E-05	mg/kg	1.05E-12	mg/kg-day	1.50E+05	1/(mg/kg-day)	2E-07	7.38E-11	mg/kg-day	1.00E-09	mg/kg-day	7E-02
				ALUMINUM	8.21E+03	mg/kg	1.14E-04	mg/kg-day		1/(mg/kg-day)		7.96E-03	mg/kg-day	1.00E+00	mg/kg-day	8E-03
				ARSENIC	1.11E+01	mg/kg	1.53E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	1.07E-05	mg/kg-day	3.00E-04	mg/kg-day	4E-02
				CHROMIUM	4.42E+01	mg/kg	6.12E-07	mg/kg-day		1/(mg/kg-day)		4.28E-05	mg/kg-day	3.00E-03	mg/kg-day	1E-02
				IRON	1.75E+04	mg/kg	2.42E-04	mg/kg-day		1/(mg/kg-day)		1.69E-02	mg/kg-day	7.00E-01	mg/kg-day	2E-02
				MANGANESE	3.91E+02	mg/kg	5.41E-06	mg/kg-day		1/(mg/kg-day)		3.79E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	3.05E+00	mg/kg	4.23E-08	mg/kg-day		1/(mg/kg-day)		2.96E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				VANADIUM	2.02E+01	mg/kg	2.79E-07	mg/kg-day		1/(mg/kg-day)		1.96E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				ZINC	1.01E+02	mg/kg	1.39E-06	mg/kg-day		1/(mg/kg-day)		9.75E-05	mg/kg-day	3.00E-01	mg/kg-day	3E-04
				HIGHLY CHLORINATED PCBs	3.70E+00	mg/kg	5.12E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	1E-07	3.58E-06	mg/kg-day	2.00E-05	mg/kg-day	2E-01
				ENDOSULFAN I	2.50E-02	mg/kg	3.46E-10	mg/kg-day		1/(mg/kg-day)		2.42E-08	mg/kg-day	6.00E-03	mg/kg-day	4E-06
				ACENAPHTHYLENE	1.38E+00	mg/kg	1.91E-08	mg/kg-day		1/(mg/kg-day)		1.34E-06	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.10E+01	mg/kg	1.52E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.07E-05	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	8.90E+00	mg/kg	1.23E-07	mg/kg-day	7.30E+00	1/(mg/kg-day)	9E-07	8.62E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.20E+01	mg/kg	1.66E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.16E-05	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.36E+00	mg/kg	3.27E-08	mg/kg-day		1/(mg/kg-day)		2.29E-06	mg/kg-day	3.00E-02	mg/kg-day	8E-05
				BENZO(K)FLUORANTHENE	3.02E+00	mg/kg	4.17E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	3E-09	2.92E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.20E+00	mg/kg	1.66E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.16E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.41E+00	mg/kg	3.33E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.33E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	2.70E+01	mg/kg	3.74E-07	mg/kg-day		1/(mg/kg-day)		2.62E-05	mg/kg-day	3.00E-02	mg/kg-day	9E-04
			Exp. Route Total								**2E-06**					**4E-01**
		Exp. Point Total									**2E-06**					**4E-01**
	Exp. Medium Total										**2E-06**					**4E-01**
Medium Total											**2E-06**					**4E-01**
Groundwater	Shallow Groundwater (0-10 ft)	Lakeshore Area	Dermal	ARSENIC	1.78E+01	ug/L	1.97E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-08	1.38E-06	mg/kg-day	3.00E-04	mg/kg-day	5E-03
				BARIUM	3.25E+02	ug/L	3.60E-07	mg/kg-day		1/(mg/kg-day)		2.52E-05	mg/kg-day	1.40E-02	mg/kg-day	2E-03
				BERYLLIUM	2.83E+01	ug/L	3.13E-08	mg/kg-day		1/(mg/kg-day)		2.19E-06	mg/kg-day	1.40E-05	mg/kg-day	2E-01
				CHROMIUM	3.52E+01	ug/L	7.79E-08	mg/kg-day		1/(mg/kg-day)		5.46E-06	mg/kg-day	7.50E-05	mg/kg-day	7E-02
				IRON	2.95E+03	ug/L	3.27E-06	mg/kg-day		1/(mg/kg-day)		2.29E-04	mg/kg-day	7.00E-01	mg/kg-day	3E-04
				MANGANESE	9.49E+01	ug/L	1.05E-07	mg/kg-day		1/(mg/kg-day)		7.35E-06	mg/kg-day	5.60E-03	mg/kg-day	1E-03
				MERCURY	6.08E+00	ug/L	6.73E-09	mg/kg-day		1/(mg/kg-day)		4.71E-07	mg/kg-day	2.10E-05	mg/kg-day	2E-02
				VANADIUM	7.88E+01	ug/L	8.72E-08	mg/kg-day		1/(mg/kg-day)		6.11E-06	mg/kg-day	2.34E-04	mg/kg-day	3E-02

TABLE 7.7e CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
LAKESHORE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Shallow Groundwater (0-10 ft)	Lakeshore Area	Dermal	2,4-DICHLOROPHENOL	2.30E+01	ug/L	6.14E-07	mg/kg-day		1/(mg/kg-day)		4.30E-05	mg/kg-day	3.00E-03	mg/kg-day	1E-02
				2-CHLOROPHENOL	4.10E+01	ug/L	4.14E-07	mg/kg-day		1/(mg/kg-day)		2.90E-05	mg/kg-day	5.00E-03	mg/kg-day	6E-03
				2-METHYLNAPHTHALENE	6.00E+00	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				4-CHLORO-3-METHYLPHENOL	3.00E+00	ug/L	1.05E-07	mg/kg-day		1/(mg/kg-day)		7.37E-06	mg/kg-day		mg/kg-day	
				4-METHYLPHENOL	6.20E+01	ug/L	5.85E-07	mg/kg-day		1/(mg/kg-day)		4.10E-05	mg/kg-day		mg/kg-day	
				NAPHTHALENE	1.40E+02	ug/L	7.29E-06	mg/kg-day		1/(mg/kg-day)		5.10E-04	mg/kg-day	2.00E-02	mg/kg-day	3E-02
				PHENANTHRENE	2.00E+00	ug/L	3.12E-07	mg/kg-day		1/(mg/kg-day)		2.19E-05	mg/kg-day	3.00E-02	mg/kg-day	7E-04
				1,2,4-TRICHLOROBENZENE	2.10E+01	ug/L	1.73E-06	mg/kg-day	3.60E-03	1/(mg/kg-day)	6E-09	1.21E-04	mg/kg-day	1.00E-02	mg/kg-day	1E-02
				1,2-DICHLOROBENZENE	6.60E+03	ug/L	3.13E-04	mg/kg-day		1/(mg/kg-day)		2.19E-02	mg/kg-day	9.00E-02	mg/kg-day	2E-01
				1,3-DICHLOROBENZENE	4.80E+02	ug/L	3.07E-05	mg/kg-day		1/(mg/kg-day)		2.15E-03	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.20E+04	ug/L	5.83E-04	mg/kg-day	5.40E-03	1/(mg/kg-day)	3E-06	4.08E-02	mg/kg-day	7.00E-02	mg/kg-day	6E-01
				BENZENE	3.00E+04	ug/L	4.93E-04	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-05	3.45E-02	mg/kg-day	4.00E-03	mg/kg-day	9E+00
				CARBON DISULFIDE	2.50E+02	ug/L	4.67E-06	mg/kg-day		1/(mg/kg-day)		3.27E-04	mg/kg-day	1.00E-01	mg/kg-day	3E-03
				CHLOROBENZENE	2.50E+04	ug/L	8.02E-04	mg/kg-day		1/(mg/kg-day)		5.62E-02	mg/kg-day	2.00E-02	mg/kg-day	3E+00
				TOLUENE	2.70E+04	ug/L	9.32E-04	mg/kg-day		1/(mg/kg-day)		6.52E-02	mg/kg-day	8.00E-02	mg/kg-day	8E-01
			Exp. Route Total								**3E-05**					**1E+01**
			Ingestion	ARSENIC	1.78E+01	ug/L	7.46E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-08	5.23E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				BARIUM	3.25E+02	ug/L	1.36E-07	mg/kg-day		1/(mg/kg-day)		9.54E-06	mg/kg-day	2.00E-01	mg/kg-day	5E-05
				BERYLLIUM	2.83E+01	ug/L	1.19E-08	mg/kg-day		1/(mg/kg-day)		8.31E-07	mg/kg-day	2.00E-03	mg/kg-day	4E-04
				CHROMIUM	3.52E+01	ug/L	1.48E-08	mg/kg-day		1/(mg/kg-day)		1.03E-06	mg/kg-day	3.00E-03	mg/kg-day	3E-04
				IRON	2.95E+03	ug/L	1.24E-06	mg/kg-day		1/(mg/kg-day)		8.66E-05	mg/kg-day	7.00E-01	mg/kg-day	1E-04
				MANGANESE	9.49E+01	ug/L	3.98E-08	mg/kg-day		1/(mg/kg-day)		2.79E-06	mg/kg-day	1.40E-01	mg/kg-day	2E-05
				MERCURY	6.08E+00	ug/L	2.55E-09	mg/kg-day		1/(mg/kg-day)		1.78E-07	mg/kg-day	3.00E-04	mg/kg-day	6E-04
				VANADIUM	7.88E+01	ug/L	3.30E-08	mg/kg-day		1/(mg/kg-day)		2.31E-06	mg/kg-day	9.00E-03	mg/kg-day	3E-04
				2,4-DICHLOROPHENOL	2.30E+01	ug/L	9.64E-09	mg/kg-day		1/(mg/kg-day)		6.75E-07	mg/kg-day	3.00E-03	mg/kg-day	2E-04
				2-CHLOROPHENOL	4.10E+01	ug/L	1.72E-08	mg/kg-day		1/(mg/kg-day)		1.20E-06	mg/kg-day	5.00E-03	mg/kg-day	2E-04
				2-METHYLNAPHTHALENE	6.00E+00	ug/L	2.52E-09	mg/kg-day		1/(mg/kg-day)		1.76E-07	mg/kg-day	4.00E-03	mg/kg-day	4E-05
				4-CHLORO-3-METHYLPHENOL	3.00E+00	ug/L	1.26E-09	mg/kg-day		1/(mg/kg-day)		8.81E-08	mg/kg-day		mg/kg-day	
				4-METHYLPHENOL	6.20E+01	ug/L	2.60E-08	mg/kg-day		1/(mg/kg-day)		1.82E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	1.40E+02	ug/L	5.87E-08	mg/kg-day		1/(mg/kg-day)		4.11E-06	mg/kg-day	2.00E-02	mg/kg-day	2E-04
				PHENANTHRENE	2.00E+00	ug/L	8.39E-10	mg/kg-day		1/(mg/kg-day)		5.87E-08	mg/kg-day	3.00E-02	mg/kg-day	2E-06
				1,2,4-TRICHLOROBENZENE	2.10E+01	ug/L	8.81E-09	mg/kg-day	3.60E-03	1/(mg/kg-day)	3E-11	6.16E-07	mg/kg-day	1.00E-02	mg/kg-day	6E-05
				1,2-DICHLOROBENZENE	6.60E+03	ug/L	2.77E-06	mg/kg-day		1/(mg/kg-day)		1.94E-04	mg/kg-day	9.00E-02	mg/kg-day	2E-03
				1,3-DICHLOROBENZENE	4.80E+02	ug/L	2.01E-07	mg/kg-day		1/(mg/kg-day)		1.41E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.20E+04	ug/L	5.03E-06	mg/kg-day	5.40E-03	1/(mg/kg-day)	3E-08	3.52E-04	mg/kg-day	7.00E-02	mg/kg-day	5E-03
				BENZENE	3.00E+04	ug/L	1.26E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	7E-07	8.81E-04	mg/kg-day	4.00E-03	mg/kg-day	2E-01
				CARBON DISULFIDE	2.50E+02	ug/L	1.05E-07	mg/kg-day		1/(mg/kg-day)		7.34E-06	mg/kg-day	1.00E-01	mg/kg-day	7E-05
				CHLOROBENZENE	2.50E+04	ug/L	1.05E-05	mg/kg-day		1/(mg/kg-day)		7.34E-04	mg/kg-day	2.00E-02	mg/kg-day	4E-02
				TOLUENE	2.70E+04	ug/L	1.13E-05	mg/kg-day		1/(mg/kg-day)		7.93E-04	mg/kg-day	8.00E-02	mg/kg-day	1E-02
			Exp. Route Total								**7E-07**					**3E-01**
		Exp. Point Total									**3E-05**					**1E+01**
	Exp. Medium Total										**3E-05**					**1E+01**
Medium Total											**3E-05**					**1E+01**
									Total of Receptor Risks Across All Media		**3E-05**			Total of Receptor Hazards Across All Media		**1E+01**

TABLE 7.7f CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Petroleum Storage Area	Dermal	ALUMINUM	9.13E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ARSENIC	3.85E+01	mg/kg	3.20E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	5E-08	2.24E-06	mg/kg-day	3.00E-04	mg/kg-day	7E-03
				CHROMIUM	2.06E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	2.46E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	4.47E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	1.03E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.73E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	2.79E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	6E-09	1.95E-07	mg/kg-day	2.00E-05	mg/kg-day	1E-02
				DELTA-BHC	1.20E-03	mg/kg		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	3.78E-01	mg/kg	1.36E-09	mg/kg-day		1/(mg/kg-day)		9.52E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.99E+00	mg/kg	1.44E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.01E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	3.77E+00	mg/kg	1.35E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	9.48E-07	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.62E+00	mg/kg	2.02E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.42E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	3.66E+00	mg/kg	1.32E-08	mg/kg-day		1/(mg/kg-day)		9.23E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZO(K)FLUORANTHENE	1.73E+00	mg/kg	6.21E-09	mg/kg-day	7.30E-02	1/(mg/kg-day)	5E-10	4.35E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	9.50E-01	mg/kg	3.42E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-08	2.39E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	3.15E+00	mg/kg	1.13E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	8E-09	7.92E-07	mg/kg-day		mg/kg-day	
				NAPHTHALENE	2.24E+01	mg/kg	8.07E-08	mg/kg-day		1/(mg/kg-day)		5.65E-06	mg/kg-day	2.00E-02	mg/kg-day	3E-04
				PHENANTHRENE	3.37E+00	mg/kg	1.21E-08	mg/kg-day		1/(mg/kg-day)		8.49E-07	mg/kg-day	3.00E-02	mg/kg-day	3E-05
				BENZENE	1.02E-01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**2E-07**					**2E-02**
			Ingestion	ALUMINUM	9.13E+03	mg/kg	1.26E-04	mg/kg-day		1/(mg/kg-day)		8.84E-03	mg/kg-day	1.00E+00	mg/kg-day	9E-03
				ARSENIC	3.85E+01	mg/kg	5.33E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-07	3.73E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				CHROMIUM	2.06E+01	mg/kg	2.85E-07	mg/kg-day		1/(mg/kg-day)		2.00E-05	mg/kg-day	3.00E-03	mg/kg-day	7E-03
				IRON	2.46E+04	mg/kg	3.41E-04	mg/kg-day		1/(mg/kg-day)		2.39E-02	mg/kg-day	7.00E-01	mg/kg-day	3E-02
				MANGANESE	4.47E+02	mg/kg	6.18E-06	mg/kg-day		1/(mg/kg-day)		4.33E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	1.03E+01	mg/kg	1.43E-07	mg/kg-day		1/(mg/kg-day)		9.98E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				VANADIUM	1.73E+01	mg/kg	2.40E-07	mg/kg-day		1/(mg/kg-day)		1.68E-05	mg/kg-day	9.00E-03	mg/kg-day	2E-03
				HIGHLY CHLORINATED PCBs	7.20E-01	mg/kg	9.96E-09	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-08	6.97E-07	mg/kg-day	2.00E-05	mg/kg-day	3E-02
				DELTA-BHC	1.20E-03	mg/kg	1.66E-11	mg/kg-day	6.30E+00	1/(mg/kg-day)	1E-10	1.16E-09	mg/kg-day		mg/kg-day	
				ACENAPHTHYLENE	3.78E-01	mg/kg	5.23E-09	mg/kg-day		1/(mg/kg-day)		3.66E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.99E+00	mg/kg	5.53E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	3.87E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	3.77E+00	mg/kg	5.21E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	4E-07	3.65E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.62E+00	mg/kg	7.78E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	5.44E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	3.66E+00	mg/kg	5.07E-08	mg/kg-day		1/(mg/kg-day)		3.55E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZO(K)FLUORANTHENE	1.73E+00	mg/kg	2.39E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-09	1.67E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	9.50E-01	mg/kg	1.31E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	9.20E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	3.15E+00	mg/kg	4.35E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.05E-06	mg/kg-day		mg/kg-day	
				NAPHTHALENE	2.24E+01	mg/kg	3.10E-07	mg/kg-day		1/(mg/kg-day)		2.17E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				PHENANTHRENE	3.37E+00	mg/kg	4.66E-08	mg/kg-day		1/(mg/kg-day)		3.26E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				BENZENE	1.02E-01	mg/kg	1.41E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	8E-11	9.88E-08	mg/kg-day	4.00E-03	mg/kg-day	2E-05
			Exp. Route Total								**1E-06**					**2E-01**
		Exp. Point Total									**2E-06**					**3E-01**
	Exp. Medium Total										**2E-06**					**3E-01**
Medium Total											**2E-06**					**3E-01**
Groundwater	Shallow Groundwater (0-10 ft)	Petroleum Storage Area	Dermal	ALUMINUM	2.64E+04	ug/L	2.93E-05	mg/kg-day		1/(mg/kg-day)		2.05E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				BARIUM	3.28E+02	ug/L	3.63E-07	mg/kg-day		1/(mg/kg-day)		2.54E-05	mg/kg-day	1.40E-02	mg/kg-day	2E-03
				CHROMIUM	5.13E+01	ug/L	1.14E-07	mg/kg-day		1/(mg/kg-day)		7.95E-06	mg/kg-day	7.50E-05	mg/kg-day	1E-01
				COPPER	1.79E+02	ug/L	1.98E-07	mg/kg-day		1/(mg/kg-day)		1.39E-05	mg/kg-day	4.00E-02	mg/kg-day	3E-04
				IRON	4.53E+04	ug/L	5.01E-05	mg/kg-day		1/(mg/kg-day)		3.51E-03	mg/kg-day	7.00E-01	mg/kg-day	5E-03
				LEAD	7.17E+01	ug/L	7.94E-09	mg/kg-day		1/(mg/kg-day)		5.56E-07	mg/kg-day		mg/kg-day	
				MANGANESE	1.73E+03	ug/L	1.91E-06	mg/kg-day		1/(mg/kg-day)		1.34E-04	mg/kg-day	5.60E-03	mg/kg-day	2E-02
				MERCURY	2.44E+00	ug/L	2.70E-09	mg/kg-day		1/(mg/kg-day)		1.89E-07	mg/kg-day	2.10E-05	mg/kg-day	9E-03
				NICKEL	6.91E+01	ug/L	1.53E-08	mg/kg-day		1/(mg/kg-day)		1.07E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-03

TABLE 7.7f CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Shallow Groundwater (0-10 ft)	Petroleum Storage Area	Dermal	VANADIUM	5.94E+01	ug/L	6.58E-08	mg/kg-day		1/(mg/kg-day)		4.60E-06	mg/kg-day	2.34E-04	mg/kg-day	2E-02
				2-METHYLNAPHTHALENE	2.40E+01	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				DIBENZOFURAN	2.00E+00	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E-03	mg/kg-day	
				NAPHTHALENE	2.30E+02	ug/L	1.20E-05	mg/kg-day		1/(mg/kg-day)		8.38E-04	mg/kg-day	2.00E-02	mg/kg-day	4E-02
				PHENANTHRENE	6.00E+00	ug/L	9.37E-07	mg/kg-day		1/(mg/kg-day)		6.56E-05	mg/kg-day	3.00E-02	mg/kg-day	2E-03
				BENZENE	2.89E+03	ug/L	4.75E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-06	3.33E-03	mg/kg-day	4.00E-03	mg/kg-day	8E-01
				XYLENES, TOTAL	4.10E+01	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-01	mg/kg-day	
			Exp. Route Total								**3E-06**					**1E+00**
			Ingestion	ALUMINUM	2.64E+04	ug/L	1.11E-05	mg/kg-day		1/(mg/kg-day)		7.76E-04	mg/kg-day	1.00E+00	mg/kg-day	8E-04
				BARIUM	3.28E+02	ug/L	1.38E-07	mg/kg-day		1/(mg/kg-day)		9.63E-06	mg/kg-day	2.00E-01	mg/kg-day	5E-05
				CHROMIUM	5.13E+01	ug/L	2.15E-08	mg/kg-day		1/(mg/kg-day)		1.51E-06	mg/kg-day	3.00E-03	mg/kg-day	5E-04
				COPPER	1.79E+02	ug/L	7.51E-08	mg/kg-day		1/(mg/kg-day)		5.25E-06	mg/kg-day	4.00E-02	mg/kg-day	1E-04
				IRON	4.53E+04	ug/L	1.90E-05	mg/kg-day		1/(mg/kg-day)		1.33E-03	mg/kg-day	7.00E-01	mg/kg-day	2E-03
				LEAD	7.17E+01	ug/L	3.01E-08	mg/kg-day		1/(mg/kg-day)		2.10E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.73E+03	ug/L	7.24E-07	mg/kg-day		1/(mg/kg-day)		5.07E-05	mg/kg-day	1.40E-01	mg/kg-day	4E-04
				MERCURY	2.44E+00	ug/L	1.02E-09	mg/kg-day		1/(mg/kg-day)		7.16E-08	mg/kg-day	3.00E-04	mg/kg-day	2E-04
				NICKEL	6.91E+01	ug/L	2.90E-08	mg/kg-day		1/(mg/kg-day)		2.03E-06	mg/kg-day	2.00E-02	mg/kg-day	1E-04
				VANADIUM	5.94E+01	ug/L	2.49E-08	mg/kg-day		1/(mg/kg-day)		1.74E-06	mg/kg-day	9.00E-03	mg/kg-day	2E-04
				2-METHYLNAPHTHALENE	2.40E+01	ug/L	1.01E-08	mg/kg-day		1/(mg/kg-day)		7.05E-07	mg/kg-day	4.00E-03	mg/kg-day	2E-04
				DIBENZOFURAN	2.00E+00	ug/L	8.39E-10	mg/kg-day		1/(mg/kg-day)		5.87E-08	mg/kg-day	1.00E-03	mg/kg-day	6E-05
				NAPHTHALENE	2.30E+02	ug/L	9.64E-08	mg/kg-day		1/(mg/kg-day)		6.75E-06	mg/kg-day	2.00E-02	mg/kg-day	3E-04
				PHENANTHRENE	6.00E+00	ug/L	2.52E-09	mg/kg-day		1/(mg/kg-day)		1.76E-07	mg/kg-day	3.00E-02	mg/kg-day	6E-06
				BENZENE	2.89E+03	ug/L	1.21E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	7E-08	8.49E-05	mg/kg-day	4.00E-03	mg/kg-day	2E-02
				XYLENES, TOTAL	4.10E+01	ug/L	1.72E-08	mg/kg-day		1/(mg/kg-day)		1.20E-06	mg/kg-day	2.00E-01	mg/kg-day	6E-06
			Exp. Route Total								**7E-08**					**3E-02**
		Exp. Point Total									**3E-06**					**1E+00**
	Exp. Medium Total										**3E-06**					**1E+00**
Medium Total											**3E-06**					**1E+00**
									Total of Receptor Risks Across All Media		**4E-06**	Total of Receptor Hazards Across All Media				**1E+00**

TABLE 7.7g CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Upper Soils (0-10 ft)	Chlorobenzene Hot-Spot Spot Area	Dermal	ARSENIC	1.02E+01	mg/kg	8.49E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-08	5.94E-07	mg/kg-day	3.00E-04	mg/kg-day	2E-03
				CHROMIUM	2.23E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				IRON	1.82E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				MANGANESE	3.82E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				MERCURY	3.68E+00	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.10E-05	mg/kg-day	
				VANADIUM	1.13E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	6.17E+01	mg/kg	2.39E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	5E-07	1.67E-05	mg/kg-day	2.00E-05	mg/kg-day	8E-01
				ACENAPHTHYLENE	2.71E-01	mg/kg	9.75E-10	mg/kg-day		1/(mg/kg-day)		6.83E-08	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.70E+01	mg/kg	6.12E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	4E-08	4.28E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.18E+00	mg/kg	2.58E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.81E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.07E+01	mg/kg	3.86E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	2.70E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.49E+00	mg/kg	1.97E-08	mg/kg-day		1/(mg/kg-day)		1.38E-06	mg/kg-day	3.00E-02	mg/kg-day	5E-05
				BENZO(K)FLUORANTHENE	5.63E+00	mg/kg	2.02E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	1E-09	1.42E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.96E+00	mg/kg	7.06E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-08	4.94E-07	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.66E+00	mg/kg	1.01E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-08	7.08E-07	mg/kg-day	8.00E-04	mg/kg-day	9E-04
				INDENO(1,2,3-CD)PYRENE	4.66E+00	mg/kg	1.68E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-08	1.17E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.61E+01	mg/kg	5.80E-08	mg/kg-day		1/(mg/kg-day)		4.06E-06	mg/kg-day	3.00E-02	mg/kg-day	1E-04
				1,2,4-TRICHLOROBENZENE	2.59E+03	mg/kg		mg/kg-day	3.60E-03	1/(mg/kg-day)			mg/kg-day	1.00E-02	mg/kg-day	
				1,2-DICHLOROBENZENE	1.20E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	9.00E-02	mg/kg-day	
				1,3-DICHLOROBENZENE	6.30E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.70E+03	mg/kg		mg/kg-day	5.40E-03	1/(mg/kg-day)			mg/kg-day	7.00E-02	mg/kg-day	
				BENZENE	5.37E-01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
				CHLOROBENZENE	4.79E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.00E-02	mg/kg-day	
			Exp. Route Total								**8E-07**					**8E-01**
			Ingestion	ARSENIC	1.02E+01	mg/kg	1.41E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	2E-07	9.90E-06	mg/kg-day	3.00E-04	mg/kg-day	3E-02
				CHROMIUM	2.23E+01	mg/kg	3.08E-07	mg/kg-day		1/(mg/kg-day)		2.16E-05	mg/kg-day	3.00E-03	mg/kg-day	7E-03
				IRON	1.82E+04	mg/kg	2.52E-04	mg/kg-day		1/(mg/kg-day)		1.76E-02	mg/kg-day	7.00E-01	mg/kg-day	3E-02
				MANGANESE	3.82E+02	mg/kg	5.29E-06	mg/kg-day		1/(mg/kg-day)		3.70E-04	mg/kg-day	1.40E-01	mg/kg-day	3E-03
				MERCURY	3.68E+00	mg/kg	5.09E-08	mg/kg-day		1/(mg/kg-day)		3.56E-06	mg/kg-day	3.00E-04	mg/kg-day	1E-02
				VANADIUM	1.13E+01	mg/kg	1.56E-07	mg/kg-day		1/(mg/kg-day)		1.09E-05	mg/kg-day	9.00E-03	mg/kg-day	1E-03
				HIGHLY CHLORINATED PCBs	6.17E+01	mg/kg	8.53E-07	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-06	5.97E-05	mg/kg-day	2.00E-05	mg/kg-day	3E+00
				ACENAPHTHYLENE	2.71E-01	mg/kg	3.75E-09	mg/kg-day		1/(mg/kg-day)		2.63E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	1.70E+01	mg/kg	2.35E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-07	1.65E-05	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	7.18E+00	mg/kg	9.94E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	7E-07	6.96E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	1.07E+01	mg/kg	1.48E-07	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-07	1.04E-05	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	5.49E+00	mg/kg	7.59E-08	mg/kg-day		1/(mg/kg-day)		5.32E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZO(K)FLUORANTHENE	5.63E+00	mg/kg	7.78E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	6E-09	5.45E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.96E+00	mg/kg	2.72E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	2E-07	1.90E-06	mg/kg-day		mg/kg-day	
				HEXACHLOROBENZENE	3.66E+00	mg/kg	5.06E-08	mg/kg-day	1.60E+00	1/(mg/kg-day)	8E-08	3.54E-06	mg/kg-day	8.00E-04	mg/kg-day	4E-03
				INDENO(1,2,3-CD)PYRENE	4.66E+00	mg/kg	6.45E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-08	4.51E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	1.61E+01	mg/kg	2.23E-07	mg/kg-day		1/(mg/kg-day)		1.56E-05	mg/kg-day	3.00E-02	mg/kg-day	5E-04
				1,2,4-TRICHLOROBENZENE	2.59E+03	mg/kg	3.58E-05	mg/kg-day	3.60E-03	1/(mg/kg-day)	1E-07	2.51E-03	mg/kg-day	1.00E-02	mg/kg-day	3E-01
				1,2-DICHLOROBENZENE	1.20E+03	mg/kg	1.66E-05	mg/kg-day		1/(mg/kg-day)		1.16E-03	mg/kg-day	9.00E-02	mg/kg-day	1E-02
				1,3-DICHLOROBENZENE	6.30E+01	mg/kg	8.72E-07	mg/kg-day		1/(mg/kg-day)		6.10E-05	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	1.70E+03	mg/kg	2.36E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-07	1.65E-03	mg/kg-day	7.00E-02	mg/kg-day	2E-02
				BENZENE	5.37E-01	mg/kg	7.43E-09	mg/kg-day	5.50E-02	1/(mg/kg-day)	4E-10	5.20E-07	mg/kg-day	4.00E-03	mg/kg-day	1E-04
				CHLOROBENZENE	4.79E+01	mg/kg	6.63E-07	mg/kg-day		1/(mg/kg-day)		4.64E-05	mg/kg-day	2.00E-02	mg/kg-day	2E-03
			Exp. Route Total								**4E-06**					**3E+00**
		Exp. Point Total									**4E-06**					**4E+00**
	Exp. Medium Total										**4E-06**					**4E+00**
Medium Total											**4E-06**					**4E+00**

TABLE 7.7g CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Shallow Groundwater (0-10 ft)	Chlorobenzene Hot-Spot Area	Dermal	ALUMINUM	2.91E+04	ug/L	3.23E-05	mg/kg-day		1/(mg/kg-day)		2.26E-03	mg/kg-day	1.00E+00	mg/kg-day	2E-03
				ARSENIC	1.78E+02	ug/L	1.97E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-07	1.38E-05	mg/kg-day	3.00E-04	mg/kg-day	5E-02
				BARIUM	4.44E+02	ug/L	4.92E-07	mg/kg-day		1/(mg/kg-day)		3.44E-05	mg/kg-day	1.40E-02	mg/kg-day	2E-03
				CHROMIUM	4.49E+02	ug/L	9.94E-07	mg/kg-day		1/(mg/kg-day)		6.96E-05	mg/kg-day	7.50E-05	mg/kg-day	9E-01
				COBALT	2.94E+01	ug/L	1.30E-08	mg/kg-day		1/(mg/kg-day)		9.11E-07	mg/kg-day		mg/kg-day	
				COPPER	1.54E+02	ug/L	1.70E-07	mg/kg-day		1/(mg/kg-day)		1.19E-05	mg/kg-day	4.00E-02	mg/kg-day	3E-04
				CYANIDE	4.27E+02	ug/L	4.73E-07	mg/kg-day		1/(mg/kg-day)		3.31E-05	mg/kg-day	2.00E-02	mg/kg-day	2E-03
				IRON	8.60E+04	ug/L	9.52E-05	mg/kg-day		1/(mg/kg-day)		6.66E-03	mg/kg-day	7.00E-01	mg/kg-day	1E-02
				LEAD	8.75E+01	ug/L	9.69E-09	mg/kg-day		1/(mg/kg-day)		6.78E-07	mg/kg-day		mg/kg-day	
				MANGANESE	1.70E+03	ug/L	1.89E-06	mg/kg-day		1/(mg/kg-day)		1.32E-04	mg/kg-day	5.60E-03	mg/kg-day	2E-02
				MERCURY	2.48E+00	ug/L	2.75E-09	mg/kg-day		1/(mg/kg-day)		1.92E-07	mg/kg-day	2.10E-05	mg/kg-day	9E-03
				NICKEL	4.03E+02	ug/L	8.92E-08	mg/kg-day		1/(mg/kg-day)		6.25E-06	mg/kg-day	8.00E-04	mg/kg-day	8E-03
				VANADIUM	1.29E+02	ug/L	1.43E-07	mg/kg-day		1/(mg/kg-day)		1.00E-05	mg/kg-day	2.34E-04	mg/kg-day	4E-02
				HEXACHLOROBENZENE	2.00E+00	ug/L	5.20E-07	mg/kg-day	1.60E+00	1/(mg/kg-day)	8E-07	3.64E-05	mg/kg-day	8.00E-04	mg/kg-day	5E-02
				NAPHTHALENE	5.38E+00	ug/L	2.80E-07	mg/kg-day		1/(mg/kg-day)		1.96E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				PHENANTHRENE	2.00E+00	ug/L	3.12E-07	mg/kg-day		1/(mg/kg-day)		2.19E-05	mg/kg-day	3.00E-02	mg/kg-day	7E-04
				1,2,3-TRICHLOROBENZENE	1.50E+02	ug/L		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.33E+02	ug/L	1.10E-05	mg/kg-day	3.60E-03	1/(mg/kg-day)	4E-08	7.67E-04	mg/kg-day	1.00E-02	mg/kg-day	8E-02
				1,2-DICHLOROBENZENE	1.11E+03	ug/L	5.25E-05	mg/kg-day		1/(mg/kg-day)		3.67E-03	mg/kg-day	9.00E-02	mg/kg-day	4E-02
				1,3-DICHLOROBENZENE	4.10E+01	ug/L	2.62E-06	mg/kg-day		1/(mg/kg-day)		1.84E-04	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.05E+03	ug/L	9.98E-05	mg/kg-day	5.40E-03	1/(mg/kg-day)	5E-07	6.99E-03	mg/kg-day	7.00E-02	mg/kg-day	1E-01
				BENZENE	3.29E+03	ug/L	5.41E-05	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-06	3.79E-03	mg/kg-day	4.00E-03	mg/kg-day	9E-01
				CHLOROBENZENE	4.01E+03	ug/L	1.29E-04	mg/kg-day		1/(mg/kg-day)		9.02E-03	mg/kg-day	2.00E-02	mg/kg-day	5E-01
				CHLOROFORM	1.00E+00	ug/L	8.47E-09	mg/kg-day		1/(mg/kg-day)		5.93E-07	mg/kg-day	1.00E-02	mg/kg-day	6E-05
			Exp. Route Total								**5E-06**					**3E+00**
			Ingestion	ALUMINUM	2.91E+04	ug/L	1.22E-05	mg/kg-day		1/(mg/kg-day)		8.55E-04	mg/kg-day	1.00E+00	mg/kg-day	9E-04
				ARSENIC	1.78E+02	ug/L	7.46E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-07	5.23E-06	mg/kg-day	3.00E-04	mg/kg-day	2E-02
				BARIUM	4.44E+02	ug/L	1.86E-07	mg/kg-day		1/(mg/kg-day)		1.30E-05	mg/kg-day	2.00E-01	mg/kg-day	7E-05
				CHROMIUM	4.49E+02	ug/L	1.88E-07	mg/kg-day		1/(mg/kg-day)		1.32E-05	mg/kg-day	3.00E-03	mg/kg-day	4E-03
				COBALT	2.94E+01	ug/L	1.23E-08	mg/kg-day		1/(mg/kg-day)		8.63E-07	mg/kg-day		mg/kg-day	
				COPPER	1.54E+02	ug/L	6.46E-08	mg/kg-day		1/(mg/kg-day)		4.52E-06	mg/kg-day	4.00E-02	mg/kg-day	1E-04
				CYANIDE	4.27E+02	ug/L	1.79E-07	mg/kg-day		1/(mg/kg-day)		1.25E-05	mg/kg-day	2.00E-02	mg/kg-day	6E-04
				IRON	8.60E+04	ug/L	3.61E-05	mg/kg-day		1/(mg/kg-day)		2.52E-03	mg/kg-day	7.00E-01	mg/kg-day	4E-03
				LEAD	8.75E+01	ug/L	3.67E-08	mg/kg-day		1/(mg/kg-day)		2.57E-06	mg/kg-day		mg/kg-day	
				MANGANESE	1.70E+03	ug/L	7.14E-07	mg/kg-day		1/(mg/kg-day)		5.00E-05	mg/kg-day	1.40E-01	mg/kg-day	4E-04
				MERCURY	2.48E+00	ug/L	1.04E-09	mg/kg-day		1/(mg/kg-day)		7.28E-08	mg/kg-day	3.00E-04	mg/kg-day	2E-04
				NICKEL	4.03E+02	ug/L	1.69E-07	mg/kg-day		1/(mg/kg-day)		1.18E-05	mg/kg-day	2.00E-02	mg/kg-day	6E-04
				VANADIUM	1.29E+02	ug/L	5.41E-08	mg/kg-day		1/(mg/kg-day)		3.79E-06	mg/kg-day	9.00E-03	mg/kg-day	4E-04
				HEXACHLOROBENZENE	2.00E+00	ug/L	8.39E-10	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-09	5.87E-08	mg/kg-day	8.00E-04	mg/kg-day	7E-05
				NAPHTHALENE	5.38E+00	ug/L	2.25E-09	mg/kg-day		1/(mg/kg-day)		1.58E-07	mg/kg-day	2.00E-02	mg/kg-day	8E-06
				PHENANTHRENE	2.00E+00	ug/L	8.39E-10	mg/kg-day		1/(mg/kg-day)		5.87E-08	mg/kg-day	3.00E-02	mg/kg-day	2E-06
				1,2,3-TRICHLOROBENZENE	1.50E+02	ug/L	6.29E-08	mg/kg-day		1/(mg/kg-day)		4.40E-06	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.33E+02	ug/L	5.59E-08	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-10	3.91E-06	mg/kg-day	1.00E-02	mg/kg-day	4E-04
				1,2-DICHLOROBENZENE	1.11E+03	ug/L	4.64E-07	mg/kg-day		1/(mg/kg-day)		3.25E-05	mg/kg-day	9.00E-02	mg/kg-day	4E-04
				1,3-DICHLOROBENZENE	4.10E+01	ug/L	1.72E-08	mg/kg-day		1/(mg/kg-day)		1.20E-06	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	2.05E+03	ug/L	8.61E-07	mg/kg-day	5.40E-03	1/(mg/kg-day)	5E-09	6.03E-05	mg/kg-day	7.00E-02	mg/kg-day	9E-04
				BENZENE	3.29E+03	ug/L	1.38E-06	mg/kg-day	5.50E-02	1/(mg/kg-day)	8E-08	9.67E-05	mg/kg-day	4.00E-03	mg/kg-day	2E-02
				CHLOROBENZENE	4.01E+03	ug/L	1.68E-06	mg/kg-day		1/(mg/kg-day)		1.18E-04	mg/kg-day	2.00E-02	mg/kg-day	6E-03
				CHLOROFORM	1.00E+00	ug/L	4.19E-10	mg/kg-day		1/(mg/kg-day)		2.94E-08	mg/kg-day	1.00E-02	mg/kg-day	3E-06
			Exp. Route Total								**2E-07**					**6E-02**
		Exp. Point Total									**5E-06**					**3E+00**
	Exp. Medium Total										**5E-06**					**3E+00**
Medium Total											**5E-06**					**3E+00**
										Total of Receptor Risks Across All Media	**9E-06**			Total of Receptor Hazards Across All Media		**7E+00**

TABLE 7.7h CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Upper Sediment (0-10 ft)	Tributary 5A	Dermal	2,3,7,8-TCDD Equivalent	2.66E-05	mg/kg	2.21E-14	mg/kg-day	1.50E+05	1/(mg/kg-day)	3E-09	1.55E-12	mg/kg-day	1.00E-09	mg/kg-day	2E-03
				ALUMINUM	8.08E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.00E+00	mg/kg-day	
				ANTIMONY	2.56E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	6.00E-05	mg/kg-day	
				ARSENIC	3.36E+01	mg/kg	2.79E-08	mg/kg-day	1.50E+00	1/(mg/kg-day)	4E-08	1.95E-06	mg/kg-day	3.00E-04	mg/kg-day	7E-03
				BARIUM	9.29E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	1.40E-02	mg/kg-day	
				CHROMIUM	1.24E+04	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.50E-05	mg/kg-day	
				COBALT	5.46E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				COPPER	2.88E+02	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	4.00E-02	mg/kg-day	
				IRON	1.58E+05	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	7.00E-01	mg/kg-day	
				LEAD	4.10E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				MANGANESE	1.24E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.60E-03	mg/kg-day	
				NICKEL	1.71E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	8.00E-04	mg/kg-day	
				SELENIUM	2.33E+01	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	5.00E-03	mg/kg-day	
				VANADIUM	9.67E+03	mg/kg		mg/kg-day		1/(mg/kg-day)			mg/kg-day	2.34E-04	mg/kg-day	
				HIGHLY CHLORINATED PCBs	5.60E+00	mg/kg	2.17E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	4E-08	1.52E-06	mg/kg-day	2.00E-05	mg/kg-day	8E-02
				ACENAPHTHYLENE	4.63E-01	mg/kg	1.67E-09	mg/kg-day		1/(mg/kg-day)		1.17E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.26E+00	mg/kg	1.17E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	9E-09	8.22E-07	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	4.60E+00	mg/kg	1.66E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.16E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	2.06E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	1.44E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.25E+00	mg/kg	8.11E-09	mg/kg-day		1/(mg/kg-day)		5.67E-07	mg/kg-day	3.00E-02	mg/kg-day	2E-05
				BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	8.18E-09	mg/kg-day	7.30E-02	1/(mg/kg-day)	6E-10	5.73E-07	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	3.96E-09	mg/kg-day	7.30E+00	1/(mg/kg-day)	3E-08	2.77E-07	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	7.52E-09	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-09	5.27E-07	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.86E+00	mg/kg	1.75E-08	mg/kg-day		1/(mg/kg-day)		1.22E-06	mg/kg-day	3.00E-02	mg/kg-day	4E-05
				BENZENE	1.30E+01	mg/kg		mg/kg-day	5.50E-02	1/(mg/kg-day)			mg/kg-day	4.00E-03	mg/kg-day	
			Exp. Route Total								**3E-07**					**8E-02**
			Ingestion	2,3,7,8-TCDD Equivalent	2.66E-05	mg/kg	3.68E-13	mg/kg-day	1.50E+05	1/(mg/kg-day)	6E-08	2.58E-11	mg/kg-day	1.00E-09	mg/kg-day	3E-02
				ALUMINUM	8.08E+03	mg/kg	1.12E-04	mg/kg-day		1/(mg/kg-day)		7.83E-03	mg/kg-day	1.00E+00	mg/kg-day	8E-03
				ANTIMONY	2.56E+01	mg/kg	3.55E-07	mg/kg-day		1/(mg/kg-day)		2.48E-05	mg/kg-day	4.00E-04	mg/kg-day	6E-02
				ARSENIC	3.36E+01	mg/kg	4.65E-07	mg/kg-day	1.50E+00	1/(mg/kg-day)	7E-07	3.25E-05	mg/kg-day	3.00E-04	mg/kg-day	1E-01
				BARIUM	9.29E+02	mg/kg	1.29E-05	mg/kg-day		1/(mg/kg-day)		9.00E-04	mg/kg-day	2.00E-01	mg/kg-day	4E-03
				CHROMIUM	1.24E+04	mg/kg	1.72E-04	mg/kg-day		1/(mg/kg-day)		1.20E-02	mg/kg-day	3.00E-03	mg/kg-day	4E+00
				COBALT	5.46E+03	mg/kg	7.56E-05	mg/kg-day		1/(mg/kg-day)		5.29E-03	mg/kg-day		mg/kg-day	
				COPPER	2.88E+02	mg/kg	3.98E-06	mg/kg-day		1/(mg/kg-day)		2.78E-04	mg/kg-day	4.00E-02	mg/kg-day	7E-03
				IRON	1.58E+05	mg/kg	2.19E-03	mg/kg-day		1/(mg/kg-day)		1.53E-01	mg/kg-day	7.00E-01	mg/kg-day	2E-01
				LEAD	4.10E+03	mg/kg	5.67E-05	mg/kg-day		1/(mg/kg-day)		3.97E-03	mg/kg-day		mg/kg-day	
				MANGANESE	1.24E+03	mg/kg	1.72E-05	mg/kg-day		1/(mg/kg-day)		1.21E-03	mg/kg-day	1.40E-01	mg/kg-day	9E-03
				NICKEL	1.71E+03	mg/kg	2.37E-05	mg/kg-day		1/(mg/kg-day)		1.66E-03	mg/kg-day	2.00E-02	mg/kg-day	8E-02
				SELENIUM	2.33E+01	mg/kg	3.23E-07	mg/kg-day		1/(mg/kg-day)		2.26E-05	mg/kg-day	5.00E-03	mg/kg-day	5E-03
				VANADIUM	9.67E+03	mg/kg	1.34E-04	mg/kg-day		1/(mg/kg-day)		9.37E-03	mg/kg-day	9.00E-03	mg/kg-day	1E+00
				HIGHLY CHLORINATED PCBs	5.60E+00	mg/kg	7.75E-08	mg/kg-day	2.00E+00	1/(mg/kg-day)	2E-07	5.42E-06	mg/kg-day	2.00E-05	mg/kg-day	3E-01
				ACENAPHTHYLENE	4.63E-01	mg/kg	6.41E-09	mg/kg-day		1/(mg/kg-day)		4.49E-07	mg/kg-day		mg/kg-day	
				BENZO(A)ANTHRACENE	3.26E+00	mg/kg	4.51E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	3E-08	3.16E-06	mg/kg-day		mg/kg-day	
				BENZO(A)PYRENE	4.60E+00	mg/kg	6.37E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	5E-07	4.46E-06	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.74E+00	mg/kg	7.94E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	6E-08	5.56E-06	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	2.25E+00	mg/kg	3.12E-08	mg/kg-day		1/(mg/kg-day)		2.18E-06	mg/kg-day	3.00E-02	mg/kg-day	7E-05

TABLE 7.7h CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Sediment	Upper Sediment (0-10 ft)	Tributary 5A	Ingestion	BENZO(K)FLUORANTHENE	2.27E+00	mg/kg	3.15E-08	mg/kg-day	7.30E-02	1/(mg/kg-day)	2E-09	2.20E-06	mg/kg-day		mg/kg-day	
				DIBENZO(A,H)ANTHRACENE	1.10E+00	mg/kg	1.52E-08	mg/kg-day	7.30E+00	1/(mg/kg-day)	1E-07	1.07E-06	mg/kg-day		mg/kg-day	
				INDENO(1,2,3-CD)PYRENE	2.09E+00	mg/kg	2.89E-08	mg/kg-day	7.30E-01	1/(mg/kg-day)	2E-08	2.03E-06	mg/kg-day		mg/kg-day	
				PHENANTHRENE	4.86E+00	mg/kg	6.73E-08	mg/kg-day		1/(mg/kg-day)		4.71E-06	mg/kg-day	3.00E-02	mg/kg-day	2E-04
				BENZENE	1.30E+01	mg/kg	1.80E-07	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-08	1.26E-05	mg/kg-day	4.00E-03	mg/kg-day	3E-03
			Exp. Route Total								**2E-06**					**6E+00**
		Exp. Point Total									**2E-06**					**6E+00**
	Exp. Medium Total										**2E-06**					**6E+00**
Medium Total											**2E-06**					**6E+00**
Water	Surface Water	Tributary 5A	Dermal	ANTIMONY	2.77E+00	ug/L	3.07E-09	mg/kg-day		1/(mg/kg-day)		2.15E-07	mg/kg-day	6.00E-05	mg/kg-day	4E-03
				ARSENIC	4.61E+00	ug/L	5.10E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	8E-09	3.57E-07	mg/kg-day	3.00E-04	mg/kg-day	1E-03
				BARIUM	1.80E+02	ug/L	1.99E-07	mg/kg-day		1/(mg/kg-day)		1.39E-05	mg/kg-day	1.40E-02	mg/kg-day	1E-03
				CHROMIUM	3.31E+01	ug/L	7.33E-08	mg/kg-day		1/(mg/kg-day)		5.13E-06	mg/kg-day	7.50E-05	mg/kg-day	7E-02
				COBALT	3.60E+02	ug/L	1.59E-07	mg/kg-day		1/(mg/kg-day)		1.12E-05	mg/kg-day		mg/kg-day	
				MANGANESE	1.03E+02	ug/L	1.14E-07	mg/kg-day		1/(mg/kg-day)		7.98E-06	mg/kg-day	5.60E-03	mg/kg-day	1E-03
				NICKEL	5.26E+02	ug/L	1.16E-07	mg/kg-day		1/(mg/kg-day)		8.15E-06	mg/kg-day	8.00E-04	mg/kg-day	1E-02
				VANADIUM	3.52E+02	ug/L	3.90E-07	mg/kg-day		1/(mg/kg-day)		2.73E-05	mg/kg-day	2.34E-04	mg/kg-day	1E-01
				DELTA-BHC	5.40E-03	ug/L		mg/kg-day	6.30E+00	1/(mg/kg-day)			mg/kg-day		mg/kg-day	
				DIELDRIN	1.70E-02	ug/L	6.75E-10	mg/kg-day	1.60E+01	1/(mg/kg-day)	1E-08	4.73E-08	mg/kg-day	5.00E-05	mg/kg-day	9E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	8.70E+02	ug/L	7.68E-05	mg/kg-day	1.40E-02	1/(mg/kg-day)	1E-06	5.38E-03	mg/kg-day	2.00E-02	mg/kg-day	3E-01
				NAPHTHALENE	1.00E+00	ug/L	5.21E-08	mg/kg-day		1/(mg/kg-day)		3.64E-06	mg/kg-day	2.00E-02	mg/kg-day	2E-04
				N-NITROSODIPHENYLAMINE	7.00E+01	ug/L	1.96E-06	mg/kg-day	4.90E-03	1/(mg/kg-day)	1E-08	1.37E-04	mg/kg-day		mg/kg-day	
				PENTACHLOROPHENOL	6.00E+00	ug/L	4.16E-06	mg/kg-day	1.20E-01	1/(mg/kg-day)	5E-07	2.91E-04	mg/kg-day	3.00E-02	mg/kg-day	1E-02
				1,4-DICHLOROBENZENE	2.00E+00	ug/L	9.72E-08	mg/kg-day	5.40E-03	1/(mg/kg-day)	5E-10	6.80E-06	mg/kg-day	7.00E-02	mg/kg-day	1E-04
				BENZENE	5.41E+01	ug/L	8.88E-07	mg/kg-day	5.50E-02	1/(mg/kg-day)	5E-08	6.22E-05	mg/kg-day	4.00E-03	mg/kg-day	2E-02
				BROMODICHLOROMETHANE	2.00E+00	ug/L	1.24E-08	mg/kg-day	6.20E-02	1/(mg/kg-day)	8E-10	8.70E-07	mg/kg-day	2.00E-02	mg/kg-day	4E-05
				CHLOROFORM	1.11E+01	ug/L	9.39E-08	mg/kg-day		1/(mg/kg-day)		6.57E-06	mg/kg-day	1.00E-02	mg/kg-day	7E-04
			Exp. Route Total								**2E-06**					**5E-01**
			Ingestion	ANTIMONY	2.77E+00	ug/L	1.16E-09	mg/kg-day		1/(mg/kg-day)		8.13E-08	mg/kg-day	4.00E-04	mg/kg-day	2E-04
				ARSENIC	4.61E+00	ug/L	1.93E-09	mg/kg-day	1.50E+00	1/(mg/kg-day)	3E-09	1.35E-07	mg/kg-day	3.00E-04	mg/kg-day	5E-04
				BARIUM	1.80E+02	ug/L	7.55E-08	mg/kg-day		1/(mg/kg-day)		5.28E-06	mg/kg-day	2.00E-01	mg/kg-day	3E-05
				CHROMIUM	3.31E+01	ug/L	1.39E-08	mg/kg-day		1/(mg/kg-day)		9.72E-07	mg/kg-day	3.00E-03	mg/kg-day	3E-04
				COBALT	3.60E+02	ug/L	1.51E-07	mg/kg-day		1/(mg/kg-day)		1.06E-05	mg/kg-day		mg/kg-day	
				MANGANESE	1.03E+02	ug/L	4.32E-08	mg/kg-day		1/(mg/kg-day)		3.02E-06	mg/kg-day	1.40E-01	mg/kg-day	2E-05
				NICKEL	5.26E+02	ug/L	2.21E-07	mg/kg-day		1/(mg/kg-day)		1.54E-05	mg/kg-day	2.00E-02	mg/kg-day	8E-04
				VANADIUM	3.52E+02	ug/L	1.48E-07	mg/kg-day		1/(mg/kg-day)		1.03E-05	mg/kg-day	9.00E-03	mg/kg-day	1E-03
				DELTA-BHC	5.40E-03	ug/L	2.26E-12	mg/kg-day	6.30E+00	1/(mg/kg-day)	1E-11	1.59E-10	mg/kg-day		mg/kg-day	
				DIELDRIN	1.70E-02	ug/L	7.13E-12	mg/kg-day	1.60E+01	1/(mg/kg-day)	1E-10	4.99E-10	mg/kg-day	5.00E-05	mg/kg-day	1E-05
				BIS(2-ETHYLHEXYL)PHTHALATE	8.70E+02	ug/L	3.65E-07	mg/kg-day	1.40E-02	1/(mg/kg-day)	5E-09	2.55E-05	mg/kg-day	2.00E-02	mg/kg-day	1E-03
				NAPHTHALENE	1.00E+00	ug/L	4.19E-10	mg/kg-day		1/(mg/kg-day)		2.94E-08	mg/kg-day	2.00E-02	mg/kg-day	1E-06
				N-NITROSODIPHENYLAMINE	7.00E+01	ug/L	2.94E-08	mg/kg-day	4.90E-03	1/(mg/kg-day)	1E-10	2.05E-06	mg/kg-day		mg/kg-day	
				PENTACHLOROPHENOL	6.00E+00	ug/L	2.52E-09	mg/kg-day	1.20E-01	1/(mg/kg-day)	3E-10	1.76E-07	mg/kg-day	3.00E-02	mg/kg-day	6E-06
				1,4-DICHLOROBENZENE	2.00E+00	ug/L	8.39E-10	mg/kg-day	5.40E-03	1/(mg/kg-day)	5E-12	5.87E-08	mg/kg-day	7.00E-02	mg/kg-day	8E-07
				BENZENE	5.41E+01	ug/L	2.27E-08	mg/kg-day	5.50E-02	1/(mg/kg-day)	1E-09	1.59E-06	mg/kg-day	4.00E-03	mg/kg-day	4E-04
				BROMODICHLOROMETHANE	2.00E+00	ug/L	8.39E-10	mg/kg-day	6.20E-02	1/(mg/kg-day)	5E-11	5.87E-08	mg/kg-day	2.00E-02	mg/kg-day	3E-06
				CHLOROFORM	1.11E+01	ug/L	4.65E-09	mg/kg-day		1/(mg/kg-day)		3.26E-07	mg/kg-day	1.00E-02	mg/kg-day	3E-05
			Exp. Route Total								**1E-08**					**5E-03**
		Exp. Point Total									**2E-06**					**5E-01**
	Exp. Medium Total										**2E-06**					**5E-01**
Medium Total											**2E-06**					**5E-01**
									Total of Receptor Risks Across All Media		**4E-06**			Total of Receptor Hazards Across All Media		**6E+00**

TABLE 7.8 CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
POTABLE WATER - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	Ingestion	ALUMINUM	2.89E+04	ug/l	1.02E-01	mg/kg-day		1/(mg/kg-day)		7.92E-01	mg/kg-day	1.00E+00	mg/kg-day	8E-01
				ARSENIC	1.23E+02	ug/l	4.33E-04	mg/kg-day	1.50E+00	1/(mg/kg-day)	6E-04	3.37E-03	mg/kg-day	3.00E-04	mg/kg-day	1E+01
				BARIUM	1.30E+03	ug/l	4.59E-03	mg/kg-day		1/(mg/kg-day)		3.57E-02	mg/kg-day	2.00E-01	mg/kg-day	2E-01
				BERYLLIUM	5.56E+00	ug/l	1.96E-05	mg/kg-day		1/(mg/kg-day)		1.52E-04	mg/kg-day	2.00E-03	mg/kg-day	8E-02
				CHROMIUM	3.82E+02	ug/l	1.35E-03	mg/kg-day		1/(mg/kg-day)		1.05E-02	mg/kg-day	3.00E-03	mg/kg-day	3E+00
				COBALT	2.88E+01	ug/l	1.01E-04	mg/kg-day		1/(mg/kg-day)		7.89E-04	mg/kg-day		mg/kg-day	
				COPPER	8.16E+01	ug/l	2.87E-04	mg/kg-day		1/(mg/kg-day)		2.24E-03	mg/kg-day	4.00E-02	mg/kg-day	6E-02
				CYANIDE	9.20E+01	ug/l	3.24E-04	mg/kg-day		1/(mg/kg-day)		2.52E-03	mg/kg-day	2.00E-02	mg/kg-day	1E-01
				IRON	6.15E+04	ug/l	2.17E-01	mg/kg-day		1/(mg/kg-day)		1.68E+00	mg/kg-day	7.00E-01	mg/kg-day	2E+00
				LEAD	5.90E+01	ug/l	2.61E-04	mg/kg-day		1/(mg/kg-day)		2.03E-03	mg/kg-day		mg/kg-day	
				MANGANESE	2.85E+03	ug/l	1.01E-02	mg/kg-day		1/(mg/kg-day)		7.82E-02	mg/kg-day	1.40E-01	mg/kg-day	6E-01
				MERCURY	2.02E+01	ug/l	7.12E-05	mg/kg-day		1/(mg/kg-day)		5.53E-04	mg/kg-day	3.00E-04	mg/kg-day	2E+00
				NICKEL	1.49E+02	ug/l	5.25E-04	mg/kg-day		1/(mg/kg-day)		4.08E-03	mg/kg-day	2.00E-02	mg/kg-day	2E-01
				SELENIUM	4.75E+00	ug/l	1.67E-05	mg/kg-day		1/(mg/kg-day)		1.30E-04	mg/kg-day	5.00E-03	mg/kg-day	3E-02
				SILVER	5.75E+00	ug/l	2.03E-05	mg/kg-day		1/(mg/kg-day)		1.58E-04	mg/kg-day	5.00E-03	mg/kg-day	3E-02
				VANADIUM	5.94E+02	ug/l	2.09E-03	mg/kg-day		1/(mg/kg-day)		1.63E-02	mg/kg-day	9.00E-03	mg/kg-day	2E+00
				ZINC	3.78E+02	ug/l	1.33E-03	mg/kg-day		1/(mg/kg-day)		1.04E-02	mg/kg-day	3.00E-01	mg/kg-day	3E-02
				2,4,6-TRICHLOROPHENOL	3.00E+00	ug/l	1.06E-05	mg/kg-day	1.10E-02	1/(mg/kg-day)	1E-07	8.22E-05	mg/kg-day	1.00E-03	mg/kg-day	8E-02
				2,4-DICHLOROPHENOL	8.11E+00	ug/l	2.86E-05	mg/kg-day		1/(mg/kg-day)		2.22E-04	mg/kg-day	3.00E-03	mg/kg-day	7E-02
				2-CHLOROPHENOL	2.67E+01	ug/l	9.39E-05	mg/kg-day		1/(mg/kg-day)		7.30E-04	mg/kg-day	5.00E-03	mg/kg-day	1E-01
				2-METHYLNAPHTHALENE	6.62E+00	ug/l	2.33E-05	mg/kg-day		1/(mg/kg-day)		1.81E-04	mg/kg-day	4.00E-03	mg/kg-day	5E-02
				2-NITROPHENOL	6.00E+00	ug/l	2.11E-05	mg/kg-day		1/(mg/kg-day)		1.64E-04	mg/kg-day		mg/kg-day	
				4-CHLORO-3-METHYLPHENOL	4.00E+00	ug/l	1.41E-05	mg/kg-day		1/(mg/kg-day)		1.10E-04	mg/kg-day		mg/kg-day	
				4-METHYLPHENOL	8.83E+01	ug/l	3.11E-04	mg/kg-day		1/(mg/kg-day)		2.42E-03	mg/kg-day		mg/kg-day	
				4-NITROPHENOL	6.00E+00	ug/l	2.11E-05	mg/kg-day		1/(mg/kg-day)		1.64E-04	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.00E+00	ug/l	1.76E-05	mg/kg-day	7.30E-01	1/(mg/kg-day)	1E-05	1.37E-04	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.00E+00	ug/l	3.52E-06	mg/kg-day		1/(mg/kg-day)		2.74E-05	mg/kg-day	3.00E-02	mg/kg-day	9E-04
				BENZO(K)FLUORANTHENE	2.00E+00	ug/l	7.05E-06	mg/kg-day	7.30E-02	1/(mg/kg-day)	5E-07	5.48E-05	mg/kg-day		mg/kg-day	
				BIS(2-ETHYLHEXYL)PHTHALATE	3.90E+01	ug/l	1.37E-04	mg/kg-day	1.40E-02	1/(mg/kg-day)	2E-06	1.07E-03	mg/kg-day	2.00E-02	mg/kg-day	5E-02
				CHRYSENE	4.00E+00	ug/l	1.41E-05	mg/kg-day	7.30E-03	1/(mg/kg-day)	1E-07	1.10E-04	mg/kg-day		mg/kg-day	
				DIBENZOFURAN	5.00E+00	ug/l	1.76E-05	mg/kg-day		1/(mg/kg-day)		1.37E-04	mg/kg-day	1.00E-03	mg/kg-day	1E-01
				HEXACHLOROBENZENE	2.00E+00	ug/l	7.05E-06	mg/kg-day	1.60E+00	1/(mg/kg-day)	1E-05	5.48E-05	mg/kg-day	8.00E-04	mg/kg-day	7E-02
				INDENO(1,2,3-CD)PYRENE	2.00E+00	ug/l	7.05E-06	mg/kg-day	7.30E-01	1/(mg/kg-day)	5E-06	5.48E-05	mg/kg-day		mg/kg-day	
				NAPHTHALENE	1.15E+02	ug/l	4.06E-04	mg/kg-day		1/(mg/kg-day)		3.16E-03	mg/kg-day	2.00E-02	mg/kg-day	2E-01
				PHENANTHRENE	1.23E+01	ug/l	4.33E-05	mg/kg-day		1/(mg/kg-day)		3.37E-04	mg/kg-day	3.00E-02	mg/kg-day	1E-02
				1,1,2,2-TETRACHLOROETHANE	1.00E+00	ug/l	3.52E-06	mg/kg-day	2.00E-01	1/(mg/kg-day)	7E-07	2.74E-05	mg/kg-day		mg/kg-day	
				1,2,3-TRICHLOROBENZENE	1.50E+02	ug/l	5.28E-04	mg/kg-day		1/(mg/kg-day)		4.11E-03	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.15E+02	ug/l	4.04E-04	mg/kg-day	3.60E-03	1/(mg/kg-day)	1E-06	3.14E-03	mg/kg-day	1.00E-02	mg/kg-day	3E-01
				1,2-DICHLOROBENZENE	2.09E+03	ug/l	7.35E-03	mg/kg-day		1/(mg/kg-day)		5.72E-02	mg/kg-day	9.00E-02	mg/kg-day	6E-01
				1,2-DICHLOROETHANE	3.00E+00	ug/l	1.06E-05	mg/kg-day	9.10E-02	1/(mg/kg-day)	1E-06	8.22E-05	mg/kg-day	2.00E-02	mg/kg-day	4E-03
				1,2-DICHLOROPROPANE	2.17E+00	ug/l	7.66E-06	mg/kg-day	3.60E-02	1/(mg/kg-day)	3E-07	5.96E-05	mg/kg-day	9.00E-02	mg/kg-day	7E-04
				1,3-DICHLOROBENZENE	4.79E+02	ug/l	1.69E-03	mg/kg-day		1/(mg/kg-day)		1.31E-02	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	5.58E+03	ug/l	1.97E-02	mg/kg-day	5.40E-03	1/(mg/kg-day)	1E-04	1.53E-01	mg/kg-day	7.00E-02	mg/kg-day	2E+00
				ACETONE	3.90E+02	ug/l	1.37E-03	mg/kg-day		1/(mg/kg-day)		1.07E-02	mg/kg-day	9.00E-01	mg/kg-day	1E-02
				BENZENE	1.75E+04	ug/l	6.16E-02	mg/kg-day	5.50E-02	1/(mg/kg-day)	3E-03	4.79E-01	mg/kg-day	4.00E-03	mg/kg-day	1E+02
				CARBON DISULFIDE	5.21E+01	ug/l	1.83E-04	mg/kg-day		1/(mg/kg-day)		1.43E-03	mg/kg-day	1.00E-01	mg/kg-day	1E-02
				CHLOROBENZENE	1.70E+04	ug/l	5.99E-02	mg/kg-day		1/(mg/kg-day)		4.66E-01	mg/kg-day	2.00E-02	mg/kg-day	2E+01
				CHLOROFORM	8.04E+00	ug/l	2.83E-05	mg/kg-day		1/(mg/kg-day)		2.20E-04	mg/kg-day	1.00E-02	mg/kg-day	2E-02
				METHYLENE CHLORIDE	7.41E+01	ug/l	2.61E-04	mg/kg-day	7.50E-03	1/(mg/kg-day)	2E-06	2.03E-03	mg/kg-day	6.00E-02	mg/kg-day	3E-02
				TETRACHLOROETHENE	4.00E+00	ug/l	1.41E-05	mg/kg-day	5.40E-01	1/(mg/kg-day)	8E-06	1.10E-04	mg/kg-day	1.00E-02	mg/kg-day	1E-02
				TOLUENE	1.47E+04	ug/l	5.16E-02	mg/kg-day		1/(mg/kg-day)		4.01E-01	mg/kg-day	8.00E-02	mg/kg-day	5E+00
				XYLENES, TOTAL	7.16E+00	ug/l	2.52E-05	mg/kg-day		1/(mg/kg-day)		1.96E-04	mg/kg-day	2.00E-01	mg/kg-day	1E-03
			Exp. Route Total								**4E-03**					**2E+02**
		Exp. Point Total									**4E-03**					**2E+02**
	Exp. Medium Total										**4E-03**					**2E+02**
Medium Total											**4E-03**					**2E+02**
										Total of Receptor Risks Across All Media	**4E-03**			Total of Receptor Hazards Across All Media		**2E+02**

TABLE 7.9 CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
POTABLE WATER - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Child (Age 0-6 years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations				
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	Ingestion	ALUMINUM	2.89E+04	ug/l	1.58E-01	mg/kg-day		1/(mg/kg-day)		1.85E+00	mg/kg-day	1.00E+00	mg/kg-day	2E+00
				ARSENIC	1.23E+02	ug/l	6.74E-04	mg/kg-day	1.50E+00	1/(mg/kg-day)	1E-03	7.86E-03	mg/kg-day	3.00E-04	mg/kg-day	3E+01
				BARIUM	1.30E+03	ug/l	7.14E-03	mg/kg-day		1/(mg/kg-day)		8.33E-02	mg/kg-day	2.00E-01	mg/kg-day	4E-01
				BERYLLIUM	5.56E+00	ug/l	3.05E-05	mg/kg-day		1/(mg/kg-day)		3.55E-04	mg/kg-day	2.00E-03	mg/kg-day	2E-01
				CHROMIUM	3.82E+02	ug/l	2.09E-03	mg/kg-day		1/(mg/kg-day)		2.44E-02	mg/kg-day	3.00E-03	mg/kg-day	8E+00
				COBALT	2.88E+01	ug/l	1.58E-04	mg/kg-day		1/(mg/kg-day)		1.84E-03	mg/kg-day		mg/kg-day	
				COPPER	8.16E+01	ug/l	4.47E-04	mg/kg-day		1/(mg/kg-day)		5.22E-03	mg/kg-day	4.00E-02	mg/kg-day	1E-01
				CYANIDE	9.20E+01	ug/l	5.04E-04	mg/kg-day		1/(mg/kg-day)		5.88E-03	mg/kg-day	2.00E-02	mg/kg-day	3E-01
				IRON	6.15E+04	ug/l	3.37E-01	mg/kg-day		1/(mg/kg-day)		3.93E+00	mg/kg-day	7.00E-01	mg/kg-day	6E+00
				LEAD	5.90E+01	ug/l	4.07E-04	mg/kg-day		1/(mg/kg-day)		4.74E-03	mg/kg-day		mg/kg-day	
				MANGANESE	2.85E+03	ug/l	1.56E-02	mg/kg-day		1/(mg/kg-day)		1.82E-01	mg/kg-day	1.40E-01	mg/kg-day	1E+00
				MERCURY	2.02E+01	ug/l	1.11E-04	mg/kg-day		1/(mg/kg-day)		1.29E-03	mg/kg-day	3.00E-04	mg/kg-day	4E+00
				NICKEL	1.49E+02	ug/l	8.16E-04	mg/kg-day		1/(mg/kg-day)		9.53E-03	mg/kg-day	2.00E-02	mg/kg-day	5E-01
				SELENIUM	4.75E+00	ug/l	2.60E-05	mg/kg-day		1/(mg/kg-day)		3.04E-04	mg/kg-day	5.00E-03	mg/kg-day	6E-02
				SILVER	5.75E+00	ug/l	3.15E-05	mg/kg-day		1/(mg/kg-day)		3.68E-04	mg/kg-day	5.00E-03	mg/kg-day	7E-02
				VANADIUM	5.94E+02	ug/l	3.25E-03	mg/kg-day		1/(mg/kg-day)		3.80E-02	mg/kg-day	9.00E-03	mg/kg-day	4E+00
				ZINC	3.78E+02	ug/l	2.07E-03	mg/kg-day		1/(mg/kg-day)		2.42E-02	mg/kg-day	3.00E-01	mg/kg-day	8E-02
				2,4,6-TRICHLOROPHENOL	3.00E+00	ug/l	1.64E-05	mg/kg-day	1.10E-02	1/(mg/kg-day)	2E-07	1.92E-04	mg/kg-day	1.00E-03	mg/kg-day	2E-01
				2,4-DICHLOROPHENOL	8.11E+00	ug/l	4.44E-05	mg/kg-day		1/(mg/kg-day)		5.18E-04	mg/kg-day	3.00E-03	mg/kg-day	2E-01
				2-CHLOROPHENOL	2.67E+01	ug/l	1.46E-04	mg/kg-day		1/(mg/kg-day)		1.70E-03	mg/kg-day	5.00E-03	mg/kg-day	3E-01
				2-METHYLNAPHTHALENE	6.62E+00	ug/l	3.63E-05	mg/kg-day		1/(mg/kg-day)		4.23E-04	mg/kg-day	4.00E-03	mg/kg-day	1E-01
				2-NITROPHENOL	6.00E+00	ug/l	3.29E-05	mg/kg-day		1/(mg/kg-day)		3.84E-04	mg/kg-day		mg/kg-day	
				4-CHLORO-3-METHYLPHENOL	4.00E+00	ug/l	2.19E-05	mg/kg-day		1/(mg/kg-day)		2.56E-04	mg/kg-day		mg/kg-day	
				4-METHYLPHENOL	8.83E+01	ug/l	4.84E-04	mg/kg-day		1/(mg/kg-day)		5.64E-03	mg/kg-day		mg/kg-day	
				4-NITROPHENOL	6.00E+00	ug/l	3.29E-05	mg/kg-day		1/(mg/kg-day)		3.84E-04	mg/kg-day		mg/kg-day	
				BENZO(B)FLUORANTHENE	5.00E+00	ug/l	(a)	mg/kg-day	(a)	1/(mg/kg-day)	2E-04	3.20E-04	mg/kg-day		mg/kg-day	
				BENZO(G,H,I)PERYLENE	1.00E+00	ug/l	5.48E-06	mg/kg-day		1/(mg/kg-day)		6.39E-05	mg/kg-day	3.00E-02	mg/kg-day	2E-03
				BENZO(K)FLUORANTHENE	2.00E+00	ug/l	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-06	1.28E-04	mg/kg-day		mg/kg-day	
				BIS(2-ETHYLHEXYL)PHTHALATE	3.90E+01	ug/l	2.14E-04	mg/kg-day	1.40E-02	1/(mg/kg-day)	3E-06	2.49E-03	mg/kg-day	2.00E-02	mg/kg-day	1E-01
				CHRYSENE	4.00E+00	ug/l	(a)	mg/kg-day	(a)	1/(mg/kg-day)	1E-06	2.56E-04	mg/kg-day		mg/kg-day	
				DIBENZOFURAN	5.00E+00	ug/l	2.74E-05	mg/kg-day		1/(mg/kg-day)		3.20E-04	mg/kg-day	1.00E-03	mg/kg-day	3E-01
				HEXACHLOROBENZENE	2.00E+00	ug/l	1.10E-05	mg/kg-day	1.60E+00	1/(mg/kg-day)	2E-05	1.28E-04	mg/kg-day	8.00E-04	mg/kg-day	2E-01
				INDENO(1,2,3-CD)PYRENE	2.00E+00	ug/l	(a)	mg/kg-day	(a)	1/(mg/kg-day)	7E-05	1.28E-04	mg/kg-day		mg/kg-day	
				NAPHTHALENE	1.15E+02	ug/l	6.31E-04	mg/kg-day		1/(mg/kg-day)		7.36E-03	mg/kg-day	2.00E-02	mg/kg-day	4E-01
				PHENANTHRENE	1.23E+01	ug/l	6.73E-05	mg/kg-day		1/(mg/kg-day)		7.86E-04	mg/kg-day	3.00E-02	mg/kg-day	3E-02
				1,1,2,2-TETRACHLOROETHANE	1.00E+00	ug/l	5.48E-06	mg/kg-day	2.00E-01	1/(mg/kg-day)	1E-06	6.39E-05	mg/kg-day		mg/kg-day	
				1,2,3-TRICHLOROBENZENE	1.50E+02	ug/l	8.22E-04	mg/kg-day		1/(mg/kg-day)		9.59E-03	mg/kg-day		mg/kg-day	
				1,2,4-TRICHLOROBENZENE	1.15E+02	ug/l	6.28E-04	mg/kg-day	3.60E-03	1/(mg/kg-day)	2E-06	7.33E-03	mg/kg-day	1.00E-02	mg/kg-day	7E-01
				1,2-DICHLOROBENZENE	2.09E+03	ug/l	1.14E-02	mg/kg-day		1/(mg/kg-day)		1.33E-01	mg/kg-day	9.00E-02	mg/kg-day	1E+00
				1,2-DICHLOROETHANE	3.00E+00	ug/l	1.64E-05	mg/kg-day	9.10E-02	1/(mg/kg-day)	1E-06	1.92E-04	mg/kg-day	2.00E-02	mg/kg-day	1E-02
				1,2-DICHLOROPROPANE	2.17E+00	ug/l	1.19E-05	mg/kg-day	3.60E-02	1/(mg/kg-day)	4E-07	1.39E-04	mg/kg-day	9.00E-02	mg/kg-day	2E-03
				1,3-DICHLOROBENZENE	4.79E+02	ug/l	2.63E-03	mg/kg-day		1/(mg/kg-day)		3.06E-02	mg/kg-day		mg/kg-day	
				1,4-DICHLOROBENZENE	5.58E+03	ug/l	3.06E-02	mg/kg-day	5.40E-03	1/(mg/kg-day)	2E-04	3.57E-01	mg/kg-day	7.00E-02	mg/kg-day	5E+00
				ACETONE	3.90E+02	ug/l	2.14E-03	mg/kg-day		1/(mg/kg-day)		2.49E-02	mg/kg-day	9.00E-01	mg/kg-day	3E-02
				BENZENE	1.75E+04	ug/l	9.59E-02	mg/kg-day	5.50E-02	1/(mg/kg-day)	5E-03	1.12E+00	mg/kg-day	4.00E-03	mg/kg-day	3E+02
				CARBON DISULFIDE	5.21E+01	ug/l	2.85E-04	mg/kg-day		1/(mg/kg-day)		3.33E-03	mg/kg-day	1.00E-01	mg/kg-day	3E-02
				CHLOROBENZENE	1.70E+04	ug/l	9.31E-02	mg/kg-day		1/(mg/kg-day)		1.09E+00	mg/kg-day	2.00E-02	mg/kg-day	5E+01
				CHLOROFORM	8.04E+00	ug/l	4.41E-05	mg/kg-day		1/(mg/kg-day)		5.14E-04	mg/kg-day	1.00E-02	mg/kg-day	5E-02
				METHYLENE CHLORIDE	7.41E+01	ug/l	4.06E-04	mg/kg-day	7.50E-03	1/(mg/kg-day)	3E-06	4.73E-03	mg/kg-day	6.00E-02	mg/kg-day	8E-02
				TETRACHLOROETHENE	4.00E+00	ug/l	2.19E-05	mg/kg-day	5.40E-01	1/(mg/kg-day)	1E-05	2.56E-04	mg/kg-day	1.00E-02	mg/kg-day	3E-02
				TOLUENE	1.47E+04	ug/l	8.03E-02	mg/kg-day		1/(mg/kg-day)		9.37E-01	mg/kg-day	8.00E-02	mg/kg-day	1E+01
				XYLENES, TOTAL	7.16E+00	ug/l	3.92E-05	mg/kg-day		1/(mg/kg-day)		4.58E-04	mg/kg-day	2.00E-01	mg/kg-day	2E-03
			Exp. Route Total								**7E-03**					**4E+02**
		Exp. Point Total									**7E-03**					**4E+02**
	Exp. Medium Total										**7E-03**					**4E+02**
Medium Total											**7E-03**					**4E+02**
											7E-03					**4E+02**
									Total of Receptor Risks Across All Media			Total of Receptor Hazards Across All Media				

Notes:
(a) See Table 7.9 CT Supplement A for the intake and toxicity values for COPCs with a Mutagenic Mode of Action.

TABLE 7.9.CT Supplement A
CALCULATION OF CHEMICAL CANCER RISKS FOR COPC WITH A MUTAGENIC MODE OF ACTION
CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Receptor Age:	Child (Age 0-6 years)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						
							Intake (1)			CSF/Unit Risk			
							Value		Units	Value		Units	Cancer Risk
					Value	Units	0-2 yrs	2-6 yrs		0-2 yrs (ADAF=10)	2-6 yrs (ADAF=3)		
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	Ingestion	BENZO(B)FLUORANTHENE	5.00E+00	µg/L	1.51E-05	2.53E-05	mg/kg/day	7.30E+00	2.19E+00	1/(mg/kg-day)	2E-04
				BENZO(K)FLUORANTHENE	2.00E+00	µg/L	6.03E-06	1.01E-05	mg/kg/day	7.30E-01	2.19E-01	1/(mg/kg-day)	7E-06
				CHRYSENE	4.00E+00	µg/L	1.21E-05	2.03E-05	mg/kg/day	7.30E-02	2.19E-02	1/(mg/kg-day)	1E-06
				INDENO(1,2,3-CD)PYRENE	2.00E+00	µg/L	6.03E-06	1.01E-05	mg/kg/day	7.30E+00	2.19E+00	1/(mg/kg-day)	7E-05

(1) - Intake equations derived from Table 4 Series.

Attachment A
RAGS Table 9 RME Series

TABLE 9.1a RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	2,3,7,8-TCDD Equivalent	3.3E-06		1.3E-06	5E-06	Developmental effects	1.7E-01		6.6E-02	2E-01
			ALUMINUM					Neurotoxicology	2.1E-03			2E-03
			ARSENIC	1.3E-06		5.0E-07	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.2E-02		8.6E-03	3E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	4.3E-04			4E-04
			CHROMIUM					None Reported (O)	1.6E-03			2E-03
			IRON					Gastrointestinal effects	8.3E-03			8E-03
			MANGANESE					CNS (N)	6.3E-04			6E-04
			MERCURY					Autoimmune effects	8.1E-01			8E-01
			NICKEL					Decreased body and organ weight (W)	4.7E-02			5E-02
			VANADIUM					Decreased hair cystine	6.4E-04			6E-04
			HIGHLY CHLORINATED PCBs	2.0E-07		3.6E-07	6E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.0E-02		7.1E-02	1E-01
			DELTA-BHC	3.9E-07			4E-07	--				
			DIELDRIN	1.9E-06			2E-06	Hepatic (H)	1.9E-02			2E-02
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	6.5E-07		1.1E-06	2E-06	--				
			BENZO(A)PYRENE	8.4E-06		1.4E-05	2E-05	--				
			BENZO(B)FLUORANTHENE	9.0E-07		1.5E-06	2E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	8.9E-05		1.5E-04	2E-04
			BENZO(K)FLUORANTHENE	4.1E-08		6.8E-08	1E-07	--				
			DIBENZO(A,H)ANTHRACENE	1.6E-06		2.7E-06	4E-06	--				
			HEXACHLOROBENZENE	3.8E-07		4.8E-07	9E-07	Hepatic (H)	2.3E-03		2.9E-03	5E-03
			HEXACHLOROBUTADIENE	4.6E-09		5.9E-09	1E-08	--				
			INDENO(1,2,3-CD)PYRENE	7.4E-07		1.2E-06	2E-06	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.3E-04		2.1E-04	3E-04
			1,2,4-TRICHLOROBENZENE	4.9E-10			5E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.1E-04			1E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.1E-03			1E-03
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	4.3E-07			4E-07	Liver	8.9E-03			9E-03

TABLE 9.1a RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	BENZENE	1.1E-11			1E-11	Reduced lymphocyte count	3.9E-07			4E-07
			CHLOROBENZENE					Histopathologic changes in liver	1.8E-03			2E-03
			Chemical Total	2.0E-05	--	2.3E-05	4E-05		1.1E+00	--	1.5E-01	1E+00
		Exposure Point Total					4E-05					1E+00
	Exposure Medium Total						4E-05					1E+00
Medium Total							4E-05					1E+00
Receptor Total							4E-05				Receptor HI Total	1E+00

Total Risk Across All Media =	4E-05
Total Hazard Across All Media =	1E+00
Total Liver HI Across All Media =	3E-02
Total Kidney HI Across All Media =	1E-03
Total Nervous System Effects HI Across All Media =	3E-02
Total Immune/Lymphocyte Effects HI Across All Media =	9E-01
Total Ocular Effects HI Across All Media =	1E-01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 9.1b RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	On-Site Ditches
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	On-Site Ditches	2,3,7,8-TCDD Equivalent	3.7E-05		1.4E-05	5E-05	Developmental effects	1.9E+00		7.4E-01	3E+00
			ARSENIC	2.0E-06		7.5E-07	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	3.4E-02		1.3E-02	5E-02
			CHROMIUM					None Reported (O)	1.6E-02			2E-02
			COPPER					Gastrointestinal effects	2.1E-03			2E-03
			IRON					Gastrointestinal effects	2.0E-02			2E-02
			LEAD					--				
			MANGANESE					CNS (N)	7.9E-04			8E-04
			MERCURY					Autoimmune effects	3.0E+00			3E+00
			NICKEL					Decreased body and organ weight (W)	3.8E-03			4E-03
			VANADIUM					Decreased hair cystine	1.8E-03			2E-03
			METHYL MERCURY					Developmental neuropsychological impairment (N)	1.8E-03			2E-03
			HIGHLY CHLORINATED PCBs	9.2E-07		1.6E-06	3E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.8E-01		3.2E-01	5E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.5E-07		2.5E-07	4E-07	--				
			BENZO(A)PYRENE	1.4E-06		2.4E-06	4E-06	--				
			BENZO(B)FLUORANTHENE	2.2E-07		3.6E-07	6E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.2E-05		2.0E-05	3E-05
			DIBENZO(A,H)ANTHRACENE	3.2E-07		5.3E-07	8E-07	--				
			INDENO(1,2,3-CD)PYRENE	8.6E-08		1.4E-07	2E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.7E-05		2.8E-05	5E-05
			Chemical Total	4.2E-05	--	2.0E-05	6E-05		5.2E+00	--	1.1E+00	6E+00
		Exposure Point Total					6E-05					6E+00
	Exposure Medium Total						6E-05					6E+00
Medium Total							6E-05					6E+00
Receptor Total							6E-05				Receptor HI Total	6E+00

Total Risk Across All Media =	6E-05
Total Hazard Across All Media =	6E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Kidney HI Across All Media =	8E-05
Total Nervous System Effects HI Across All Media =	5E-02
Total Immune/Lymphocyte Effects HI Across All Media =	4E+00
Total Ocular Effects HI Across All Media =	5E-01

TABLE 9.1c RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Expsosure Area:	Former Chlorination Building
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	3.1E-04		1.2E-04	4E-04	Developmental effects	1.6E+01		6.1E+00	2E+01
			ARSENIC	5.1E-07		2.0E-07	7E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	8.9E-03		3.4E-03	1E-02
			CHROMIUM					None Reported (O)	1.2E-03			1E-03
			IRON					Gastrointestinal effects	3.1E-03			3E-03
			MANGANESE					CNS (N)	6.2E-04			6E-04
			MERCURY					Autoimmune effects	7.0E-03			7E-03
			VANADIUM					Decreased hair cystine	3.5E-04			4E-04
			HIGHLY CHLORINATED PCBs	3.6E-07		6.5E-07	1E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	7.0E-02		1.3E-01	2E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.2E-07		1.9E-07	3E-07	--				
			BENZO(A)PYRENE	1.1E-06		1.8E-06	3E-06	--				
			BENZO(B)FLUORANTHENE	2.0E-07		3.3E-07	5E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	9.4E-06		1.6E-05	2E-05
			DIBENZO(A,H)ANTHRACENE	2.2E-07		3.7E-07	6E-07	--				
			INDENO(1,2,3-CD)PYRENE	6.3E-08		1.1E-07	2E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.6E-05		2.7E-05	4E-05
			1,2,4-TRICHLOROBENZENE	2.4E-09			2E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	5.1E-04			5E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	2.2E-04			2E-04
			1,4-DICHLOROBENZENE	3.2E-09			3E-09	Liver	6.6E-05			7E-05
			Chemical Total	3.1E-04	--	1.2E-04	4E-04		1.6E+01	--	6.3E+00	2E+01
		Exposure Point Total					4E-04					2E+01
	Exposure Medium Total						4E-04					2E+01
Medium Total							4E-04					2E+01
Receptor Total							4E-04				Receptor HI Total	2E+01

Total Risk Across All Media =	4E-04
Total Hazard Across All Media =	2E+01
Total Liver HI Across All Media =	7E-05
Total Kidney HI Across All Media =	7E-05
Total Nervous System Effects HI Across All Media =	1E-02
Total Immune/Lymphocyte Effects HI Across All Media =	2E-01
Total Ocular Effects HI Across All Media =	2E-01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 9.1d RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	3.4E-06		1.3E-06	5E-06	Developmental effects	1.8E-01		6.8E-02	2E-01
			ALUMINUM					Neurotoxicology	2.0E-03			2E-03
			ARSENIC	1.4E-06		5.2E-07	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.4E-02		9.0E-03	3E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	8.6E-04			9E-04
			CHROMIUM					None Reported (O)	1.6E-02			2E-02
			IRON					Gastrointestinal effects	9.6E-03			1E-02
			LEAD					--				
			MANGANESE					CNS (N)	5.4E-04			5E-04
			MERCURY					Autoimmune effects	9.4E-01			9E-01
			VANADIUM					Decreased hair cystine	3.0E-03			3E-03
			HIGHLY CHLORINATED PCBs	2.3E-06		4.1E-06	6E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.5E-01		8.0E-01	1E+00
			ALDRIN	6.0E-08			6E-08	Liver toxicity (H)	9.2E-04			9E-04
			DELTA-BHC	7.5E-10			7E-10	--				
			ENDOSULFAN I					Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	1.4E-07			1E-07
			HEPTACHLOR	1.8E-08			2E-08	Liver weight increase	6.1E-05			6E-05
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	4.8E-07		8.0E-07	1E-06	--				
			BENZO(A)PYRENE	5.6E-06		9.3E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	9.4E-07		1.6E-06	2E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.9E-05		8.2E-05	1E-04
			BENZO(K)FLUORANTHENE	2.4E-08		3.9E-08	6E-08	--				
			DIBENZO(A,H)ANTHRACENE	1.7E-06		2.9E-06	5E-06	--				
			HEXACHLOROBENZENE	2.0E-07		2.5E-07	4E-07	Hepatic (H)	1.2E-03		1.5E-03	3E-03
			INDENO(1,2,3-CD)PYRENE	3.7E-07		6.1E-07	1E-06	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	7.5E-05		1.2E-04	2E-04

TABLE 9.1d RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	BENZENE	3.6E-12			4E-12	Reduced lymphocyte count	1.3E-07			1E-07
			TRICHLOROETHENE	5.0E-10			5E-10	--				
			Chemical Total	1.7E-05	--	2.1E-05	4E-05		1.6E+00	--	8.8E-01	3E+00
		Exposure Point Total					4E-05					3E+00
	Exposure Medium Total						4E-05					3E+00
Medium Total							4E-05					3E+00
Receptor Total							4E-05				Receptor HI Total	3E+00

Total Risk Across All Media =	4E-05
Total Hazard Across All Media =	3E+00
Total Liver HI Across All Media =	4E-03
Total Kidney HI Across All Media =	1E-03
Total Nervous System Effects HI Across All Media =	4E-02
Total Immune/Lymphocyte Effects HI Across All Media =	9E-01
Total Ocular Effects HI Across All Media =	1E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 9.1e RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA- REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area;	State Fair Blvd/ Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	2,3,7,8-TCDD Equivalent	2.6E-06		1.0E-06	4E-06	Developmental effects	1.4E-01		5.2E-02	2E-01
			MERCURY					Autoimmune effects	1.4E-01			1E-01
			HIGHLY CHLORINATED PCBs	9.9E-08		1.8E-07	3E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.9E-02		3.4E-02	5E-02
			1,2,3-TRICHLOROBENZENE					--				
			BENZENE	2.5E-12			3E-12	Reduced lymphocyte count	8.9E-08			9E-08
			Chemical Total	2.7E-06	--	1.2E-06	4E-06		2.9E-01	--	8.6E-02	4E-01
		Exposure Point Total					4E-06					4E-01
	Exposure Medium Total						4E-06					4E-01
Medium Total							4E-06					4E-01
Receptor Total							4E-06				Receptor HI Total	4E-01

Total Risk Across All Media = 4E-06

Total Hazard Across All Media = 4E-01

TABLE 9.1f RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
LAKESHORE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Lakeshore Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Lakeshore Area	2,3,7,8-TCDD Equivalent	2.9E-07		1.1E-07	4E-07	Developmental effects	1.5E-02		5.8E-03	2E-02
			ALUMINUM					Neurotoxicology	2.1E-03			2E-03
			ARSENIC	5.5E-07		2.1E-07	8E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	9.4E-03		3.6E-03	1E-02
			CHROMIUM					None Reported (O)	3.8E-03			4E-03
			IRON					Gastrointestinal effects	6.4E-03			6E-03
			MANGANESE					CNS (N)	7.1E-04			7E-04
			MERCURY					Autoimmune effects	2.6E-03			3E-03
			VANADIUM					Decreased hair cystine	5.7E-04			6E-04
			ZINC					Decreased ESOD (B)	8.6E-05			9E-05
			HIGHLY CHLORINATED PCBs	2.4E-07		4.3E-07	7E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.7E-02		8.4E-02	1E-01
			ENDOSULFAN I					Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	1.1E-06			1E-06
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	7.9E-07		1.3E-06	2E-06	--				
			BENZO(A)PYRENE	6.4E-06		1.1E-05	2E-05	--				
			BENZO(B)FLUORANTHENE	8.6E-07		1.4E-06	2E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.0E-05		3.3E-05	5E-05
			BENZO(K)FLUORANTHENE	2.2E-08		3.6E-08	6E-08	--				
			DIBENZO(A,H)ANTHRACENE	8.6E-07		1.4E-06	2E-06	--				
			INDENO(1,2,3-CD)PYRENE	1.7E-07		2.9E-07	5E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.3E-04		3.8E-04	6E-04
			Chemical Total	1.0E-05	--	1.6E-05	3E-05		8.8E-02	--	9.4E-02	2E-01
		Exposure Point Total					3E-05					2E-01
	Exposure Medium Total						3E-05					2E-01
Medium Total							3E-05					2E-01
Receptor Total							3E-05				Receptor HI Total	2E-01

Total Risk Across All Media = 3E-05

Total Hazard Across All Media = 2E-01

TABLE 9.1g RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Petroleum Storage Area	ARSENIC	3.3E-06		1.3E-06	5E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	5.8E-02		2.2E-02	8E-02
			CHROMIUM					None Reported (O)	2.4E-03			2E-03
			IRON					Gastrointestinal effects	1.0E-02			1E-02
			MANGANESE					CNS (N)	8.9E-04			9E-04
			MERCURY					Autoimmune effects	1.2E-02			1E-02
			VANADIUM					Decreased hair cystine	5.7E-04			6E-04
			HIGHLY CHLORINATED PCBs	4.7E-08		8.5E-08	1E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	9.2E-03		1.6E-02	3E-02
			DELTA-BHC	2.5E-10			2E-10	--				
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	5.3E-07		8.7E-07	1E-06	--				
			BENZO(A)PYRENE	5.0E-06		8.4E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	7.2E-07		1.2E-06	2E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.7E-05		9.5E-05	2E-04
			BENZO(K)FLUORANTHENE	2.0E-08		3.3E-08	5E-08	--				
			DIBENZO(A,H)ANTHRACENE	1.2E-06		2.0E-06	3E-06	--				
			INDENO(1,2,3-CD)PYRENE	4.4E-07		7.3E-07	1E-06	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.8E-05		6.2E-05	1E-04
			BENZENE	1.6E-10			2E-10	Reduced lymphocyte count	5.5E-06			5E-06
			Chemical Total	1.1E-05	--	1.5E-05	3E-05		9.3E-02	--	3.9E-02	1E-01
		Exposure Point Total					3E-05					1E-01
	Exposure Medium Total						3E-05					1E-01
Medium Total							3E-05					1E-01
Receptor Total							3E-05				Receptor HI Total	1E-01

Total Risk Across All Media = 3E-05

Total Hazard Across All Media = 1E-01

TABLE 9.1h RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Chlorobenzene Hot-Spot Area	ARSENIC	6.8E-07		2.6E-07	9E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	1.2E-02		4.5E-03	2E-02
			CHROMIUM					None Reported (O)	2.2E-03			2E-03
			IRON					Gastrointestinal effects	8.6E-03			9E-03
			MANGANESE					CNS (N)	6.1E-04			6E-04
			MERCURY					Autoimmune effects	2.4E-03			2E-03
			VANADIUM					Decreased hair cystine	3.5E-04			4E-04
			HIGHLY CHLORINATED PCBs	7.4E-06		1.3E-05	2E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.4E+00		2.6E+00	4E+00
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	9.7E-07		1.6E-06	3E-06	--				
			BENZO(A)PYRENE	5.5E-06		9.2E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	1.3E-06		2.1E-06	3E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.6E-05		7.6E-05	1E-04
			BENZO(K)FLUORANTHENE	3.9E-08		6.4E-08	1E-07	--				
			DIBENZO(A,H)ANTHRACENE	1.3E-06		2.2E-06	3E-06	--				
			HEXACHLOROBENZENE	1.5E-07		2.0E-07	4E-07	Hepatic (H)	9.4E-04		1.2E-03	2E-03
			INDENO(1,2,3-CD)PYRENE	4.5E-07		7.4E-07	1E-06	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.1E-04		3.5E-04	6E-04
			1,2,4-TRICHLOROBENZENE	1.6E-09			2E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	3.5E-04			3E-04
			1,4-DICHLOROBENZENE	1.1E-09			1E-09	Liver	2.2E-05			2E-05
			BENZENE	1.4E-11			1E-11	Reduced lymphocyte count	5.1E-07			5E-07
			Chemical Total	1.8E-05	--	3.0E-05	5E-05		1.5E+00	--	2.6E+00	4E+00
		Exposure Point Total					5E-05					4E+00
	Exposure Medium Total						5E-05					4E+00
Medium Total							5E-05					4E+00
Receptor Total							5E-05				Receptor HI Total	4E+00

Total Risk Across All Media =	5E-05
Total Hazard Across All Media =	4E+00

Total Liver HI Across All Media =	2E-03
Total Kidney HI Across All Media =	7E-04
Total Nervous System Effects HI Across All Media =	2E-02
Total Immune/Lymphocyte Effects HI Across All Media =	4E+00
Total Ocular Effects HI Across All Media =	4E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 9.1i RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment (0-1 ft bgs)	Tributary 5A	2,3,7,8-TCDD Equivalent	1.3E-07		5.0E-08	2E-07	Developmental effects	6.8E-03		2.6E-03	9E-03
			ALUMINUM					Neurotoxicology	2.1E-03			2E-03
			ANTIMONY					Longevity (M); Blood glucose (E); Cholesterol (E)	1.6E-02			2E-02
			ARSENIC	1.7E-06		6.3E-07	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.9E-02		1.1E-02	4E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.2E-03			1E-03
			CHROMIUM					None Reported (O)	1.1E+00			1E+00
			COBALT					--				
			COPPER					Gastrointestinal effects	1.8E-03			2E-03
			IRON					Gastrointestinal effects	5.8E-02			6E-02
			LEAD					--				
			MANGANESE					CNS (N)	2.3E-03			2E-03
			NICKEL					Decreased body and organ weight (W)	2.2E-02			2E-02
			SELENIUM					Clinical selenosis	1.2E-03			1E-03
			VANADIUM					Decreased hair cystine	2.7E-01			3E-01
			HIGHLY CHLORINATED PCBs	3.7E-07		6.6E-07	1E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	7.2E-02		1.3E-01	2E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.3E-07		3.9E-07	6E-07	--				
			BENZO(A)PYRENE	3.3E-06		5.5E-06	9E-06	--				
			BENZO(B)FLUORANTHENE	4.1E-07		6.8E-07	1E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.9E-05		3.2E-05	5E-05
			BENZO(K)FLUORANTHENE	1.6E-08		2.7E-08	4E-08	--				
			DIBENZO(A,H)ANTHRACENE	7.9E-07		1.3E-06	2E-06	--				
			INDENO(1,2,3-CD)PYRENE	1.5E-07		2.5E-07	4E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.1E-05		6.9E-05	1E-04
			BENZENE	2.4E-08			2E-08	Reduced lymphocyte count	8.3E-04			8E-04
			Chemical Total	7.1E-06	--	9.5E-06	2E-05		1.5E+00	--	1.4E-01	2E+00
		Exposure Point Total					2E-05					2E+00
	Exposure Medium Total						2E-05					2E+00
Medium Total							2E-05					2E+00

TABLE 9.1i RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Surface Water	Tributary 5A	ANTIMONY					Longevity (M); Blood glucose (E); Cholesterol (E)	5.3E-04		1.0E-03	2E-03
			ARSENIC	6.8E-08		1.9E-08	9E-08	Hyperpigmentation (In); Vascular (V); PNS (N)	1.2E-03		3.3E-04	2E-03
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	6.9E-05		2.8E-04	3E-04
			CHROMIUM					None Reported (O)	8.5E-04		1.9E-02	2E-02
			COBALT					--				
			MANGANESE					CNS (N)	5.6E-05		4.0E-04	5E-04
			NICKEL					Decreased body and organ weight (W)	2.0E-03		2.9E-03	5E-03
			VANADIUM					Decreased hair cystine	3.0E-03		3.3E-02	4E-02
			DELTA-BHC	3.4E-10			3E-10	--				
			DIELDRIN	2.7E-09		5.5E-08	6E-08	Hepatic (H)	2.6E-05		5.3E-04	6E-04
			BIS(2-ETHYLHEXYL)PHTHALATE	1.2E-07		5.4E-06	6E-06	Increased relative liver weight (H)	3.3E-03		1.5E-01	2E-01
			NAPHTHALENE					Decreased body weight (W)	3.8E-06		7.7E-05	8E-05
			N-NITROSODIPHENYLAMINE	3.4E-09		4.3E-08	5E-08	--				
			PENTACHLOROPHENOL	7.1E-09		2.5E-06	3E-06	Liver (H) and kidney (R) pathology	1.5E-05		5.4E-03	5E-03
			1,4-DICHLOROBENZENE	1.1E-10		2.1E-09	2E-09	Liver	2.2E-06		4.4E-05	5E-05
			BENZENE	2.9E-08		1.5E-07	2E-07	Reduced lymphocyte count	1.0E-03		5.4E-03	6E-03
			BROMODICHLOROMETHANE	1.2E-09		2.9E-09	4E-09	Renal cytomegaly (R)	7.7E-06		1.8E-05	3E-05
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	8.5E-05		2.5E-04	3E-04
			Chemical Total	2.3E-07	--	8.2E-06	8E-06		1.2E-02	--	2.2E-01	2E-01
		Exposure Point Total					8E-06					2E-01
	Exposure Medium Total						8E-06					2E-01
Medium Total							8E-06					2E-01
Receptor Total							3E-05				Receptor HI Total	2E+00

Total Risk Across All Media =	3E-05
Total Hazard Across All Media =	2E+00

Total Liver HI Across All Media =	2E-01
Total Kidney HI Across All Media =	7E-03
Total Nervous System Effects HI Across All Media =	5E-02
Total Immune/Lymphocyte Effects HI Across All Media =	2E-01
Total Ocular Effects HI Across All Media =	2E-01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 9.2a RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	2,3,7,8-TCDD Equivalent	3.6E-06		3.6E-06	7E-06	Developmental effects	5.5E-02		5.7E-02	1E-01
			ALUMINUM					Neurotoxicology	6.9E-04			7E-04
			ARSENIC	1.4E-06		1.4E-06	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	7.2E-03		7.4E-03	1E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.4E-04			1E-04
			CHROMIUM					None Reported (O)	5.2E-04			5E-04
			IRON					Gastrointestinal effects	2.7E-03			3E-03
			MANGANESE					CNS (N)	2.0E-04			2E-04
			MERCURY					Autoimmune effects	2.6E-01			3E-01
			NICKEL					Decreased body and organ weight (W)	1.5E-02			2E-02
			VANADIUM					Decreased hair cystine	2.1E-04			2E-04
			HIGHLY CHLORINATED PCBs	2.2E-07		1.0E-06	1E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	1.3E-02		6.1E-02	7E-02
			DELTA-BHC	4.2E-07			4E-07	--				
			DIELDRIN	2.1E-06			2E-06	Hepatic (H)	6.1E-03			6E-03
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.3E-07		1.0E-06	1E-06	--				
			BENZO(A)PYRENE	3.0E-06		1.3E-05	2E-05	--				
			BENZO(B)FLUORANTHENE	3.2E-07		1.4E-06	2E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.8E-05		1.3E-04	2E-04
			BENZO(K)FLUORANTHENE	1.5E-08		6.5E-08	8E-08	--				
			DIBENZO(A,H)ANTHRACENE	5.8E-07		2.6E-06	3E-06	--				
			HEXACHLOROBENZENE	4.0E-07		1.4E-06	2E-06	Hepatic (H)	7.3E-04		2.5E-03	3E-03
			HEXACHLOROBUTADIENE	4.9E-09		1.7E-08	2E-08	--				
			INDENO(1,2,3-CD)PYRENE	2.6E-07		1.2E-06	1E-06	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.0E-05		1.8E-04	2E-04
			1,2,4-TRICHLOROBENZENE	5.3E-10			5E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	3.4E-05			3E-05
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	3.6E-04			4E-04
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	4.6E-07			5E-07	Liver	2.9E-03			3E-03
			BENZENE	1.2E-11			1E-11	Reduced lymphocyte count	1.2E-07			1E-07

TABLE 9.2a RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	CHLOROBENZENE					Histopathologic changes in liver	5.7E-04			6E-04
			Chemical Total	1.3E-05	--	2.7E-05	4E-05		3.7E-01	--	1.3E-01	5E-01
		Exposure Point Total					4E-05					5E-01
	Exposure Medium Total						4E-05					5E-01
Medium Total							4E-05					5E-01
Receptor Total							4E-05				Receptor HI Total	5E-01

Total Risk Across All Media = 4E-05

Total Hazard Across All Media = 5E-01

TABLE 9.2b RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	On-Site Ditches	2,3,7,8-TCDD Equivalent	4.0E-05		4.1E-05	8E-05	Developmental effects	6.2E-01		6.4E-01	1E+00
			ARSENIC	2.1E-06		2.2E-06	4E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.1E-02		1.1E-02	2E-02
			CHROMIUM					None Reported (O)	5.3E-03			5E-03
			COPPER					Gastrointestinal effects	6.7E-04			7E-04
			IRON					Gastrointestinal effects	6.3E-03			6E-03
			LEAD					--				
			MANGANESE					CNS (N)	2.5E-04			3E-04
			MERCURY					Autoimmune effects	9.8E-01			1E+00
			METHYL MERCURY					Developmental neuropsychological impairment (N)	5.8E-04			6E-04
			NICKEL					Decreased body and organ weight (W)	5.6E-04			6E-04
			VANADIUM					Decreased hair cystine	1.2E-03			1E-03
			HIGHLY CHLORINATED PCBs	9.9E-07		4.7E-06	6E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	5.8E-02		2.8E-01	3E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	5.4E-08		2.4E-07	3E-07	--				
			BENZO(A)PYRENE	5.1E-07		2.3E-06	3E-06	--				
			BENZO(B)FLUORANTHENE	7.7E-08		3.4E-07	4E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.8E-06		1.7E-05	2E-05
			DIBENZO(A,H)ANTHRACENE	1.1E-07		5.0E-07	6E-07	--				
			INDENO(1,2,3-CD)PYRENE	3.1E-08		1.4E-07	2E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.5E-06		2.4E-05	3E-05
			Chemical Total	4.4E-05	--	5.1E-05	9E-05		1.7E+00	--	9.2E-01	3E+00
		Exposure Point Total					9E-05					3E+00
	Exposure Medium Total						9E-05					3E+00
Medium Total							9E-05					3E+00
Receptor Total							9E-05				Receptor HI Total	3E+00

Total Risk Across All Media =	9E-05
Total Hazard Across All Media =	3E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Kidney HI Across All Media =	5E-05
Total Nervous System Effects HI Across All Media =	2E-02
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	3E-01

TABLE 9.2c RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	3.3E-04		3.4E-04	7E-04	Developmental effects	5.1E+00		5.3E+00	1E+01
			ARSENIC	5.5E-07		5.6E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.8E-03		2.9E-03	6E-03
			CHROMIUM					None Reported (O)	3.7E-04			4E-04
			IRON					Gastrointestinal effects	1.0E-03			1E-03
			MANGANESE					CNS (N)	2.0E-04			2E-04
			MERCURY					Autoimmune effects	2.2E-03			2E-03
			VANADIUM					Decreased hair cystine	1.1E-04			1E-04
			HIGHLY CHLORINATED PCBs	3.9E-07		1.9E-06	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	2.3E-02		1.1E-01	1E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	4.1E-08		1.8E-07	2E-07	--				
			BENZO(A)PYRENE	3.9E-07		1.7E-06	2E-06	--				
			BENZO(B)FLUORANTHENE	7.2E-08		3.2E-07	4E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.0E-06		1.3E-05	2E-05
			DIBENZO(A,H)ANTHRACENE	8.0E-08		3.5E-07	4E-07	--				
			INDENO(1,2,3-CD)PYRENE	2.3E-08		1.0E-07	1E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.2E-06		2.3E-05	3E-05
			1,2,4-TRICHLOROBENZENE	2.5E-09			3E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.6E-04			2E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	7.1E-05			7E-05
			1,4-DICHLOROBENZENE	3.4E-09			3E-09	Liver	2.1E-05			2E-05
			Chemical Total	3.3E-04	--	3.4E-04	7E-04		5.2E+00	--	5.4E+00	1E+01
		Exposure Point Total					7E-04					1E+01
	Exposure Medium Total						7E-04					1E+01
Medium Total							7E-04					1E+01
Receptor Total							7E-04				Receptor HI Total	1E+01

Total Risk Across All Media =	7E-04
Total Hazard Across All Media =	1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	2E-05
Total Kidney HI Across All Media =	4E-05
Total Nervous System Effects HI Across All Media =	6E-03
Total Immune/Lymphocyte Effects HI Across All Media =	1E-01
Total Ocular Effects HI Across All Media =	1E-01

TABLE 9.2d RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/ OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	3.7E-06		3.8E-06	7E-06	Developmental effects	5.7E-02		5.9E-02	1E-01
			ALUMINUM					Neurotoxicology	6.4E-04			6E-04
			ARSENIC	1.5E-06		1.5E-06	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	7.6E-03		7.8E-03	2E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	2.8E-04			3E-04
			CHROMIUM					None Reported (O)	5.0E-03			5E-03
			IRON					Gastrointestinal effects	3.1E-03			3E-03
			LEAD					--				
			MANGANESE					CNS (N)	1.7E-04			2E-04
			MERCURY					Autoimmune effects	3.0E-01			3E-01
			VANADIUM					Decreased hair cystine	9.7E-04			1E-03
			HIGHLY CHLORINATED PCBs	2.5E-06		1.2E-05	1E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.4E-01		6.9E-01	8E-01
			ALDRIN	6.5E-08			6E-08	Liver toxicity (H)	3.0E-04			3E-04
			DELTA-BHC	8.0E-10			8E-10	--				
			ENDOSULFAN I					Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	4.4E-08			4E-08
			HEPTACHLOR	1.9E-08			2E-08	Liver weight increase	2.0E-05			2E-05
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.7E-07		7.7E-07	9E-07	--				
			BENZO(A)PYRENE	2.0E-06		8.9E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	3.3E-07		1.5E-06	2E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.6E-05		7.1E-05	9E-05
			BENZO(K)FLUORANTHENE	8.5E-09		3.8E-08	5E-08	--				
			DIBENZO(A,H)ANTHRACENE	6.2E-07		2.7E-06	3E-06	--				
			HEXACHLOROBENZENE	2.1E-07		7.2E-07	9E-07	Hepatic (H)	3.8E-04		1.3E-03	2E-03
			INDENO(1,2,3-CD)PYRENE	1.3E-07		5.8E-07	7E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.4E-05		1.1E-04	1E-04

TABLE 9.2d RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/ OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Surface Soils (0-2 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	BENZENE	3.9E-12			4E-12	Reduced lymphocyte count	4.1E-08			4E-08
			TRICHLOROETHENE	5.3E-10			5E-10	--				
			Chemical Total	1.1E-05	--	3.2E-05	4E-05		5.2E-01	--	7.6E-01	1E+00
		Exposure Point Total					4E-05					1E+00
	Exposure Medium Total						4E-05					1E+00
Medium Total							4E-05					1E+00
Receptor Total							4E-05				Receptor HI Total	1E+00

Total Risk Across All Media =	4E-05
Total Hazard Across All Media =	1E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	2E-03
Total Kidney HI Across All Media =	5E-04
Total Nervous System Effects HI Across All Media =	2E-02
Total Immune/Lymphocyte Effects HI Across All Media =	3E-01
Total Ocular Effects HI Across All Media =	8E-01

TABLE 9.2e RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	2,3,7,8-TCDD Equivalent	2.8E-06		2.9E-06	6E-06	Developmental effects	4.3E-02		4.5E-02	9E-02
			MERCURY					Autoimmune effects	4.4E-02			4E-02
			HIGHLY CHLORINATED PCBs	1.1E-07		5.1E-07	6E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	6.2E-03		3.0E-02	4E-02
			1,2,3-TRICHLOROBENZENE					--				
			BENZENE	2.7E-12			3E-12	Reduced lymphocyte count	2.9E-08			3E-08
			Chemical Total	2.9E-06	--	3.4E-06	6E-06		9.3E-02	--	7.4E-02	2E-01
		Exposure Point Total					6E-06					2E-01
	Exposure Medium Total						6E-06					2E-01
Medium Total							6E-06					2E-01
Receptor Total							6E-06				Receptor HI Total	2E-01

Total Risk Across All Media = 6E-06

Total Hazard Across All Media = 2E-01

TABLE 9.2f RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
LAKESHORE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Lakeshore Area	2,3,7,8-TCDD Equivalent	3.1E-07		3.2E-07	6E-07	Developmental effects	4.9E-03		5.0E-03	1E-02
			ALUMINUM					Neurotoxicology	6.8E-04			7E-04
			ARSENIC	5.8E-07		6.0E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	3.0E-03		3.1E-03	6E-03
			CHROMIUM					None Reported (O)	1.2E-03			1E-03
			IRON					Gastrointestinal effects	2.1E-03			2E-03
			MANGANESE					CNS (N)	2.3E-04			2E-04
			MERCURY					Autoimmune effects	8.4E-04			8E-04
			VANADIUM					Decreased hair cystine	1.8E-04			2E-04
			ZINC					Decreased ESOD (B)	2.8E-05			3E-05
			HIGHLY CHLORINATED PCBs	2.6E-07		1.2E-06	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.5E-02		7.3E-02	9E-02
			ENDOSULFAN I					Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	3.4E-07			3E-07
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.8E-07		1.3E-06	2E-06	--				
			BENZO(A)PYRENE	2.3E-06		1.0E-05	1E-05	--				
			BENZO(B)FLUORANTHENE	3.1E-07		1.4E-06	2E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.5E-06		2.9E-05	4E-05
			BENZO(K)FLUORANTHENE	7.8E-09		3.4E-08	4E-08	--				
			DIBENZO(A,H)ANTHRACENE	3.1E-07		1.4E-06	2E-06	--				
			INDENO(1,2,3-CD)PYRENE	6.2E-08		2.8E-07	3E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	7.4E-05		3.3E-04	4E-04
			Chemical Total	4.4E-06	--	1.7E-05	2E-05		2.8E-02	--	8.1E-02	1E-01
		Exposure Point Total					2E-05					1E-01
	Exposure Medium Total						2E-05					1E-01
Medium Total							2E-05					1E-01
Receptor Total							2E-05				Receptor HI Total	1E-01

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 1E-01

TABLE 9.2g RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Petroleum Storage Area	ARSENIC	3.6E-06		3.7E-06	7E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.9E-02		1.9E-02	4E-02
			CHROMIUM					None Reported (O)	7.7E-04			8E-04
			IRON					Gastrointestinal effects	3.4E-03			3E-03
			MANGANESE					CNS (N)	2.9E-04			3E-04
			MERCURY					Autoimmune effects	3.9E-03			4E-03
			VANADIUM					Decreased hair cystine	1.8E-04			2E-04
			HIGHLY CHLORINATED PCBs	5.1E-08		2.4E-07	3E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	3.0E-03		1.4E-02	2E-02
			DELTA-BHC	2.7E-10			3E-10	--				
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.9E-07		8.3E-07	1E-06	--				
			BENZO(A)PYRENE	1.8E-06		8.0E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	2.6E-07		1.1E-06	1E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.8E-05		8.2E-05	1E-04
			BENZO(K)FLUORANTHENE	7.2E-09		3.2E-08	4E-08	--				
			DIBENZO(A,H)ANTHRACENE	4.4E-07		1.9E-06	2E-06	--				
			INDENO(1,2,3-CD)PYRENE	1.6E-07		7.0E-07	9E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.2E-05		5.4E-05	7E-05
			BENZENE	1.7E-10			2E-10	Reduced lymphocyte count	1.8E-06			2E-06
			Chemical Total	6.5E-06	--	1.7E-05	2E-05		3.0E-02	--	3.3E-02	6E-02
		Exposure Point Total					2E-05					6E-02
	Exposure Medium Total						2E-05					6E-02
Medium Total							2E-05					6E-02
Receptor Total							2E-05				Receptor HI Total	6E-02

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 6E-02

TABLE 9.2h RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Chlorobenzene Hot-Spot Area	ARSENIC	7.2E-07		7.4E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	3.8E-03		3.9E-03	8E-03
			CHROMIUM					None Reported (O)	7.2E-04			7E-04
			IRON					Gastrointestinal effects	2.8E-03			3E-03
			MANGANESE					CNS (N)	2.0E-04			2E-04
			MERCURY					Autoimmune effects	7.6E-04			8E-04
			VANADIUM					Decreased hair cystine	1.1E-04			1E-04
			HIGHLY CHLORINATED PCBs	8.0E-06		3.8E-05	5E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.6E-01		2.2E+00	3E+00
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	3.5E-07		1.5E-06	2E-06	--				
			BENZO(A)PYRENE	2.0E-06		8.8E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	4.6E-07		2.0E-06	2E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.5E-05		6.5E-05	8E-05
			BENZO(K)FLUORANTHENE	1.4E-08		6.1E-08	8E-08	--				
			DIBENZO(A,H)ANTHRACENE	4.6E-07		2.1E-06	3E-06	--				
			HEXACHLOROBENZENE	1.7E-07		5.7E-07	7E-07	Hepatic (H)	3.0E-04		1.0E-03	1E-03
			INDENO(1,2,3-CD)PYRENE	1.6E-07		7.1E-07	9E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.8E-05		3.0E-04	4E-04
			1,2,4-TRICHLOROBENZENE	1.7E-09			2E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.1E-04			1E-04
			1,4-DICHLOROBENZENE	1.1E-09			1E-09	Liver	7.0E-06			7E-06
			BENZENE	1.5E-11			2E-11	Reduced lymphocyte count	1.6E-07			2E-07
			Chemical Total	1.2E-05	--	5.5E-05	7E-05		4.7E-01	--	2.2E+00	3E+00
		Exposure Point Total					7E-05					3E+00
	Exposure Medium Total						7E-05					3E+00
Medium Total							7E-05					3E+00
Receptor Total							7E-05				Receptor HI Total	3E+00

Total Risk Across All Media =	7E-05
Total Hazard Across All Media =	3E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	1E-03
Total Kidney HI Across All Media =	5E-04
Total Nervous System Effects HI Across All Media =	8E-03
Total Immune/Lymphocyte Effects HI Across All Media =	3E+00
Total Ocular Effects HI Across All Media =	3E+00

TABLE 9.2i RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment (0-1 ft bgs)	Tributary 5A	2,3,7,8-TCDD Equivalent	1.4E-07		1.4E-07	3E-07	Developmental effects	2.2E-03		2.2E-03	4E-03
			ALUMINUM					Neurotoxicology	6.6E-04			7E-04
			ANTIMONY					Longevity (M); Blood glucose (E); Cholesterol (E)	5.3E-03			5E-03
			ARSENIC	1.8E-06		1.8E-06	4E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	9.2E-03		9.4E-03	2E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	3.8E-04			4E-04
			CHROMIUM					None Reported (O)	3.4E-01			3E-01
			COBALT					--				
			COPPER					Gastrointestinal effects	5.9E-04			6E-04
			IRON					Gastrointestinal effects	1.9E-02			2E-02
			LEAD					--				
			MANGANESE					CNS (N)	7.3E-04			7E-04
			NICKEL					Decreased body and organ weight (W)	7.0E-03			7E-03
			SELENIUM					Clinical selenosis	3.8E-04			4E-04
			VANADIUM					Decreased hair cystine	8.8E-02			9E-02
			HIGHLY CHLORINATED PCBs	3.9E-07		1.9E-06	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	2.3E-02		1.1E-01	1E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	8.4E-08		3.7E-07	5E-07	--				
			BENZO(A)PYRENE	1.2E-06		5.3E-06	6E-06	--				
			BENZO(B)FLUORANTHENE	1.5E-07		6.6E-07	8E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.2E-06		2.7E-05	3E-05
			BENZO(K)FLUORANTHENE	5.8E-09		2.6E-08	3E-08	--				
			DIBENZO(A,H)ANTHRACENE	2.8E-07		1.3E-06	2E-06	--				
			INDENO(1,2,3-CD)PYRENE	5.4E-08		2.4E-07	3E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.3E-05		5.9E-05	7E-05
			BENZENE	2.5E-08			3E-08	Reduced lymphocyte count	2.7E-04			3E-04
			Chemical Total	4.1E-06	--	1.2E-05	2E-05		5.0E-01	--	1.2E-01	6E-01
		Exposure Point Total					2E-05					6E-01
	Exposure Medium Total						2E-05					6E-01
Medium Total							2E-05					6E-01

TABLE 9.2i RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Surface Water	Tributary 5A	ANTIMONY					Longevity (M); Blood glucose (E); Cholesterol (E)	3.4E-04		1.7E-03	2E-03
			ARSENIC	1.5E-07		1.1E-07	3E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	7.6E-04		5.8E-04	1E-03
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	4.4E-05		4.8E-04	5E-04
			CHROMIUM					None Reported (O)	5.4E-04		3.3E-02	3E-02
			COBALT					--				
			MANGANESE					CNS (N)	3.6E-05		6.9E-04	7E-04
			NICKEL					Decreased body and organ weight (W)	1.3E-03		4.9E-03	6E-03
			VANADIUM					Decreased hair cystine	1.9E-03		5.6E-02	6E-02
			DELTA-BHC	7.2E-10			7E-10	--				
			DIELDRIN	5.7E-09		2.2E-07	2E-07	Hepatic (H)	1.7E-05		6.5E-04	7E-04
			BIS(2-ETHYLHEXYL)PHTHALATE	2.6E-07		2.2E-05	2E-05	Increased relative liver weight (H)	2.1E-03		1.8E-01	2E-01
			NAPHTHALENE					Decreased body weight (W)	2.5E-06		1.0E-04	1E-04
			N-NITROSODIPHENYLAMINE	7.2E-09		1.8E-07	2E-07	--				
			PENTACHLOROPHENOL	1.5E-08		1.0E-05	1E-05	Liver (H) and kidney (R) pathology	9.9E-06		6.6E-03	7E-03
			1,4-DICHLOROBENZENE	2.3E-10		9.2E-09	9E-09	Liver	1.4E-06		5.7E-05	6E-05
			BENZENE	6.3E-08		7.7E-07	8E-07	Reduced lymphocyte count	6.7E-04		8.1E-03	9E-03
			BROMODICHLOROMETHANE	2.6E-09		1.3E-08	2E-08	Renal cytomegaly (R)	4.9E-06		2.5E-05	3E-05
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	5.5E-05		3.5E-04	4E-04
			Chemical Total	5.0E-07	--	3.4E-05	3E-05		7.9E-03	--	3.0E-01	3E-01
		Exposure Point Total					3E-05					3E-01
	Exposure Medium Total						3E-05					3E-01
Medium Total							3E-05					3E-01
Receptor Total							5E-05				Receptor HI Total	9E-01

Total Risk Across All Media = 5E-05

Total Hazard Across All Media = 9E-01

TABLE 9.3a RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	2,3,7,8-TCDD Equivalent	4.4E-06		1.3E-06	6E-06	Developmental effects	8.2E-02		2.4E-02	1E-01
			ALUMINUM					Neurotoxicology	1.0E-03			1E-03
			ARSENIC	1.7E-06		5.1E-07	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.1E-02		3.2E-03	1E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	2.0E-04			2E-04
			CHROMIUM					None Reported (O)	7.6E-04			8E-04
			IRON					Gastrointestinal effects	3.9E-03			4E-03
			MANGANESE					CNS (N)	3.0E-04			3E-04
			MERCURY					Autoimmune effects	3.9E-01			4E-01
			NICKEL					Decreased body and organ weight (W)	2.2E-02			2E-02
			VANADIUM					Decreased hair cystine	3.0E-04			3E-04
			HIGHLY CHLORINATED PCBs	2.7E-07		3.7E-07	6E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	1.9E-02		2.6E-02	4E-02
			DELTA-BHC	5.2E-07			5E-07	--				
			DIELDRIN	2.6E-06			3E-06	Hepatic (H)	9.0E-03			9E-03
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.9E-07		3.7E-07	7E-07	--				
			BENZO(A)PYRENE	3.7E-06		4.7E-06	8E-06	--				
			BENZO(B)FLUORANTHENE	4.0E-07		5.1E-07	9E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.2E-05		5.4E-05	1E-04
			BENZO(K)FLUORANTHENE	1.8E-08		2.3E-08	4E-08	--				
			DIBENZO(A,H)ANTHRACENE	7.1E-07		9.2E-07	2E-06	--				
			HEXACHLOROBENZENE	4.9E-07		4.9E-07	1E-06	Hepatic (H)	1.1E-03		1.1E-03	2E-03
			HEXACHLOROBUTADIENE	6.1E-09		6.0E-09	1E-08	--				
			INDENO(1,2,3-CD)PYRENE	3.2E-07		4.2E-07	7E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.0E-05		7.7E-05	1E-04
			1,2,4-TRICHLOROBENZENE	6.5E-10			7E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	5.1E-05			5E-05
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	5.3E-04			5E-04
			1,3-DICHLOROBENZENE					--				

TABLE 9.3a RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	1,4-DICHLOROBENZENE	5.7E-07			6E-07	Liver	4.2E-03			4E-03
			BENZENE	1.4E-11			1E-11	Reduced lymphocyte count	1.8E-07			2E-07
			CHLOROBENZENE					Histopathologic changes in liver	8.4E-04			8E-04
			Chemical Total	1.6E-05	--	9.6E-06	3E-05		5.4E-01	--	5.5E-02	6E-01
		Exposure Point Total					3E-05					6E-01
	Exposure Medium Total						3E-05					6E-01
Medium Total							3E-05					6E-01
Receptor Total							3E-05				Receptor HI Total	6E-01

Total Risk Across All Media = 3E-05

Total Hazard Across All Media = 6E-01

TABLE 9.3b RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	On-Site Ditches	2,3,7,8-TCDD Equivalent	4.9E-05		1.5E-05	6E-05	Developmental effects	9.1E-01		2.7E-01	1E+00
			ARSENIC	2.6E-06		7.7E-07	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.6E-02		4.8E-03	2E-02
			CHROMIUM					None Reported (O)	7.8E-03			8E-03
			COPPER					Gastrointestinal effects	9.9E-04			1E-03
			IRON					Gastrointestinal effects	9.3E-03			9E-03
			LEAD					--				
			MANGANESE					CNS (N)	3.7E-04			4E-04
			MERCURY					Autoimmune effects	1.4E+00			1E+00
			METHYL MERCURY					Developmental neuropsychological impairment (N)	8.3E-04			8E-04
			NICKEL					Decreased body and organ weight (W)	1.8E-03			2E-03
			VANADIUM					Decreased hair cystine	8.6E-04			9E-04
			HIGHLY CHLORINATED PCBs	1.2E-06		1.7E-06	3E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	8.5E-02		1.2E-01	2E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	6.6E-08		8.5E-08	2E-07	--				
			BENZO(A)PYRENE	6.3E-07		8.1E-07	1E-06	--				
			BENZO(B)FLUORANTHENE	9.5E-08		1.2E-07	2E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.7E-06		7.3E-06	1E-05
			DIBENZO(A,H)ANTHRACENE	1.4E-07		1.8E-07	3E-07	--				
			INDENO(1,2,3-CD)PYRENE	3.8E-08		4.9E-08	9E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	8.1E-06		1.0E-05	2E-05
			Chemical Total	5.4E-05	--	1.8E-05	7E-05		2.5E+00	--	3.9E-01	3E+00
		Exposure Point Total					7E-05					3E+00
	Exposure Medium Total						7E-05					3E+00
Medium Total							7E-05					3E+00
Receptor Total							7E-05				Receptor HI Total	3E+00

Total Risk Across All Media =	7E-05
Total Hazard Across All Media =	3E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Kidney HI Across All Media =	3E-05
Total Nervous System Effects HI Across All Media =	2E-02
Total Immune/Lymphocyte Effects HI Across All Media =	2E+00
Total Ocular Effects HI Across All Media =	2E-01

TABLE 9.3c RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BULIDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	4.1E-04		1.2E-04	5E-04	Developmental effects	7.6E+00		2.3E+00	1E+01
			ARSENIC	6.8E-07		2.0E-07	9E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	4.2E-03		1.2E-03	5E-03
			CHROMIUM					None Reported (O)	5.5E-04			5E-04
			IRON					Gastrointestinal effects	1.5E-03			1E-03
			MANGANESE					CNS (N)	2.9E-04			3E-04
			MERCURY					Autoimmune effects	3.3E-03			3E-03
			VANADIUM					Decreased hair cystine	1.7E-04			2E-04
			HIGHLY CHLORINATED PCBs	4.8E-07		6.6E-07	1E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	3.3E-02		4.6E-02	8E-02
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	5.1E-08		6.5E-08	1E-07	--				
			BENZO(A)PYRENE	4.7E-07		6.1E-07	1E-06	--				
			BENZO(B)FLUORANTHENE	8.9E-08		1.1E-07	2E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.4E-06		5.7E-06	1E-05
			DIBENZO(A,H)ANTHRACENE	9.8E-08		1.3E-07	2E-07	--				
			INDENO(1,2,3-CD)PYRENE	2.8E-08		3.6E-08	6E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	7.7E-06		9.9E-06	2E-05
			1,2,4-TRICHLOROBENZENE	3.1E-09			3E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	2.4E-04			2E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.1E-04			1E-04
			1,4-DICHLOROBENZENE	4.2E-09			4E-09	Liver	3.1E-05			3E-05
			Chemical Total	4.1E-04	--	1.2E-04	5E-04		7.6E+00	--	2.3E+00	1E+01
		Exposure Point Total					5E-04					1E+01
	Exposure Medium Total						5E-04					1E+01
Medium Total							5E-04					1E+01
Receptor Total							5E-04				Receptor HI Total	1E+01

Total Risk Across All Media =	5E-04
Total Hazard Across All Media =	1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	3E-05
Total Kidney HI Across All Media =	3E-05
Total Nervous System Effects HI Across All Media =	6E-03
Total Immune/Lymphocyte Effects HI Across All Media =	8E-02
Total Ocular Effects HI Across All Media =	8E-02

TABLE 9.4a RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	2,3,7,8-TCDD Equivalent	1.3E-05		5.3E-06	2E-05	Developmental effects	2.5E-01		9.8E-02	3E-01
			ALUMINUM					Neurotoxicology	3.1E-03			3E-03
			ARSENIC	5.2E-06		2.1E-06	7E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	3.2E-02		1.3E-02	5E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	6.2E-04			6E-04
			CHROMIUM					None Reported (O)	2.3E-03			2E-03
			IRON					Gastrointestinal effects	1.2E-02			1E-02
			MANGANESE					CNS (N)	9.1E-04			9E-04
			MERCURY					Autoimmune effects	1.2E+00			1E+00
			NICKEL					Decreased body and organ weight (W)	6.8E-02			7E-02
			VANADIUM					Decreased hair cystine	9.2E-04			9E-04
			HIGHLY CHLORINATED PCBs	8.1E-07		1.5E-06	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	5.7E-02		1.1E-01	2E-01
			DELTA-BHC	1.6E-06			2E-06	--				
			DIELDRIN	7.8E-06			8E-06	Hepatic (H)	2.7E-02			3E-02
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	8.7E-07		1.5E-06	2E-06	--				
			BENZO(A)PYRENE	1.1E-05		1.9E-05	3E-05	--				
			BENZO(B)FLUORANTHENE	1.2E-06		2.1E-06	3E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.3E-04		2.2E-04	3E-04
			BENZO(K)FLUORANTHENE	5.5E-08		9.4E-08	1E-07	--				
			DIBENZO(A,H)ANTHRACENE	2.2E-06		3.7E-06	6E-06	--				
			HEXACHLOROBENZENE	1.5E-06		2.0E-06	3E-06	Hepatic (H)	3.3E-03		4.3E-03	8E-03
			HEXACHLOROBUTADIENE	1.8E-08		2.4E-08	4E-08	--				
			INDENO(1,2,3-CD)PYRENE	9.8E-07		1.7E-06	3E-06	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.8E-04		3.1E-04	5E-04
			1,2,4-TRICHLOROBENZENE	2.0E-09			2E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.5E-04			2E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.6E-03			2E-03
			1,3-DICHLOROBENZENE					--				

TABLE 9.4a RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	1,4-DICHLOROBENZENE	1.7E-06			2E-06	Liver	1.3E-02			1E-02
			BENZENE	4.4E-11			4E-11	Reduced lymphocyte count	5.5E-07			6E-07
			CHLOROBENZENE					Histopathologic changes in liver	2.6E-03			3E-03
			Chemical Total	4.8E-05	--	3.9E-05	9E-05		1.6E+00	--	2.2E-01	2E+00
		Exposure Point Total					9E-05					2E+00
	Exposure Medium Total						9E-05					2E+00
Medium Total							9E-05					2E+00
Receptor Total							9E-05				Receptor HI Total	2E+00

Total Risk Across All Media =	9E-05
Total Hazard Across All Media =	2E+00
Total Liver HI Across All Media =	5E-02
Total Kidney HI Across All Media =	1E-03
Total Nervous System Effects HI Across All Media =	5E-02
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	2E-01

TABLE 9.4b RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	On-Site Ditches	2,3,7,8-TCDD Equivalent	1.5E-04		5.9E-05	2E-04	Developmental effects	2.8E+00		1.1E+00	4E+00
			ARSENIC	7.9E-06		3.1E-06	1E-05	Hyperpigmentation (In); Vascular (V); PNS (N)	4.9E-02		1.9E-02	7E-02
			CHROMIUM					None Reported (O)	2.4E-02			2E-02
			COPPER					Gastrointestinal effects	3.0E-03			3E-03
			IRON					Gastrointestinal effects	2.8E-02			3E-02
			LEAD					--				
			MANGANESE					CNS (N)	1.1E-03			1E-03
			MERCURY					Autoimmune effects	4.4E+00			4E+00
			METHYL MERCURY					Developmental neuropsychological impairment (N)	2.5E-03			3E-03
			NICKEL					Decreased body and organ weight (W)	5.5E-03			6E-03
			VANADIUM					Decreased hair cystine	2.6E-03			3E-03
			HIGHLY CHLORINATED PCBs	3.7E-06		6.8E-06	1E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	2.6E-01		4.8E-01	7E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.0E-07		3.5E-07	5E-07	--				
			BENZO(A)PYRENE	1.9E-06		3.3E-06	5E-06	--				
			BENZO(B)FLUORANTHENE	2.9E-07		4.9E-07	8E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.7E-05		2.9E-05	5E-05
			DIBENZO(A,H)ANTHRACENE	4.2E-07		7.2E-07	1E-06	--				
			INDENO(1,2,3-CD)PYRENE	1.2E-07		2.0E-07	3E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.5E-05		4.2E-05	7E-05
			Chemical Total	1.6E-04	--	7.4E-05	2E-04		7.5E+00	--	1.6E+00	9E+00
		Exposure Point Total					2E-04					9E+00
	Exposure Medium Total						2E-04					9E+00
Medium Total							2E-04					9E+00
Receptor Total							2E-04				Receptor HI Total	9E+00

Total Risk Across All Media =	2E-04
Total Hazard Across All Media =	9E+00
Total Kidney HI Across All Media =	1E-04
Total Nervous System Effects HI Across All Media =	7E-02
Total Immune/Lymphocyte Effects HI Across All Media =	5E+00
Total Ocular Effects HI Across All Media =	7E-01

TABLE 9.4c RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	1.2E-03		4.9E-04	2E-03	Developmental effects	2.3E+01		9.1E+00	3E+01
			ARSENIC	2.0E-06		8.1E-07	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.3E-02		5.1E-03	2E-02
			CHROMIUM					None Reported (O)	1.7E-03			2E-03
			IRON					Gastrointestinal effects	4.5E-03			5E-03
			MANGANESE					CNS (N)	8.9E-04			9E-04
			MERCURY					Autoimmune effects	1.0E-02			1E-02
			VANADIUM					Decreased hair cystine	5.1E-04			5E-04
			HIGHLY CHLORINATED PCBs	1.4E-06		2.7E-06	4E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	1.0E-01		1.9E-01	3E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.5E-07		2.6E-07	4E-07	--				
			BENZO(A)PYRENE	1.4E-06		2.5E-06	4E-06	--				
			BENZO(B)FLUORANTHENE	2.7E-07		4.6E-07	7E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.3E-05		2.3E-05	4E-05
			DIBENZO(A,H)ANTHRACENE	3.0E-07		5.1E-07	8E-07	--				
			INDENO(1,2,3-CD)PYRENE	8.4E-08		1.4E-07	2E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.3E-05		4.0E-05	6E-05
			1,2,4-TRICHLOROBENZENE	9.5E-09			9E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	7.4E-04			7E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	3.2E-04			3E-04
			1,4-DICHLOROBENZENE	1.3E-08			1E-08	Liver	9.5E-05			9E-05
			Chemical Total	1.2E-03	--	5.0E-04	2E-03		2.3E+01	--	9.3E+00	3E+01
		Exposure Point Total					2E-03					3E+01
	Exposure Medium Total						2E-03					3E+01
Medium Total							2E-03					3E+01
Receptor Total							2E-03				Receptor HI Total	3E+01

Total Risk Across All Media =	2E-03
Total Hazard Across All Media =	3E+01
Total Liver HI Across All Media =	9E-05
Total Kidney HI Across All Media =	1E-04
Total Nervous System Effects HI Across All Media =	2E-02
Total Immune/Lymphocyte Effects HI Across All Media =	3E-01
Total Ocular Effects HI Across All Media =	3E-01

TABLE 9.4d RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/OUFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	1.4E-05		5.4E-06	2E-05	Developmental effects	2.6E-01		1.0E-01	4E-01
			ALUMINUM					Neurotoxicology	2.9E-03			3E-03
			ARSENIC	5.4E-06		2.2E-06	8E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	3.4E-02		1.3E-02	5E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.2E-03			1E-03
			CHROMIUM					None Reported (O)	2.2E-02			2E-02
			IRON					Gastrointestinal effects	1.4E-02			1E-02
			LEAD					--				
			MANGANESE					CNS (N)	7.8E-04			8E-04
			MERCURY					Autoimmune effects	1.4E+00			1E+00
			VANADIUM					Decreased hair cystine	4.3E-03			4E-03
			HIGHLY CHLORINATED PCBs	9.2E-06		1.7E-05	3E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	6.4E-01		1.2E+00	2E+00
			ALDRIN	2.4E-07			2E-07	Liver toxicity (H)	1.3E-03			1E-03
			DELTA-BHC	3.0E-09			3E-09	--				
			ENDOSULFAN I					Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	2.0E-07			2E-07
			HEPTACHLOR	7.1E-08			7E-08	Liver weight increase	8.8E-05			9E-05
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	6.4E-07		1.1E-06	2E-06	--				
			BENZO(A)PYRENE	7.5E-06		1.3E-05	2E-05	--				
			BENZO(B)FLUORANTHENE	1.2E-06		2.1E-06	3E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	7.1E-05		1.2E-04	2E-04
			BENZO(K)FLUORANTHENE	3.2E-08		5.4E-08	9E-08	--				
			DIBENZO(A,H)ANTHRACENE	2.3E-06		4.0E-06	6E-06	--				
			HEXACHLOROBENZENE	7.8E-07		1.0E-06	2E-06	Hepatic (H)	1.7E-03		2.3E-03	4E-03
			INDENO(1,2,3-CD)PYRENE	5E-07		8E-07	1E-06	--				

TABLE 9.4d RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/OUFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Southwest Off-Site/Outfall 006 Exposure Area	PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.1E-04		1.9E-04	3E-04
			BENZENE	1.4E-11			1E-11	Reduced lymphocyte count	1.8E-07			2E-07
			TRICHLOROETHENE	2.0E-09			2E-09	--				
			Chemical Total	4.2E-05	--	4.7E-05	9E-05		2.3E+00	--	1.3E+00	4E+00
		Exposure Point Total					9E-05					4E+00
	Exposure Medium Total						9E-05					4E+00
Medium Total							9E-05					4E+00
Receptor Total							9E-05				Receptor HI Total	4E+00

Total Risk Across All Media =	9E-05
Total Hazard Across All Media =	4E+00
Total Liver HI Across All Media =	5E-03
Total Kidney HI Across All Media =	2E-03
Total Nervous System Effects HI Across All Media =	5E-02
Total Immune/Lymphocyte Effects HI Across All Media =	3E+00
Total Ocular Effects HI Across All Media =	2E+00

TABLE 9.4e RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Petroleum Storage Area	ARSENIC	1.3E-05		5.3E-06	2E-05	Hyperpigmentation (In); Vascular (V); PNS (N)	8.3E-02		3.3E-02	1E-01
			CHROMIUM					None Reported (O)	3.4E-03			3E-03
			IRON					Gastrointestinal effects	1.5E-02			2E-02
			MANGANESE					CNS (N)	1.3E-03			1E-03
			MERCURY					Autoimmune effects	1.7E-02			2E-02
			VANADIUM					Decreased hair cystine	8.2E-04			8E-04
			HIGHLY CHLORINATED PCBs	1.9E-07		3.5E-07	5E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.3E-02		2.4E-02	4E-02
			DELTA-BHC	9.9E-10			1E-09	--				
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	7.0E-07		1.2E-06	2E-06	--				
			BENZO(A)PYRENE	6.7E-06		1.2E-05	2E-05	--				
			BENZO(B)FLUORANTHENE	9.6E-07		1.6E-06	3E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	8.2E-05		1.4E-04	2E-04
			BENZO(K)FLUORANTHENE	2.7E-08		4.6E-08	7E-08	--				
			DIBENZO(A,H)ANTHRACENE	1.6E-06		2.8E-06	4E-06	--				
			INDENO(1,2,3-CD)PYRENE	5.9E-07		1.0E-06	2E-06	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.4E-05		9.3E-05	1E-04
			BENZENE	6.2E-10			6E-10	Reduced lymphocyte count	7.9E-06			8E-06
			Chemical Total	2.4E-05	--	2.4E-05	5E-05		1.3E-01	--	5.8E-02	2E-01
		Exposure Point Total					5E-05					2E-01
	Exposure Medium Total						5E-05					2E-01
Medium Total							5E-05					2E-01
Receptor Total							5E-05				Receptor HI Total	2E-01

Total Risk Across All Media = 5E-05

Total Hazard Across All Media = 2E-01

TABLE 9.4f RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Chlorobenzene Hot-Spot Area	ARSENIC	2.7E-06		1.1E-06	4E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.7E-02		6.7E-03	2E-02
			CHROMIUM					None Reported (O)	3.2E-03			3E-03
			IRON					Gastrointestinal effects	1.2E-02			1E-02
			MANGANESE					CNS (N)	8.7E-04			9E-04
			MERCURY					Autoimmune effects	3.4E-03			3E-03
			VANADIUM					Decreased hair cystine	5.1E-04			5E-04
			HIGHLY CHLORINATED PCBs	3.0E-05		5.5E-05	8E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	2.1E+00		3.8E+00	6E+00
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.3E-06		2.2E-06	3E-06	--				
			BENZO(A)PYRENE	7.4E-06		1.3E-05	2E-05	--				
			BENZO(B)FLUORANTHENE	1.7E-06		2.9E-06	5E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.6E-05		1.1E-04	2E-04
			BENZO(K)FLUORANTHENE	5.2E-08		8.9E-08	1E-07	--				
			DIBENZO(A,H)ANTHRACENE	1.7E-06		3.0E-06	5E-06	--				
			HEXACHLOROBENZENE	6.2E-07		8.1E-07	1E-06	Hepatic (H)	1.3E-03		1.8E-03	3E-03
			INDENO(1,2,3-CD)PYRENE	6.0E-07		1.0E-06	2E-06	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.1E-04		5.3E-04	8E-04
			1,2,4-TRICHLOROBENZENE	6.4E-09			6E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	5.0E-04			5E-04
			1,4-DICHLOROBENZENE	4.2E-09			4E-09	Liver	3.1E-05			3E-05
			BENZENE	5.8E-11			6E-11	Reduced lymphocyte count	7.4E-07			7E-07
			Chemical Total	4.6E-05	--	7.9E-05	1E-04		2.1E+00	--	3.9E+00	6E+00
		Exposure Point Total					1E-04					6E+00
	Exposure Medium Total						1E-04					6E+00
Medium Total							1E-04					6E+00
Receptor Total							1E-04				Receptor HI Total	6E+00

Total Risk Across All Media =	1E-04
Total Hazard Across All Media =	6E+00
Total Liver HI Across All Media =	3E-03
Total Kidney HI Across All Media =	1E-03
Total Nervous System Effects HI Across All Media =	2E-02
Total Immune/Lymphocyte Effects HI Across All Media =	6E+00
Total Ocular Effects HI Across All Media =	6E+00

TABLE 9.5a RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Plant Area	2,3,7,8-TCDD Equivalent	1.8E-06		1.7E-07	2E-06	Developmental effects	8.6E-01		7.7E-02	9E-01
			ALUMINUM					Neurotoxicity, Psychomotor and cognitive impairments	1.1E-02	8.8E-01		9E-01
			ARSENIC	6.8E-07	7.5E-07	6.1E-08	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.1E-01	2.4E-01	9.5E-03	4E-01
			BARIUM					Humans - none observed (O); Rats - Kidney (R), Renal toxicity	1.7E-03	2.6E-01		3E-01
			CHROMIUM		1.5E-06		2E-06	Respiratory (P)	7.7E-03	8.9E-02		1E-01
			IRON					Gastrointestinal effects	3.9E-02			4E-02
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	3.1E-03	3.3E+00		3E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	1.4E+00	5.5E-01		2E+00
			NICKEL		5.9E-06		6E-06	Decreased body and organ weight (W) , Respiratory (P)	2.0E-01	1.8E+01		2E+01
			VANADIUM					Decreased hair cystine	3.7E-03			4E-03
			HIGHLY CHLORINATED PCBs	7.1E-08	7.9E-09	3.0E-08	1E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	1.2E-01		5.2E-02	2E-01
			DELTA-BHC	2.2E-07	2.4E-08		2E-07	--				
			DIELDRIN	1.1E-06	1.2E-07		1E-06	Hepatic (H)	9.6E-02			1E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.4E-07		5.5E-08	2E-07	--				
			BENZO(A)PYRENE	1.5E-06		5.7E-07	2E-06	--				
			BENZO(B)FLUORANTHENE	2.0E-07		7.7E-08	3E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights)	5.3E-04		2.1E-04	7E-04
			BENZO(K)FLUORANTHENE	7.2E-09		2.8E-09	1E-08	--				
			DIBENZO(A,H)ANTHRACENE	3.0E-07		1.2E-07	4E-07	--				
			HEXACHLOROBENZENE	5.5E-07	6.1E-08	1.6E-07	8E-07	Hepatic (H)	3.0E-02		9.0E-03	4E-02
			HEXACHLOROBUTADIENE	1.8E-09	2.0E-10	5.4E-10	3E-09	--				
			INDENO(1,2,3-CD)PYRENE	1.3E-07		5.0E-08	2E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	6E-04		2E-04	8E-04
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	3.1E-10			3E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	6.0E-04			6E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	3.9E-03	6.0E-02		6E-02
			1,3-DICHLOROBENZENE					--				

TABLE 9.5a RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Plant Area	1,4-DICHLOROBENZENE	1.6E-07	9.3E-06		9E-06	Liver	3.0E-02	7.1E-02		1E-01
			BENZENE	2.1E-09	3.9E-08		4E-08	Reduced lymphocyte count	6.8E-04	1.2E-02		1E-02
			CHLOROBENZENE					Histopathologic changes in liver	8.3E-03			8E-03
			Chemical Total	6.9E-06	1.8E-05	1.3E-06	3E-05		2.9E+00	2.3E+01	1.5E-01	3E+01
		Exposure Point Total					3E-05					3E+01
	Exposure Medium Total						3E-05					3E+01
Medium Total							3E-05					3E+01
Receptor Total							3E-05				Receptor HI Total	3E+01

Total Risk Across All Media =	3E-05
Total Hazard Across All Media =	3E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	2E-01
Total Kidney HI Across All Media =	3E-01
Total Nervous System Effects HI Across All Media =	7E+00
Total Immune/Lymphocyte Effects HI Across All Media =	2E+00
Total Nasal/Respiratory Effects HI Across All Media =	2E+01
Total Ocular Effects HI Across All Media =	2E-01

TABLE 9.5b RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	On-Site Ditches	2,3,7,8-TCDD Equivalent	2.1E-05		1.9E-06	2E-05	Developmental effects	9.7E+00		8.8E-01	1E+01
			ARSENIC	1.1E-06	1.2E-06	9.9E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.7E-01	4.0E-01	1.5E-02	6E-01
			CHROMIUM		1.6E-05		2E-05	Respiratory (P)	8.3E-02	9.6E-01		1E+00
			COPPER					Gastrointestinal effects	1.1E-02			1E-02
			IRON					Gastrointestinal effects	9.9E-02			1E-01
			LEAD					--				
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	4.0E-03	4.3E+00		4E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	2.1E+01	8.0E+00		3E+01
			METHYL MERCURY					Developmental neuropsychological impairment (N), PNS (N); CNS (N)	8.9E-03	1.1E-03		1E-02
			NICKEL		5.6E-07		6E-07	Decreased body and organ weight (W) , Respiratory (P)	1.9E-02	1.7E+00		2E+00
			VANADIUM					Decreased hair cystine	9.2E-03			9E-03
			HIGHLY CHLORINATED PCBs	3.6E-07	4.0E-08	1.5E-07	6E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	6.4E-01		2.7E-01	9E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.8E-08		1.1E-08	4E-08	--				
			BENZO(A)PYRENE	2.7E-07		1.1E-07	4E-07	--				
			BENZO(B)FLUORANTHENE	4.0E-08		1.6E-08	6E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights)	6.0E-05		2.4E-05	8E-05
			DIBENZO(A,H)ANTHRACENE	5.9E-08		2.3E-08	8E-08	--				
			INDENO(1,2,3-CD)PYRENE	1.6E-08		6.3E-09	2E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	8.6E-05		3.4E-05	1E-04
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	5.0E-10			5E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	9.7E-04			1E-03
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	2.7E-03	4.2E-02		4E-02
			1,3-DICHLOROBENZENE					--				

TABLE 9.5b RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	On-Site Ditches	1,4-DICHLOROBENZENE	4.3E-08	2.4E-06		2E-06	Liver	7.9E-03	1.9E-02		3E-02
			BENZENE	1.2E-10	2.2E-09		2E-09	Reduced lymphocyte count	3.9E-05	6.6E-04		7E-04
			CHLOROBENZENE					Histopathologic changes in liver	4.6E-03			5E-03
			Chemical Total	2.3E-05	2.1E-05	2.3E-06	5E-05		3.1E+01	1.5E+01	1.2E+00	5E+01
		Exposure Point Total					5E-05					5E+01
	Exposure Medium Total						5E-05					5E+01
Medium Total							5E-05					5E+01
Receptor Total							5E-05				Receptor HI Total	5E+01

Total Risk Across All Media = 5E-05

Total Hazard Across All Media = 5E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	3E-02
Total Kidney HI Across All Media =	2E-04
Total Nervous System Effects HI Across All Media =	3E+01
Total Immune/Lymphocyte Effects HI Across All Media =	3E+01
Total Nasal/Respiratory Effects HI Across All Media =	3E+00
Total Ocular Effects HI Across All Media =	9E-01

TABLE 9.5c RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	7.0E-04		6.3E-05	8E-04	Developmental effects	3.3E+02		2.9E+01	4E+02
			ARSENIC	2.9E-07	3.2E-07	2.6E-08	6E-07	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	4.5E-02	1.0E-01	4.0E-03	2E-01
			CHROMIUM		1.2E-06		1E-06	Respiratory (P)	5.8E-03	6.7E-02		7E-02
			IRON					Gastrointestinal effects	1.6E-02			2E-02
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	3.1E-03	3.4E+00		3E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	6.5E-01	2.5E-01		9E-01
			VANADIUM					Decreased hair cystine	1.8E-03			2E-03
			HIGHLY CHLORINATED PCBs	2.0E-07	2.2E-08	8.5E-08	3E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	3.6E-01		1.5E-01	5E-01
			LESS CHLORINATED PCBs	4.1E-08	4.5E-09	1.7E-08	6E-08	Reduced birth weights (W)	2.0E-02		8.5E-03	3E-02
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.2E-08		8.4E-09	3E-08	--				
			BENZO(A)PYRENE	2.0E-07		7.9E-08	3E-07	--				
			BENZO(B)FLUORANTHENE	3.8E-08		1.5E-08	5E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights)	4.7E-05		1.8E-05	7E-05
			DIBENZO(A,H)ANTHRACENE	4.2E-08		1.6E-08	6E-08	--				
			HEXACHLOROBENZENE	3.5E-08	3.9E-09	1.1E-08	5E-08	Hepatic (H)	1.9E-03		5.8E-04	3E-03
			INDENO(1,2,3-CD)PYRENE	1.2E-08		4.6E-09	2E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	8.2E-05		3.2E-05	1E-04

TABLE 9.5c RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Former Chlorination Building	1,2,4-TRICHLOROBENZENE	1.3E-09			1E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	2.6E-03			3E-03
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.1E-03	1.7E-02		2E-02
			1,4-DICHLOROBENZENE	1.8E-09	1.0E-07		1E-07	Liver	3.3E-04	7.8E-04		1E-03
			Chemical Total	7.0E-04	1.6E-06	6.3E-05	8E-04		3.3E+02	3.8E+00	2.9E+01	4E+02
		Exposure Point Total					8E-04					4E+02
	Exposure Medium Total						8E-04					4E+02
Medium Total							8E-04					4E+02
Receptor Total							8E-04				Receptor HI Total	4E+02

Total Risk Across All Media =	8E-04
Total Hazard Across All Media =	4E+02

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	4E-03
Total Kidney HI Across All Media =	2E-04
Total Nervous System Effects HI Across All Media =	4E+00
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Nasal/Respiratory Effects HI Across All Media =	7E-02
Total Ocular Effects HI Across All Media =	5E-01

TABLE 9.5d RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	1.9E-06		1.7E-07	2E-06	Developmental effects	9.0E-01		8.1E-02	1E+00
			ALUMINUM					Neurotoxicity, Psychomotor and cognitive impairments	1.0E-02	7.8E-01		8E-01
			ARSENIC	7.6E-07	8.5E-07	6.9E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.2E-01	2.8E-01	1.1E-02	4E-01
			BARIUM					Humans - none observed (O); Rats - Kidney (R), Renal toxicity	4.3E-03	6.9E-01		7E-01
			CHROMIUM		1.6E-05		2E-05	Respiratory (P)	7.9E-02	9.1E-01		1E+00
			IRON					Gastrointestinal effects	4.9E-02			5E-02
			LEAD					--				
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	2.7E-03	3.0E+00		3E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	8.1E+00	3.1E+00		1E+01
			VANADIUM					Decreased hair cystine	1.5E-02			2E-02
			HIGHLY CHLORINATED PCBs	1.3E-06	1.4E-07	5.4E-07	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	2.3E+00		9.5E-01	3E+00
			ALDRIN	2.8E-08	3.0E-09		3E-08	Liver toxicity (H)	3.8E-03			4E-03
			HEPTACHLOR	1.0E-08	1.1E-09		1E-08	Liver weight increase	3.1E-04			3E-04
			BENZO(A)ANTHRACENE	9.0E-08		3.5E-08	1E-07	--				
			BENZO(A)PYRENE	1.1E-06		4.1E-07	1E-06	--				
			BENZO(B)FLUORANTHENE	1.8E-07		6.8E-08	2E-07	--				
			BENZO(K)FLUORANTHENE	4.4E-09		1.7E-09	6E-09	--				
			DIBENZO(A,H)ANTHRACENE	3.2E-07		1.3E-07	4E-07	--				
			HEXACHLOROBENZENE	9.1E-08	1.0E-08	2.7E-08	1E-07	Hepatic (H)	5.0E-03		1.5E-03	6E-03
			INDENO(1,2,3-CD)PYRENE	6.9E-08		2.7E-08	1E-07	--				
			NAPHTHALENE		7.8E-07		8E-07	Decreased body weight (W) , Nasal/respiratory (P)	2.1E-01	5.3E-01	8.1E-02	8E-01
			1,2,4-TRIMETHYLBENZENE					NA, Hematological and Pulmonary		2.1E-01		2E-01
			1,3,5-TRIMETHYLBENZENE					--				
			1,4-DICHLOROBENZENE	6.0E-09	3.4E-07		3E-07	Liver	1.1E-03	2.6E-03		4E-03
			BENZENE	7.7E-06	1.4E-04		1E-04	Reduced lymphocyte count	2.5E+00	4.2E+01		4E+01
			ETHYLBENZENE					Liver (H) and kidney (R) toxicity, Developmental toxicity	1.1E-03	7.3E-03		8E-03
			SEC-BUTYLBENZENE					--				
			TERT-BUTYLBENZENE					--				

TABLE 9.5d RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	TOLUENE	2.5E-10	7.6E-09		8E-09	Increased kidney weight (R), Neurological effects	5.0E-02	7.0E-02		1E-01
			TRICHLOROETHENE					--				
			XYLENES, TOTAL					Decreased body weight (W), increased mortality (M), Impaired motor coordination (decreased rotarod performance)	1.1E-02	8.6E+00		9E+00
			Chemical Total	1.4E-05	1.6E-04	1.5E-06	2E-04		1.4E+01	6.0E+01	1.1E+00	8E+01
		Exposure Point Total					2E-04					8E+01
	Exposure Medium Total						2E-04					8E+01
Medium Total							2E-04					8E+01
Receptor Total							2E-04				Receptor HI Total	8E+01

Total Risk Across All Media = 2E-04

Total Hazard Across All Media = 8E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	2E-02
Total Kidney HI Across All Media =	8E-01
Total Nervous System Effects HI Across All Media =	2E+01
Total Immune/Lymphocyte Effects HI Across All Media =	6E+01
Total Nasal/Respiratory Effects HI Across All Media =	2E+00
Total Ocular Effects HI Across All Media =	3E+00

TABLE 9.5e RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Petroleum Storage Area	ALUMINUM					Neurotoxicity, Psychomotor and cognitive impairments	1.2E-02	9.1E-01		9E-01
			ARSENIC	1.1E-06	1.2E-06	9.6E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.7E-01	3.8E-01	1.5E-02	6E-01
			CHROMIUM		1.8E-06		2E-06	Respiratory (P)	8.9E-03	1.0E-01		1E-01
			IRON					Gastrointestinal effects	4.5E-02			5E-02
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	4.1E-03	4.5E+00		4E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	4.4E-02	1.7E-02		6E-02
			VANADIUM					Decreased hair cystine	2.5E-03			2E-03
			HIGHLY CHLORINATED PCBs	2.7E-08	2.9E-09	1.1E-08	4E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	4.6E-02		2.0E-02	7E-02
			DELTA-BHC	1.4E-10	1.5E-11		2E-10	--				
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	5.4E-08		2.1E-08	7E-08	--				
			BENZO(A)PYRENE	5.1E-07		2.0E-07	7E-07	--				
			BENZO(B)FLUORANTHENE	7.6E-08		3.0E-08	1E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights)	1.6E-04		6.2E-05	2E-04
			BENZO(K)FLUORANTHENE	2.3E-09		9.1E-10	3E-09	--				
			DIBENZO(A,H)ANTHRACENE	1.3E-07		5.0E-08	2E-07	--				
			INDENO(1,2,3-CD)PYRENE	4.2E-08		1.7E-08	6E-08	--				
			NAPHTHALENE		5.5E-09		5E-09	Decreased body weight (W) , Nasal/respiratory (P)	1.4E-03	3.7E-03	5.6E-04	6E-03
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	1.5E-04		5.7E-05	2E-04
			BENZENE	1.0E-10	1.9E-09		2E-09	Reduced lymphocyte count	3.3E-05	5.6E-04		6E-04
			Chemical Total	1.9E-06	3.0E-06	4.2E-07	5E-06		3.3E-01	5.9E+00	3.5E-02	6E+00
		Exposure Point Total					5E-06					6E+00
	Exposure Medium Total						5E-06					6E+00
Medium Total							5E-06					6E+00

TABLE 9.5e RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Shallow Groundwater (0-10 ft bgs)	Petroleum Storage Area	ALUMINUM					Neurotoxicity, Psychomotor and cognitive impairments	3.1E-03		2.7E-03	6E-03
			BARIUM					Humans - none observed (O); Rats - Kidney (R), Renal toxicity	1.9E-04		2.4E-03	3E-03
			CHROMIUM					Respiratory (P)	2.0E-03		1.4E-01	1E-01
			COPPER					Gastrointestinal effects	5.3E-04		4.6E-04	1E-03
			IRON					Gastrointestinal effects	7.6E-03		6.7E-03	1E-02
			LEAD					--				
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	1.4E-03		3.2E-02	3E-02
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	9.5E-04		1.2E-02	1E-02
			NICKEL					Decreased body and organ weight (W) , Respiratory (P)	4.1E-04		1.8E-03	2E-03
			VANADIUM					Decreased hair cystine	7.7E-04		2.6E-02	3E-02
			2-METHYLNAPHTHALENE					Pulmonary alveolar proteinosis	7.0E-04			7E-04
			DIBENZOFURAN					Reduced length and organ weight. Excess abdominal fat (O)	2.3E-04			2E-04
			NAPHTHALENE					Decreased body weight (W) , Nasal/respiratory (P)	1.4E-03		5.6E-02	6E-02
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	2.3E-05		2.9E-03	3E-03
			BENZENE	2.7E-07		3.5E-06	4E-06	Reduced lymphocyte count	8.5E-02		1.1E+00	1E+00
			XYLENES, TOTAL					Decreased body weight (W), increased mortality (M), Impaired motor coordination (decreased rotarod performance)	2.4E-05			2E-05
			Chemical Total	2.7E-07	--	3.5E-06	4E-06		1.0E-01	--	1.4E+00	1E+00
		Exposure Point Total					4E-06					1E+00
	Exposure Medium Total						4E-06					1E+00
Medium Total							4E-06					1E+00
Receptor Total							9E-06				Receptor HI Total	8E+00

Total Risk Across All Media = 9E-06

Total Hazard Across All Media = 8E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Kidney HI Across All Media =	6E-03
Total Nervous System Effects HI Across All Media =	6E+00
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Nasal/Respiratory Effects HI Across All Media =	3E-01
Total Ocular Effects HI Across All Media =	7E-02

TABLE 9.5f RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobezene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Chlorobenzene Hot-Spot Area	ARSENIC	2.8E-07	3.1E-07	2.5E-08	6E-07	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	4.4E-02	1.0E-01	4.0E-03	1E-01
			CHROMIUM		1.9E-06		2E-06	Respiratory (P)	9.6E-03	1.1E-01		1E-01
			IRON					Gastrointestinal effects	3.4E-02			3E-02
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	3.5E-03	3.8E+00		4E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	1.6E-02	6.1E-03		2E-02
			VANADIUM					Decreased hair cystine	1.6E-03			2E-03
			HIGHLY CHLORINATED PCBs	2.3E-06	2.5E-07	9.6E-07	3E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	4.0E+00		1.7E+00	6E+00
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.3E-07		8.9E-08	3E-07	--				
			BENZO(A)PYRENE	9.7E-07		3.8E-07	1E-06	--				
			BENZO(B)FLUORANTHENE	1.4E-07		5.6E-08	2E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights)	2.4E-04		9.2E-05	3E-04
			BENZO(K)FLUORANTHENE	7.6E-09		3.0E-09	1E-08	--				
			DIBENZO(A,H)ANTHRACENE	2.6E-07		1.0E-07	4E-07	--				
			HEXACHLOROBENZENE	1.1E-07	1.2E-08	3.2E-08	2E-07	Hepatic (H)	5.9E-03		1.8E-03	8E-03
			INDENO(1,2,3-CD)PYRENE	6.3E-08		2.4E-08	9E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	6.9E-04		2.7E-04	1E-03
			1,2,4-TRICHLOROBENZENE	1.7E-07			2E-07	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	3.3E-01			3E-01
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.7E-02	2.6E-01		3E-01
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.7E-07	9.7E-06		1E-05	Liver	3.1E-02	7.4E-02		1E-01
			BENZENE	5.4E-10	9.9E-09		1E-08	Reduced lymphocyte count	1.7E-04	3.0E-03		3E-03
			CHLOROBENZENE					Histopathologic changes in liver	3.1E-03			3E-03
			Chemical Total	5E-06	1E-05	2E-06	2E-05		4E+00	4E+00	2E+00	1E+01
		Exposure Point Total					2E-05					1E+01
	Exposure Medium Total						2E-05					1E+01
Medium Total							2E-05					1E+01

TABLE 9.5f RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobezene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Shallow Groundwater (0-10 ft bgs)	Chlorobenzene Hot-Spot Area	ALUMINUM					Neurotoxicity, Psychomotor and cognitive impairments	3.4E-03		3.0E-03	6E-03
			ARSENIC	4.5E-07		3.9E-07	8E-07	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	7.0E-02		6.1E-02	1E-01
			BARIUM					Humans - none observed (O); Rats - Kidney (R), Renal toxicity	2.6E-04		3.3E-03	4E-03
			CHROMIUM					Respiratory (P)	1.8E-02		1.2E+00	1E+00
			COBALT					--				
			COPPER					Gastrointestinal effects	4.5E-04		4.0E-04	8E-04
			IRON					Gastrointestinal effects	1.4E-02		1.3E-02	3E-02
			LEAD					--				
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	1.4E-03		3.1E-02	3E-02
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	9.7E-04		1.2E-02	1E-02
			NICKEL					Decreased body and organ weight (W) , Respiratory (P)	2.4E-03		1.0E-02	1E-02
			VANADIUM					Decreased hair cystine	1.7E-03		5.7E-02	6E-02
			HEXACHLOROBENZENE	5.4E-09		1.1E-06	1E-06	Hepatic (H)	2.9E-04		6.1E-02	6E-02
			NAPHTHALENE					Decreased body weight (W) , Nasal/respiratory (P)	3.2E-05		1.3E-03	1E-03
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	7.8E-06		9.7E-04	1E-03
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	8.0E-10		5.3E-08	5E-08	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.6E-03		1.0E-01	1E-01
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.4E-03		5.4E-02	6E-02
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.9E-08		7.2E-07	7E-07	Liver	3.4E-03		1.3E-01	1E-01

TABLE 9.5f RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobezene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Shallow Groundwater (0-10 ft bgs)	Chlorobenzene Hot-Spot Area	BENZENE	3.0E-07		4.0E-06	4E-06	Reduced lymphocyte count	9.7E-02		1.3E+00	1E+00
			CHLOROBENZENE					Histopathologic changes in liver	2.4E-02		6.0E-01	6E-01
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT, Hepatic effects	1.2E-05		7.9E-05	9E-05
			Chemical Total	7.8E-07	--	6.2E-06	7E-06		2.4E-01	--	3.6E+00	4E+00
		Exposure Point Total					7E-06					4E+00
	Exposure Medium Total						7E-06					4E+00
Medium Total							7E-06					4E+00
Receptor Total							3E-05				Receptor HI Total	1E+01

Total Risk Across All Media =	3E-05
Total Hazard Across All Media =	1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	9E-01
Total Kidney HI Across All Media =	6E-03
Total Nervous System Effects HI Across All Media =	4E+00
Total Immune/Lymphocyte Effects HI Across All Media =	7E+00
Total Nasal/Respiratory Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	6E+00

TABLE 9.6 RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
STATE FAIR BLVD/ NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Transient Trespasser
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	2,3,7,8-TCDD Equivalent	5.6E-07		5.7E-08	6E-07	Developmental effects	2.9E-02		3.0E-03	3E-02
			MERCURY					Autoimmune effects	2.9E-02			3E-02
			HIGHLY CHLORINATED PCBs	2.1E-08		1.0E-08	3E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (lgG and lgM) response to sheep erythrocytes	4.1E-03		2.0E-03	6E-03
			1,2,3-TRICHLOROBENZENE					--				
			BENZENE	5.4E-13			5E-13	Reduced lymphocyte count	1.9E-08			2E-08
			Chemical Total	5.8E-07	--	6.7E-08	6E-07		6.2E-02	--	4.9E-03	7E-02
		Exposure Point Total					6E-07					7E-02
Medium Total							6E-07					7E-02
Receptor Total							6E-07				Receptor HI Total	7E-02

Total Risk Across All Media = 6E-07

Total Hazard Across All Media = 7E-02

TABLE 9.7a RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils (0 - 20 ft)	Plant Area	2,3,7,8-TCDD Equivalent	2.5E-09		6.8E-10	3E-09	Developmental effects	1.2E-03		3.2E-04	1E-03
			ALUMINUM					Neurotoxicology	1.2E-02			1E-02
			ARSENIC	4.2E-07		1.1E-07	5E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	6.5E-02		1.7E-02	8E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.5E-03			2E-03
			CHROMIUM					None Reported (O)	5.5E-03			5E-03
			IRON					Gastrointestinal effects	2.5E-02			2E-02
			MANGANESE					CNS (N)	2.1E-03			2E-03
			MERCURY					Autoimmune effects	3.2E+00			3E+00
			NICKEL					Decreased body and organ weight (W)	1.1E-01			1E-01
			VANADIUM					Decreased hair cystine	3.1E-03			3E-03
			HIGHLY CHLORINATED PCBs	5.3E-08		6.7E-08	1E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep	9.3E-02		1.2E-01	2E-01
			DELTA-BHC	1.7E-07			2E-07	--				
			DIELDRIN	8.2E-07			8E-07	Hepatic (H)	7.2E-02			7E-02
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	6.3E-08		7.3E-08	1E-07	--				
			BENZO(A)PYRENE	6.5E-07		7.6E-07	1E-06	--				
			BENZO(B)FLUORANTHENE	9.1E-08		1.1E-07	2E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.3E-04		2.7E-04	5E-04
			BENZO(K)FLUORANTHENE	4.4E-09		5.2E-09	1E-08	--				
			DIBENZO(A,H)ANTHRACENE	2.0E-07		2.3E-07	4E-07	--				
			HEXACHLOROBENZENE	3.9E-07		3.5E-07	7E-07	Hepatic (H)	2.1E-02		1.9E-02	4E-02
			HEXACHLOROBUTADIENE	1.3E-09		1.2E-09	2E-09	--				
			INDENO(1,2,3-CD)PYRENE	5.5E-08		6.4E-08	1E-07	--				
			NAPHTHALENE					Decreased body weight (W)	3.5E-04		4.1E-04	8E-04
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.9E-04		4.6E-04	8E-04
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	2.4E-09			2E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	4.6E-03			5E-03
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	5.8E-03			6E-03
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.0E-07			1E-07	Liver	1.9E-02			2E-02
			BENZENE	2.2E-09			2E-09	Reduced lymphocyte count	7.1E-04			7E-04
			CHLOROBENZENE					Histopathologic changes in liver	8.1E-03			8E-03
			Chemical Total	3.0E-06	--	1.8E-06	5E-06		3.6E+00	--	1.6E-01	4E+00
		Exposure Point Total					5E-06					4E+00
	Exposure Medium Total						5E-06					4E+00
Medium Total							5E-06					4E+00

TABLE 9.7a RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Intermediate Groundwater	Plant Area	ALUMINUM					Neurotoxicology	4.4E-03		3.9E-03	8E-03
			ARSENIC	2.0E-07		1.7E-07	4E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	3.1E-02		2.7E-02	6E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	8.0E-04		1.0E-02	1E-02
			COPPER					Gastrointestinal effects	8.5E-04		7.4E-04	2E-03
			IRON					Gastrointestinal effects	5.9E-03		5.2E-03	1E-02
			LEAD					--				
			MANGANESE					CNS (N)	2.7E-04		5.9E-03	6E-03
			MERCURY					Autoimmune effects	1.9E-03		2.4E-02	3E-02
			NICKEL					Decreased body and organ weight (W)	6.4E-04		2.8E-03	3E-03
			VANADIUM					Decreased hair cystine	3.8E-03		1.3E-01	1E-01
			2,4-DICHLOROPHENOL					Decreased delayed hypersensitivity response (O)	5.3E-04		1.1E-02	1E-02
			2-CHLOROPHENOL					Reproductive efforts	7.0E-05		5.7E-04	6E-04
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.9E-06			3E-06
			CHRYSENE	3.7E-11		2.1E-08	2E-08	--				
			INDENO(1,2,3-CD)PYRENE	1.8E-09		1.8E-06	2E-06	--				
			NAPHTHALENE					Decreased body weight (W)	1.5E-04		6.0E-03	6E-03
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.8E-05		2.2E-03	2E-03
			1,2,4-TRICHLOROBENZENE	8.6E-11		5.6E-09	6E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.7E-04		1.1E-02	1E-02
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	2.5E-04		9.6E-03	1E-02
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	4.4E-09		1.7E-07	2E-07	Liver	8.2E-04		3.2E-02	3E-02
			BENZENE	1.2E-07		1.5E-06	2E-06	Reduced lymphocyte count	3.7E-02		4.9E-01	5E-01
			CHLOROBENZENE					Histopathologic changes in liver	2.2E-02		5.7E-01	6E-01
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	4.6E-04		3.1E-03	4E-03
			METHYLENE CHLORIDE	1.4E-09		4.7E-09	6E-09	Liver toxicity (H)	2.2E-04		7.3E-04	1E-03
			Chemical Total	3.2E-07	--	3.8E-06	4E-06		1.1E-01	--	1.3E+00	1E+00
		Exposure Point Total					4E-06					1E+00
	Exposure Medium Total						4E-06					1E+00
Medium Total							4E-06					1E+00
Receptor Total							9E-06				Receptor HI Total	5E+00

Total Risk Across All Media =	9E-06
Total Hazard Across All Media =	5E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	8E-01
Total Kidney HI Across All Media =	2E-02
Total Nervous System Effects HI Across All Media =	2E-01
Total Immune/Lymphocyte Effects HI Across All Media =	4E+00
Total Ocular Effects HI Across All Media =	2E-01

TABLE 9.7b RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils (0-20 ft bgs)	On-Site Ditches	2,3,7,8-TCDD Equivalent	1.6E-05		4.2E-06	2E-05	Developmental effects	7.3E+00		2.0E+00	9E+00
			ARSENIC	8.3E-07		2.2E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.3E-01		3.5E-02	2E-01
			CHROMIUM					None Reported (O)	6.2E-02			6E-02
			COPPER					Gastrointestinal effects	7.9E-03			8E-03
			IRON					Gastrointestinal effects	7.5E-02			7E-02
			LEAD					--				
			MANGANESE					CNS (N)	3.0E-03			3E-03
			MERCURY					Autoimmune effects	1.5E+01			2E+01
			NICKEL					Decreased body and organ weight (W)	1.5E-02			1E-02
			VANADIUM					Decreased hair cystine	6.9E-03			7E-03
			METHYL MERCURY					Developmental neuropsychological impairment (N)	6.6E-03			7E-03
			HIGHLY CHLORINATED PCBs	2.7E-07		3.4E-07	6E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.8E-01		6.0E-01	1E+00
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.1E-08		2.5E-08	5E-08	--				
			BENZO(A)PYRENE	2.0E-07		2.4E-07	4E-07	--				
			BENZO(B)FLUORANTHENE	3.0E-08		3.5E-08	7E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.5E-05		5.3E-05	1E-04
			DIBENZO(A,H)ANTHRACENE	4.4E-08		5.2E-08	1E-07	--				
			INDENO(1,2,3-CD)PYRENE	1.2E-08		1.4E-08	3E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.5E-05		7.6E-05	1E-04
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	3.7E-10			4E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	7.3E-04			7E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	2.0E-03			2E-03
			1,3-DICHLOROBENZENE					--				

TABLE 9.7b RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils (0-20 ft bgs)	On-Site Ditches	1,4-DICHLOROBENZENE	3.2E-08			3E-08	Liver	6.0E-03			6E-03
			BENZENE	9.1E-11			9E-11	Reduced lymphocyte count	2.9E-05			3E-05
			CHLOROBENZENE					Histopathologic changes in liver	3.4E-03			3E-03
			Chemical Total	1.7E-05	--	5.2E-06	2E-05		2.4E+01	--	2.6E+00	3E+01
		Exposure Point Total					2E-05					3E+01
	Exposure Medium Total						2E-05					3E+01
Medium Total							2E-05					3E+01
Receptor Total							2E-05				Receptor HI Total	3E+01

Total Risk Across All Media =	2E-05
Total Hazard Across All Media =	3E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	9E-03
Total Kidney HI Across All Media =	2E-04
Total Nervous System Effects HI Across All Media =	2E-01
Total Immune/Lymphocyte Effects HI Across All Media =	2E+01
Total Ocular Effects HI Across All Media =	1E+00

TABLE 9.7c RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils (0-20 ft bgs)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	5.2E-04		1.4E-04	7E-04	Developmental effects	2.4E+02		6.6E+01	3E+02
			ARSENIC	2.2E-07		5.8E-08	3E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	3.4E-02		9.1E-03	4E-02
			CHROMIUM					None Reported (O)	4.4E-03			4E-03
			IRON					Gastrointestinal effects	1.2E-02			1E-02
			MANGANESE					CNS (N)	2.3E-03			2E-03
			MERCURY					Autoimmune effects	4.8E-01			5E-01
			VANADIUM					Decreased hair cystine	1.3E-03			1E-03
			HIGHLY CHLORINATED PCBs	1.5E-07		1.9E-07	3E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep	2.7E-01		3.4E-01	6E-01
			LESS CHLORINATED PCBs	3.0E-08		3.8E-08	7E-08	Reduced birth weights (W)	1.5E-02		1.9E-02	3E-02
			ALDRIN	5.9E-09			6E-09	Liver toxicity (H)	8.1E-04			8E-04
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.6E-08		1.9E-08	4E-08	--				
			BENZO(A)PYRENE	1.5E-07		1.8E-07	3E-07	--				
			BENZO(B)FLUORANTHENE	2.8E-08		3.3E-08	6E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.6E-05		4.2E-05	8E-05
			DIBENZO(A,H)ANTHRACENE	3.1E-08		3.7E-08	7E-08	--				
			HEXACHLOROBENZENE	2.7E-08		2.4E-08	5E-08	Hepatic (H)	1.5E-03		1.3E-03	3E-03
			INDENO(1,2,3-CD)PYRENE	8.9E-09		1.0E-08	2E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.1E-05		7.2E-05	1E-04
			1,2,4-TRICHLOROBENZENE	1.0E-09			1E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.9E-03			2E-03
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	8.4E-04			8E-04
			1,4-DICHLOROBENZENE	1.3E-09			1E-09	Liver	2.5E-04			2E-04
			Chemical Total	5.2E-04	--	1.4E-04	7E-04		2.5E+02	--	6.6E+01	3E+02
		Exposure Point Total					7E-04					3E+02
	Exposure Medium Total						7E-04					3E+02
Medium Total							7E-04					3E+02
Receptor Total							7E-04				Receptor HI Total	3E+02

Total Risk Across All Media =	7E-04
Total Hazard Across All Media =	3E+02

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	4E-03
Total Kidney HI Across All Media =	2E-04
Total Nervous System Effects HI Across All Media =	4E-02
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	6E-01

TABLE 9.7d RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
STATE FAIR BLVD/NORHTWEST OFF-SITE/ OUTFALL 004 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	2,3,7,8-TCDD Equivalent	1.1E-06		3.0E-07	1E-06	Developmental effects	5.1E-01		1.4E-01	6E-01
			MERCURY					Autoimmune effects	3.7E-01			4E-01
								Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes				
			HIGHLY CHLORINATED PCBs	4.2E-08		5.2E-08	9E-08		7.3E-02		9.2E-02	2E-01
			LESS CHLORINATED PCBs	1.9E-08		2.4E-08	4E-08	Reduced birth weights (W)	9.5E-03		1.2E-02	2E-02
			HEXACHLOROBENZENE	1.6E-08		1.5E-08	3E-08	Hepatic (H)	8.8E-04		8.0E-04	2E-03
			1,2,3-TRICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.8E-07			2E-07	Liver	3.3E-02			3E-02
			BENZENE	1.1E-12			1E-12	Reduced lymphocyte count	3.4E-07			3E-07
			TRICHLOROETHENE	3.2E-09			3E-09	--				
			Chemical Total	1.4E-06	--	3.9E-07	2E-06		1.0E+00	--	2.4E-01	1E+00
		Exposure Point Total					2E-06					1E+00
	Exposure Medium Total						2E-06					1E+00
Medium Total							2E-06					1E+00
Receptor Total							2E-06				Receptor HI Total	1E+00

Total Risk Across All Media =	2E-06
Total Hazard Across All Media =	1E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	3E-02
Total Immune/Lymphocyte Effects HI Across All Media =	5E-01
Total Ocular Effects HI Across All Media =	2E-01

TABLE 9.7e RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
LAKESHORE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Lakeshore Area	2,3,7,8-TCDD Equivalent	1.6E-07		4.3E-08	2E-07	Developmental effects	7.4E-02		2.0E-02	9E-02
			ALUMINUM					Neurotoxicology	8.0E-03			8E-03
			ARSENIC	2.3E-07		6.2E-08	3E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	3.6E-02		9.6E-03	5E-02
			CHROMIUM					None Reported (O)	1.4E-02			1E-02
			IRON					Gastrointestinal effects	2.4E-02			2E-02
			MANGANESE					CNS (N)	2.7E-03			3E-03
			MERCURY					Autoimmune effects	9.9E-03			1E-02
			VANADIUM					Decreased hair cystine	2.2E-03			2E-03
			ZINC					Decreased ESOD (B)	3.3E-04			3E-04
			HIGHLY CHLORINATED PCBs	1.0E-07		1.3E-07	2E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	1.8E-01		2.3E-01	4E-01
			ENDOSULFAN I					Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	4.0E-06			4E-06
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.1E-07		1.3E-07	2E-07	--				
			BENZO(A)PYRENE	9.0E-07		1.1E-06	2E-06	--				
			BENZO(B)FLUORANTHENE	1.2E-07		1.4E-07	3E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	7.6E-05		8.9E-05	2E-04
			BENZO(K)FLUORANTHENE	3.0E-09		3.6E-09	7E-09	--				
			DIBENZO(A,H)ANTHRACENE	1.2E-07		1.4E-07	3E-07	--				
			INDENO(1,2,3-CD)PYRENE	2.4E-08		2.8E-08	5E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	8.7E-04		1.0E-03	2E-03
			Chemical Total	1.8E-06	--	1.7E-06	4E-06		3.5E-01	--	2.6E-01	6E-01
		Exposure Point Total					4E-06					6E-01
	Exposure Medium Total						4E-06					6E-01
Medium Total							4E-06					6E-01

TABLE 9.7e RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
LAKESHORE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Shallow Groundwater	Lakeshore Area	ARSENIC	3.4E-08		3.0E-08	6E-08	Hyperpigmentation (In); Vascular (V); PNS (N)	5.2E-03		4.6E-03	1E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.4E-04		1.8E-03	2E-03
			BERYLLIUM					Small intestinal lesions	1.2E-03		1.6E-01	2E-01
			CHROMIUM					None Reported (O)	1.0E-03		7.3E-02	7E-02
			IRON					Gastrointestinal effects	3.7E-04		3.3E-04	7E-04
			MANGANESE					CNS (N)	6.0E-05		1.3E-03	1E-03
			MERCURY					Autoimmune effects	1.8E-03		2.2E-02	2E-02
			VANADIUM					Decreased hair cystine	7.7E-04		2.6E-02	3E-02
			2,4-DICHLOROPHENOL					Decreased delayed hypersensitivity response (O)	6.8E-04		1.4E-02	2E-02
			2-CHLOROPHENOL					Reproductive efforts	7.2E-04		5.8E-03	7E-03
			2-METHYLNAPHTHALENE					Pulmonary alveolar proteinosis	1.3E-04			1E-04
			4-CHLORO-3-METHYLPHENOL					--				
			4-METHYLPHENOL					--				
			NAPHTHALENE					Decreased body weight (W)	6.2E-04		2.6E-02	3E-02
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.9E-06		7.3E-04	7E-04
			1,2,4-TRICHLOROBENZENE	9.5E-11		6.2E-09	6E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.8E-04		1.2E-02	1E-02
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	6.5E-03		2.4E-01	3E-01
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	8.2E-08		3.1E-06	3E-06	Liver	1.5E-02		5.8E-01	6E-01
			BENZENE	2.1E-06		2.7E-05	3E-05	Reduced lymphocyte count	6.6E-01		8.6E+00	9E+00
			CARBON DISULFIDE					Fetal toxicity/malformations	2.2E-04		3.3E-03	3E-03
			CHLOROBENZENE					Histopathologic changes in liver	1.1E-01		2.8E+00	3E+00
			TOLUENE					Increased kidney weight (R)	3.0E-02		8.2E-01	8E-01
			Chemical Total	2.2E-06	--	3.0E-05	3E-05		8.4E-01	--	1.3E+01	1E+01
		Exposure Point Total					3E-05					1E+01
	Exposure Medium Total						3E-05					1E+01
Medium Total							3E-05					1E+01
Receptor Total							4E-05				Receptor HI Total	1E+01

Total Risk Across All Media =	4E-05
Total Hazard Across All Media =	1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	4E+00
Total Kidney HI Across All Media =	8E-01
Total Nervous System Effects HI Across All Media =	7E-02
Total Immune/Lymphocyte Effects HI Across All Media =	1E+01
Total Nasal/Respiratory Effects HI Across All Media =	1E-04
Total Ocular Effects HI Across All Media =	4E-01

TABLE 9.7f RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Petroleum Storage Area	ALUMINUM					Neurotoxicology	8.8E-03			9E-03
			ARSENIC	8.0E-07		2.2E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.2E-01		3.4E-02	2E-01
			CHROMIUM					None Reported (O)	6.7E-03			7E-03
			IRON					Gastrointestinal effects	3.4E-02			3E-02
			MANGANESE					CNS (N)	3.1E-03			3E-03
			MERCURY					Autoimmune effects	3.3E-02			3E-02
			VANADIUM					Decreased hair cystine	1.9E-03			2E-03
			HIGHLY CHLORINATED PCBs	2.0E-08		2.5E-08	5E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep	3.5E-02		4.4E-02	8E-02
			DELTA-BHC	1.0E-10			1E-10	--				
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	4.0E-08		4.7E-08	9E-08	--				
			BENZO(A)PYRENE	3.8E-07		4.4E-07	8E-07	--				
			BENZO(B)FLUORANTHENE	5.7E-08		6.6E-08	1E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.2E-04		1.4E-04	3E-04
			BENZO(K)FLUORANTHENE	1.7E-09		2.0E-09	4E-09	--				
			DIBENZO(A,H)ANTHRACENE	9.6E-08		1.1E-07	2E-07	--				
			INDENO(1,2,3-CD)PYRENE	3.2E-08		3.7E-08	7E-08	--				
			NAPHTHALENE					Decreased body weight (W)	1.1E-03		1.3E-03	2E-03
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.1E-04		1.3E-04	2E-04
			BENZENE	7.8E-11			8E-11	Reduced lymphocyte count	2.5E-05			2E-05
			Chemical Total	1.4E-06	--	9.5E-07	2E-06		2.5E-01	--	7.9E-02	3E-01
		Exposure Point Total					2E-06					3E-01
	Exposure Medium Total						2E-06					3E-01
Medium Total							2E-06					3E-01
Groundwater	Shallow Groundwater	Petroleum Storage Area	ALUMINUM					Neurotoxicology	2.3E-03		2.0E-03	4E-03
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.4E-04		1.8E-03	2E-03
			CHROMIUM					None Reported (O)	1.5E-03		1.1E-01	1E-01
			COPPER					Gastrointestinal effects	3.9E-04		3.5E-04	7E-04
			IRON					Gastrointestinal effects	5.7E-03		5.0E-03	1E-02
			LEAD					--				
			MANGANESE					CNS (N)	1.1E-03		2.4E-02	2E-02
			MERCURY					Autoimmune effects	7.2E-04		9.0E-03	1E-02
			NICKEL					Decreased body and organ weight (W)	3.0E-04		1.3E-03	2E-03
			VANADIUM					Decreased hair cystine	5.8E-04		2.0E-02	2E-02
			2-METHYLNAPHTHALENE					Pulmonary alveolar proteinosis	5.3E-04			5E-04
			DIBENZOFURAN					Reduced length and organ weight. Excess abdominal fat (O).	1.8E-04			2E-04

TABLE 9.7f RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Shallow Groundwater	Petroleum Storage Area	NAPHTHALENE					Decreased body weight (W)	1.0E-03		4.2E-02	4E-02
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.8E-05		2.2E-03	2E-03
			BENZENE	2.0E-07		2.6E-06	3E-06	Reduced lymphocyte count	6.4E-02		8.3E-01	9E-01
			XYLENES, TOTAL					Decreased body weight (W), increased mortality (M)	1.8E-05			2E-05
			Chemical Total	2.0E-07	--	2.6E-06	3E-06		7.8E-02	--	1.0E+00	1E+00
		Exposure Point Total					3E-06					1E+00
	Exposure Medium Total						3E-06					1E+00
Medium Total							3E-06					1E+00
Receptor Total							5E-06				Receptor HI Total	1E+00

Total Risk Across All Media = 5E-06

Total Hazard Across All Media = 1E+00

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Kidney HI Across All Media =	5E-03
Total Nervous System Effects HI Across All Media =	2E-01
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Nasal/Respiratory Effects HI Across All Media =	5E-04
Total Ocular Effects HI Across All Media =	8E-02

TABLE 9.7g RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Chlorobenzene Hot-Spot Area	ARSENIC	2.1E-07		5.7E-08	3E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	3.3E-02		8.9E-03	4E-02
			CHROMIUM					None Reported (O)	7.2E-03			7E-03
			IRON					Gastrointestinal effects	2.5E-02			3E-02
			MANGANESE					CNS (N)	2.6E-03			3E-03
			MERCURY					Autoimmune effects	1.2E-02			1E-02
			VANADIUM					Decreased hair cystine	1.2E-03			1E-03
			HIGHLY CHLORINATED PCBs	1.7E-06		2.1E-06	4E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep	3.0E+00		3.8E+00	7E+00
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.7E-07		2.0E-07	4E-07	--				
			BENZO(A)PYRENE	7.3E-07		8.5E-07	2E-06	--				
			BENZO(B)FLUORANTHENE	1.1E-07		1.3E-07	2E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.8E-04		2.1E-04	4E-04
			BENZO(K)FLUORANTHENE	5.7E-09		6.6E-09	1E-08	--				
			DIBENZO(A,H)ANTHRACENE	2.0E-07		2.3E-07	4E-07	--				
			HEXACHLOROBENZENE	8.1E-08		7.3E-08	2E-07	Hepatic (H)	4.4E-03		4.0E-03	8E-03
			INDENO(1,2,3-CD)PYRENE	4.7E-08		5.5E-08	1E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.2E-04		6.1E-04	1E-03
			1,2,4-TRICHLOROBENZENE	1.3E-07			1E-07	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	2.5E-01			3E-01
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.3E-02			1E-02
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.3E-07			1E-07	Liver	2.4E-02			2E-02
			BENZENE	4.1E-10			4E-10	Reduced lymphocyte count	1.3E-04			1E-04
			CHLOROBENZENE					Histopathologic changes in liver	2.3E-03			2E-03
			Chemical Total	4E-06	--	4E-06	7E-06		3E+00	--	4E+00	7E+00
		Exposure Point Total					7E-06					7E+00
	Exposure Medium Total						7E-06					7E+00
Medium Total							7E-06					7E+00
Groundwater	Shallow Groundwater	Chlorobenzene Hot-Spot Area	ALUMINUM					Neurotoxicology	2.6E-03		2.3E-03	5E-03
			ARSENIC	3.4E-07		3.0E-07	6E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	5.2E-02		4.6E-02	1E-01
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	2.0E-04		2.5E-03	3E-03
			CHROMIUM					None Reported (O)	1.3E-02		9.3E-01	9E-01
			COBALT					--				
			COPPER					Gastrointestinal effects	3.4E-04		3.0E-04	6E-04
			CYANIDE					Weight loss, thyroid effects, myelin degeneration	1.9E-03		1.7E-03	4E-03

TABLE 9.7g RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Shallow Groundwater	Chlorobenzene Hot-Spot Area	IRON					Gastrointestinal effects	1.1E-02		9.5E-03	2E-02
			LEAD					--				
			MANGANESE					CNS (N)	1.1E-03		2.4E-02	2E-02
			MERCURY					Autoimmune effects	7.3E-04		9.2E-03	1E-02
			NICKEL					Decreased body and organ weight (W)	1.8E-03		7.8E-03	1E-02
			VANADIUM					Decreased hair cystine	1.3E-03		4.3E-02	4E-02
			HEXACHLOROBENZENE	4.0E-09		8.3E-07	8E-07	Hepatic (H)	2.2E-04		4.6E-02	5E-02
			NAPHTHALENE					Decreased body weight (W)	2.4E-05		9.8E-04	1E-03
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.9E-06		7.3E-04	7E-04
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	6.0E-10		3.9E-08	4E-08	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.2E-03		7.7E-02	8E-02
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.1E-03		4.1E-02	4E-02
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.4E-08		5.4E-07	6E-07	Liver	2.6E-03		1.0E-01	1E-01
			BENZENE	2.3E-07		3.0E-06	3E-06	Reduced lymphocyte count	7.3E-02		9.5E-01	1E+00
			CHLOROBENZENE					Histopathologic changes in liver	1.8E-02		4.5E-01	5E-01
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	8.8E-06		5.9E-05	7E-05
			Chemical Total	5.8E-07	--	4.7E-06	5E-06		1.8E-01	--	2.7E+00	3E+00
		Exposure Point Total					5E-06					3E+00
	Exposure Medium Total						5E-06					3E+00
Medium Total							5E-06					3E+00
Receptor Total							1E-05				Receptor HI Total	1E+01

Total Risk Across All Media =	1E-05
Total Hazard Across All Media =	1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	7E-01
Total Kidney HI Across All Media =	5E-03
Total Nervous System Effects HI Across All Media =	2E-01
Total Immune/Lymphocyte Effects HI Across All Media =	8E+00
Total Ocular Effects HI Across All Media =	7E+00

TABLE 9.7h RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Upper Sediment (0-10 ft bgs)	Tributary 5A	2,3,7,8-TCDD Equivalent	5.5E-08		1.5E-08	7E-08	Developmental effects	2.6E-02		7.0E-03	3E-02
			ALUMINUM					Neurotoxicology	7.8E-03			8E-03
			ANTIMONY					Longevity (M); Blood glucose (E); Cholesterol (E)	6.2E-02			6E-02
			ARSENIC	7.0E-07		1.9E-07	9E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	1.1E-01		2.9E-02	1E-01
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	4.5E-03			4E-03
			CHROMIUM					None Reported (O)	4.0E+00			4E+00
			COBALT					--				
			COPPER					Gastrointestinal effects	7.0E-03			7E-03
			IRON					Gastrointestinal effects	2.2E-01			2E-01
			LEAD					--				
			MANGANESE					CNS (N)	8.6E-03			9E-03
			NICKEL					Decreased body and organ weight (W)	8.3E-02			8E-02
			SELENIUM					Clinical selenosis	4.5E-03			5E-03
			VANADIUM					Decreased hair cystine	1.0E+00			1E+00
			HIGHLY CHLORINATED PCBs	1.5E-07		2.0E-07	4E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep	2.7E-01		3.4E-01	6E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	3.3E-08		3.9E-08	7E-08	--				
			BENZO(A)PYRENE	4.6E-07		5.4E-07	1E-06	--				
			BENZO(B)FLUORANTHENE	5.8E-08		6.8E-08	1E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	7.3E-05		8.5E-05	2E-04
			BENZO(K)FLUORANTHENE	2.3E-09		2.7E-09	5E-09	--				
			DIBENZO(A,H)ANTHRACENE	1.1E-07		1.3E-07	2E-07	--				
			INDENO(1,2,3-CD)PYRENE	2.1E-08		2.5E-08	5E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.6E-04		1.8E-04	3E-04
			BENZENE	9.9E-09			1E-08	Reduced lymphocyte count	3.1E-03			3E-03
			Chemical Total	1.6E-06	--	1.2E-06	3E-06		5.8E+00	--	3.8E-01	6E+00
		Exposure Point Total					3E-06					6E+00
	Exposure Medium Total						3E-06					6E+00
Medium Total							3E-06					6E+00

TABLE 9.7h RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Surface Water	Tributary 5A	ANTIMONY					Longevity (M); Blood glucose (E); Cholesterol (E)	6.1E-04		3.6E-03	4E-03
			ARSENIC	8.7E-09		7.7E-09	2E-08	Hyperpigmentation (In); Vascular (V); PNS (N)	1.4E-03		1.2E-03	3E-03
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	7.9E-05		1.0E-03	1E-03
			CHROMIUM					None Reported (O)	9.7E-04		6.8E-02	7E-02
			COBALT					--				
			MANGANESE					CNS (N)	6.5E-05		1.4E-03	1E-03
			NICKEL					Decreased body and organ weight (W)	2.3E-03		1.0E-02	1E-02
			VANADIUM					Decreased hair cystine	3.4E-03		1.2E-01	1E-01
			DELTA-BHC	4.3E-11			4E-11	--				
			DIELDRIN	3.4E-10		1.1E-08	1E-08	Hepatic (H)	3.0E-05		9.5E-04	1E-03
			BIS(2-ETHYLHEXYL)PHTHALATE	1.5E-08		1.1E-06	1E-06	Increased relative liver weight (H)	3.8E-03		2.7E-01	3E-01
			NAPHTHALENE					Decreased body weight (W)	4.4E-06		1.8E-04	2E-04
			N-NITROSODIPHENYLAMINE	4.3E-10		9.6E-09	1E-08	--				
			PENTACHLOROPHENOL	9.1E-10		5.0E-07	5E-07	Liver (H) and kidney (R) pathology	1.8E-05		9.7E-03	1E-02
			1,4-DICHLOROBENZENE	1.4E-11		5.2E-10	5E-10	Liver	2.5E-06		9.7E-05	1E-04
			BENZENE	3.7E-09		4.9E-08	5E-08	Reduced lymphocyte count	1.2E-03		1.6E-02	2E-02
			BROMODICHLOROMETHANE	1.6E-10		7.7E-10	9E-10	Renal cytomegaly (R)	8.8E-06		4.3E-05	5E-05
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	9.8E-05		6.6E-04	8E-04
			Chemical Total	3.0E-08	--	1.7E-06	2E-06		1.4E-02	--	5.0E-01	5E-01
		Exposure Point Total					2E-06					5E-01
	Exposure Medium Total						2E-06					5E-01
Medium Total							2E-06					5E-01
Receptor Total							4E-06				Receptor HI Total	7E+00

Total Risk Across All Media = 4E-06

Total Hazard Across All Media = 7E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	3E-01
Total Kidney HI Across All Media =	2E-02
Total Nervous System Effects HI Across All Media =	2E-01
Total Immune/Lymphocyte Effects HI Across All Media =	6E-01
Total Ocular Effects HI Across All Media =	6E-01

TABLE 9.8 RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
POTABLE WATER - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	ALUMINUM					Neurotoxicology	7.9E-01			8E-01
			ARSENIC	2.2E-03			2E-03	Hyperpigmentation (In); Vascular (V); PNS (N)	1.1E+01			1E+01
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.8E-01			2E-01
			BERYLLIUM					Small intestinal lesions	7.6E-02			8E-02
			CHROMIUM					None Reported (O)	3.5E+00			3E+00
			COBALT					--				
			COPPER					Gastrointestinal effects	5.6E-02			6E-02
			CYANIDE					Weight loss, thyroid effects, myelin degeneration	1.3E-01			1E-01
			IRON					Gastrointestinal effects	2.4E+00			2E+00
			LEAD					--				
			MANGANESE					CNS (N)	5.6E-01			6E-01
			MERCURY					Autoimmune effects	1.8E+00			2E+00
			NICKEL					Decreased body and organ weight (W)	2.0E-01			2E-01
			SELENIUM					Clinical selenosis	2.6E-02			3E-02
			SILVER					Argyria (In)	3.2E-02			3E-02
			VANADIUM					Decreased hair cystine	1.8E+00			2E+00
			ZINC					Decreased ESOD (B)	3.5E-02			3E-02
			2,4,6-TRICHLOROPHENOL	3.9E-07			4E-07	No adverse effects observed (O)	8.2E-02			8E-02
			2,4-DICHLOROPHENOL					Decreased delayed hypersensitivity response (O)	7.4E-02			7E-02
			2-CHLOROPHENOL					Reproductive efforts	1.5E-01			1E-01
			2-METHYLNAPHTHALENE					Pulmonary alveolar proteinosis	4.5E-02			5E-02
			2-NITROPHENOL					--				
			4-CHLORO-3-METHYLPHENOL					--				
			4-METHYLPHENOL					--				
			4-NITROPHENOL					--				
			BENZO(B)FLUORANTHENE	4.3E-05			4E-05	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	9.1E-04			9E-04
			BENZO(K)FLUORANTHENE	1.7E-06			2E-06	--				
			BIS(2-ETHYLHEXYL)PHTHALATE	6.4E-06			6E-06	Increased relative liver weight (H)	5.3E-02			5E-02
			CHRYSENE	3.4E-07			3E-07	--				
			DIBENZOFURAN					Reduced length and organ weight. Excess abdominal fat (O).	1.4E-01			1E-01
			HEXACHLOROBENZENE	3.8E-05			4E-05	Hepatic (H)	6.8E-02			7E-02
			INDENO(1,2,3-CD)PYRENE	1.7E-05			2E-05	--				
			NAPHTHALENE					Decreased body weight (W)	1.6E-01			2E-01
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.1E-02			1E-02

TABLE 9.8 RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
POTABLE WATER - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	1,1,2,2-TETRACHLOROETHANE	2.3E-06			2E-06	--				
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	4.8E-06			5E-06	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	3.1E-01			3E-01
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	6.4E-01			6E-01
			1,2-DICHLOROETHANE	3.2E-06			3E-06	Cardiac arrhythmia, bronchitis, central nervous system depression, and injury to the liver, kidneys, and gastrointestinal tract	4.1E-03			4E-03
			1,2-DICHLOROPROPANE	9.2E-07			9E-07	Liver (H)	6.6E-04			7E-04
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	3.5E-04			4E-04	Liver	2.2E+00			2E+00
			ACETONE					Nephropathy	1.2E-02			1E-02
			BENZENE	1.1E-02			1E-02	Reduced lymphocyte count	1.2E+02			1E+02
			CARBON DISULFIDE					Fetal toxicity/malformations	1.4E-02			1E-02
			CHLOROBENZENE					Histopathologic changes in liver	2.3E+01			2E+01
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	2.2E-02			2E-02
			METHYLENE CHLORIDE	6.5E-06			7E-06	Liver toxicity (H)	3.4E-02			3E-02
			TETRACHLOROETHENE	2.5E-05			3E-05	Hepatotoxicity in mice (H), weight gain in rats	1.1E-02			1E-02
			TOLUENE					Increased kidney weight (R)	5.0E+00			5E+00
			XYLENES, TOTAL					Decreased body weight (W), increased mortality (M)	9.8E-04			1E-03
			Chemical Total	1.4E-02	--	--	1E-02		1.7E+02	--	--	2E+02
		Exposure Point Total					1E-02					2E+02
	Exposure Medium Total						1E-02					2E+02
Medium Total							1E-02					2E+02
Receptor Total							1E-02				Receptor HI Total	2E+02

Total Risk Across All Media =	1E-02
Total Hazard Across All Media =	2E+02

Total Liver HI Across All Media =	3E+01
Total Kidney HI Across All Media =	5E+00
Total Nervous System Effects HI Across All Media =	1E+01
Total Immune/Lymphocyte Effects HI Across All Media =	1E+02
Total Nasal/Respiratory Effects HI Across All Media =	5E-02
Total Other Effects HI Across All Media =	1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 9.9 RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
POTABLE WATER - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Child (Ages 0-6 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	ALUMINUM					Neurotoxicology	1.8E+00			2E+00
			ARSENIC	1.0E-03			1E-03	Hyperpigmentation (In); Vascular (V); PNS (N)	2.6E+01			3E+01
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	4.2E-01			4E-01
			BERYLLIUM					Small intestinal lesions	1.8E-01			2E-01
			CHROMIUM					None Reported (O)	8.1E+00			8E+00
			COBALT					--				
			COPPER					Gastrointestinal effects	1.3E-01			1E-01
			CYANIDE					Weight loss, thyroid effects, myelin degeneration	2.9E-01			3E-01
			IRON					Gastrointestinal effects	5.6E+00			6E+00
			LEAD					--				
			MANGANESE					CNS (N)	1.3E+00			1E+00
			MERCURY					Autoimmune effects	4.3E+00			4E+00
			NICKEL					Decreased body and organ weight (W)	4.8E-01			5E-01
			SELENIUM					Clinical selenosis	6.1E-02			6E-02
			SILVER					Argyria (In)	7.4E-02			7E-02
			VANADIUM					Decreased hair cystine	4.2E+00			4E+00
			ZINC					Decreased ESOD (B)	8.1E-02			8E-02
			2,4,6-TRICHLOROPHENOL	1.8E-07			2E-07	No adverse effects observed (O)	1.9E-01			2E-01
			2,4-DICHLOROPHENOL					Decreased delayed hypersensitivity response (O)	1.7E-01			2E-01
			2-CHLOROPHENOL					Reproductive efforts	3.4E-01			3E-01
			2-METHYLNAPHTHALENE					Pulmonary alveolar proteinosis	1.1E-01			1E-01
			2-NITROPHENOL					--				
			4-CHLORO-3-METHYLPHENOL					--				
			4-METHYLPHENOL					--				
			4-NITROPHENOL					--				
			BENZO(B)FLUORANTHENE	1.7E-04			2E-04	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.1E-03			2E-03
			BENZO(K)FLUORANTHENE	6.6E-06			7E-06	--				
			BIS(2-ETHYLHEXYL)PHTHALATE	3.0E-06			3E-06	Increased relative liver weight (H)	1.2E-01			1E-01
			CHRYSENE	1.3E-06			1E-06	--				
			DIBENZOFURAN					Reduced length and organ weight. Excess abdominal fat (O).	3.2E-01			3E-01
			HEXACHLOROBENZENE	1.8E-05			2E-05	Hepatic (H)	1.6E-01			2E-01
			INDENO(1,2,3-CD)PYRENE	6.6E-05			7E-05	--				
			NAPHTHALENE					Decreased body weight (W)	3.7E-01			4E-01

TABLE 9.9 RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
POTABLE WATER - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Child (Ages 0-6 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	'Site Wide Groundwater (All Depths)	Potable Water	PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.6E-02			3E-02
			1,1,2,2-TETRACHLOROETHANE	1.1E-06			1E-06	--				
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	2.3E-06			2E-06	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	7.3E-01			7E-01
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.5E+00			1E+00
			1,2-DICHLOROETHANE	1.5E-06			1E-06	Cardiac arrhythmia, bronchitis, central nervous system depression, and injury to the liver, kidneys, and gastrointestinal tract	9.6E-03			1E-02
			1,2-DICHLOROPROPANE	4.3E-07			4E-07	Liver (H)	1.5E-03			2E-03
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.7E-04			2E-04	Liver	5.1E+00			5E+00
			ACETONE					Nephropathy	2.8E-02			3E-02
			BENZENE	5.3E-03			5E-03	Reduced lymphocyte count	2.8E+02			3E+02
			CARBON DISULFIDE					Fetal toxicity/malformations	3.3E-02			3E-02
			CHLOROBENZENE					Histopathologic changes in liver	5.4E+01			5E+01
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	5.1E-02			5E-02
			METHYLENE CHLORIDE	3.0E-06			3E-06	Liver toxicity (H)	7.9E-02			8E-02
			TETRACHLOROETHENE	1.2E-05			1E-05	Hepatotoxicity in mice (H), weight gain in rats	2.6E-02			3E-02
			TOLUENE					Increased kidney weight (R)	1.2E+01			1E+01
			XYLENES, TOTAL					Decreased body weight (W), increased mortality (M)	2.3E-03			2E-03
			Chemical Total	6.7E-03	--	--	7E-03		4.1E+02	--	--	4E+02
		Exposure Point Total					7E-03					4E+02
	Exposure Medium Total						7E-03					4E+02
Medium Total							7E-03					4E+02
Receptor Total							7E-03				Receptor HI Total	4E+02

Total Risk Across All Media =	7E-03
Total Hazard Across All Media =	4E+02

Total Liver HI Across All Media =	6E+01
Total Kidney HI Across All Media =	1E+01
Total Nervous System Effects HI Across All Media =	3E+01
Total Immune/Lymphocyte Effects HI Across All Media =	3E+02
Total Nasal/Respiratory Effects HI Across All Media =	1E-01
Total Other Effects HI Across All Media =	2E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Attachment A
RAGS Table 9 CT Series

TABLE 9.1a CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	2,3,7,8-TCDD Equivalent	2.5E-06		4.8E-07	3E-06	Developmental effects	1.3E-01		2.5E-02	2E-01
			ALUMINUM					Neurotoxicology	1.6E-03			2E-03
			ARSENIC	9.9E-07		1.9E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.7E-02		3.3E-03	2E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	3.3E-04			3E-04
			CHROMIUM					None Reported (O)	1.2E-03			1E-03
			IRON					Gastrointestinal effects	6.3E-03			6E-03
			MANGANESE					CNS (N)	4.8E-04			5E-04
			MERCURY					Autoimmune effects	6.2E-01			6E-01
			NICKEL					Decreased body and organ weight (W)	3.6E-02			4E-02
			VANADIUM					Decreased hair cystine	4.9E-04			5E-04
			HIGHLY CHLORINATED PCBs	1.6E-07		1.4E-07	3E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	3.0E-02		2.7E-02	6E-02
			DELTA-BHC	3.0E-07			3E-07	--				
			DIELDRIN	1.5E-06			1E-06	Hepatic (H)	1.4E-02			1E-02
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	5.0E-07		4.1E-07	9E-07	--				
			BENZO(A)PYRENE	6.4E-06		5.3E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	6.9E-07		5.7E-07	1E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.7E-05		5.6E-05	1E-04
			BENZO(K)FLUORANTHENE	3.1E-08		2.6E-08	6E-08	--				
			DIBENZO(A,H)ANTHRACENE	1.2E-06		1.0E-06	2E-06	--				
			HEXACHLOROBENZENE	2.9E-07		1.8E-07	5E-07	Hepatic (H)	1.7E-03		1.1E-03	3E-03
			HEXACHLOROBUTADIENE	3.5E-09		2.2E-09	6E-09	--				
			INDENO(1,2,3-CD)PYRENE	5.6E-07		4.7E-07	1E-06	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	9.6E-05		7.9E-05	2E-04
			1,2,4-TRICHLOROBENZENE	3.8E-10			4E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	8.1E-05			8E-05
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	8.4E-04			8E-04
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	3.3E-07			3E-07	Liver	6.8E-03			7E-03

TABLE 9.1a CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	BENZENE	8.3E-12			8E-12	Reduced lymphocyte count	2.9E-07			3E-07
			CHLOROBENZENE					Histopathologic changes in liver	1.4E-03			1E-03
			Chemical Total	1.5E-05	--	8.8E-06	2E-05		8.7E-01	--	5.7E-02	9E-01
		Exposure Point Total					2E-05					9E-01
	Exposure Medium Total						2E-05					9E-01
Medium Total							2E-05					9E-01
Receptor Total							2E-05				Receptor HI Total	9E-01

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 9E-01

TABLE 9.1b CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	On-Site Ditches
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	On-Site Ditches	2,3,7,8-TCDD Equivalent	2.8E-05		5.4E-06	3E-05	Developmental effects	1.5E+00		2.8E-01	2E+00
			ARSENIC	1.5E-06		2.9E-07	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.6E-02		5.0E-03	3E-02
			CHROMIUM					None Reported (O)	1.2E-02			1E-02
			COPPER					Gastrointestinal effects	1.6E-03			2E-03
			IRON					Gastrointestinal effects	1.5E-02			2E-02
			LEAD					--				
			MANGANESE					CNS (N)	6.0E-04			6E-04
			MERCURY					Autoimmune effects	2.3E+00			2E+00
			NICKEL					Decreased body and organ weight (W)	2.9E-03			3E-03
			VANADIUM					Decreased hair cystine	1.4E-03			1E-03
			METHYL MERCURY					Developmental neuropsychological impairment (N)	1.3E-03			1E-03
			HIGHLY CHLORINATED PCBs	7.0E-07		6.3E-07	1E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.4E-01		1.2E-01	3E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	9.5E-08		5.0E-07	6E-07	--				
			BENZO(A)PYRENE	1.1E-06		9.1E-07	2E-06	--				
			BENZO(B)FLUORANTHENE	1.6E-07		1.4E-07	3E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	9.1E-06		7.5E-06	2E-05
			DIBENZO(A,H)ANTHRACENE	2.4E-07		2.0E-07	4E-07	--				
			INDENO(1,2,3-CD)PYRENE	6.6E-08		5.5E-08	1E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.3E-05		1.1E-05	2E-05
			Chemical Total	3.2E-05	--	8.1E-06	4E-05		4.0E+00	--	4.1E-01	4E+00
		Exposure Point Total					4E-05					4E+00
	Exposure Medium Total						4E-05					4E+00
Medium Total							4E-05					4E+00
Receptor Total							4E-05				Receptor HI Total	4E+00

Total Risk Across All Media =	4E-05
Total Hazard Across All Media =	4E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Kidney HI Across All Media =	4E-05
Total Nervous System Effects HI Across All Media =	3E-02
Total Immune/Lymphocyte Effects HI Across All Media =	3E+00
Total Ocular Effects HI Across All Media =	3E-01

TABLE 9.1c CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Expsosure Area:	Former Chlorination Building
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	2.4E-04		4.5E-05	3E-04	Developmental effects	1.2E+01		2.3E+00	1E+01
			ARSENIC	3.9E-07		7.5E-08	5E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	6.8E-03		1.3E-03	8E-03
			CHROMIUM					None Reported (O)	8.8E-04			9E-04
			IRON					Gastrointestinal effects	2.4E-03			2E-03
			MANGANESE					CNS (N)	4.7E-04			5E-04
			MERCURY					Autoimmune effects	5.3E-03			5E-03
			VANADIUM					Decreased hair cystine	2.7E-04			3E-04
			HIGHLY CHLORINATED PCBs	2.8E-07		2.5E-07	5E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	5.4E-02		4.8E-02	1E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	8.8E-08		7.3E-08	2E-07	--				
			BENZO(A)PYRENE	8.2E-07		6.8E-07	2E-06	--				
			BENZO(B)FLUORANTHENE	1.5E-07		1.3E-07	3E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	7.1E-06		5.9E-06	1E-05
			DIBENZO(A,H)ANTHRACENE	1.7E-07		1.4E-07	3E-07	--				
			INDENO(1,2,3-CD)PYRENE	4.8E-08		4.0E-08	9E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.2E-05		1.0E-05	2E-05
			1,2,4-TRICHLOROBENZENE	1.8E-09			2E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	3.9E-04			4E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.7E-04			2E-04
			1,4-DICHLOROBENZENE	2.4E-09			2E-09	Liver	5.0E-05			5E-05
			Chemical Total	2.4E-04	--	4.6E-05	3E-04		1.2E+01	--	2.4E+00	1E+01
		Exposure Point Total					3E-04					1E+01
	Exposure Medium Total						3E-04					1E+01
Medium Total							3E-04					1E+01
Receptor Total							3E-04				Receptor HI Total	1E+01

Total Risk Across All Media =	3E-04
Total Hazard Across All Media =	1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	5E-05
Total Kidney HI Across All Media =	4E-05
Total Nervous System Effects HI Across All Media =	9E-03
Total Immune/Lymphocyte Effects HI Across All Media =	1E-01
Total Ocular Effects HI Across All Media =	1E-01

TABLE 9.1d CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	2.6E-06		5.0E-07	3E-06	Developmental effects	1.4E-01		2.6E-02	2E-01
			ALUMINUM					Neurotoxicology	1.5E-03			2E-03
			ARSENIC	1.0E-06		2.0E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.8E-02		3.4E-03	2E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	6.6E-04			7E-04
			CHROMIUM					None Reported (O)	1.2E-02			1E-02
			IRON					Gastrointestinal effects	7.3E-03			7E-03
			LEAD					--				
			MANGANESE					CNS (N)	4.1E-04			4E-04
			MERCURY					Autoimmune effects	7.2E-01			7E-01
			VANADIUM					Decreased hair cystine	2.3E-03			2E-03
			HIGHLY CHLORINATED PCBs	1.8E-06		1.6E-06	3E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	3.4E-01		3.0E-01	6E-01
			ALDRIN	4.6E-08			5E-08	Liver toxicity (H)	7.0E-04			7E-04
			DELTA-BHC	5.7E-10			6E-10	--				
			ENDOSULFAN I					Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	1.0E-07			1E-07
			HEPTACHLOR	1.4E-08			1E-08	Liver weight increase	4.7E-05			5E-05
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	3.7E-07		3.0E-07	7E-07	--				
			BENZO(A)PYRENE	4.3E-06		3.5E-06	8E-06	--				
			BENZO(B)FLUORANTHENE	7.1E-07		5.9E-07	1E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.8E-05		3.1E-05	7E-05
			BENZO(K)FLUORANTHENE	1.8E-08		1.5E-08	3E-08	--				
			DIBENZO(A,H)ANTHRACENE	1.3E-06		1.1E-06	2E-06	--				
			HEXACHLOROBENZENE	1.5E-07		9.5E-08	2E-07	Hepatic (H)	9.1E-04		5.8E-04	1E-03
			INDENO(1,2,3-CD)PYRENE	2.8E-07		2.3E-07	5E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.7E-05		4.7E-05	1E-04

TABLE 9.1d CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	BENZENE	2.8E-12			3E-12	Reduced lymphocyte count	9.7E-08			1E-07
			TRICHLOROETHENE	3.8E-10			4E-10	--				
			Chemical Total	1.3E-05	--	8.1E-06	2E-05		1.2E+00	--	3.3E-01	2E+00
		Exposure Point Total					2E-05					2E+00
	Exposure Medium Total						2E-05					2E+00
Medium Total							2E-05					2E+00
Receptor Total							2E-05				Receptor HI Total	2E+00

Total Risk Across All Media =	2E-05
Total Hazard Across All Media =	2E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	2E-03
Total Kidney HI Across All Media =	8E-04
Total Nervous System Effects HI Across All Media =	2E-02
Total Immune/Lymphocyte Effects HI Across All Media =	7E-01
Total Ocular Effects HI Across All Media =	6E-01

TABLE 9.1e CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area;	State Fair Blvd/ Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	2,3,7,8-TCDD Equivalent	2.0E-06		3.8E-07	2E-06	Developmental effects	1.0E-01		2.0E-02	1E-01
			MERCURY					Autoimmune effects	1.0E-01			1E-01
			HIGHLY CHLORINATED PCBs	7.5E-08		6.7E-08	1E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.5E-02		1.3E-02	3E-02
			1,2,3-TRICHLOROBENZENE					--				
			BENZENE	1.9E-12			2E-12	Reduced lymphocyte count	6.8E-08			7E-08
			Chemical Total	2.1E-06	--	4.5E-07	3E-06		2.2E-01	--	3.3E-02	3E-01
		Exposure Point Total					3E-06					3E-01
	Exposure Medium Total						3E-06					3E-01
Medium Total							3E-06					3E-01
Receptor Total							3E-06				Receptor HI Total	3E-01

Total Risk Across All Media = 3E-06

Total Hazard Across All Media = 3E-01

TABLE 9.1f CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
LAKESHORE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Lakeshore Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Lakeshore Area	2,3,7,8-TCDD Equivalent	2.2E-07		4.2E-08	3E-07	Developmental effects	1.1E-02		2.2E-03	1E-02
			ALUMINUM					Neurotoxicology	1.6E-03			2E-03
			ARSENIC	4.2E-07		7.9E-08	5E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	7.2E-03		1.4E-03	9E-03
			CHROMIUM					None Reported (O)	2.9E-03			3E-03
			IRON					Gastrointestinal effects	4.9E-03			5E-03
			MANGANESE					CNS (N)	5.4E-04			5E-04
			MERCURY					Autoimmune effects	2.0E-03			2E-03
			VANADIUM					Decreased hair cystine	4.4E-04			4E-04
			ZINC					Decreased ESOD (B)	6.5E-05			7E-05
			HIGHLY CHLORINATED PCBs	1.9E-07		1.7E-07	4E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	3.6E-02		3.2E-02	7E-02
			ENDOSULFAN I					Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	8.1E-07			8E-07
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	6.0E-07		5.0E-07	1E-06	--				
			BENZO(A)PYRENE	4.9E-06		4.0E-06	9E-06	--				
			BENZO(B)FLUORANTHENE	6.6E-07		5.5E-07	1E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.5E-05		1.3E-05	3E-05
			BENZO(K)FLUORANTHENE	1.7E-08		1.4E-08	3E-08	--				
			DIBENZO(A,H)ANTHRACENE	6.6E-07		5.5E-07	1E-06	--				
			INDENO(1,2,3-CD)PYRENE	1.3E-07		1.1E-07	2E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.8E-04		1.5E-04	3E-04
			Chemical Total	7.8E-06	--	6.0E-06	1E-05		6.7E-02	--	3.6E-02	1E-01
		Exposure Point Total					1E-05					1E-01
	Exposure Medium Total						1E-05					1E-01
Medium Total							1E-05					1E-01
Receptor Total							1E-05				Receptor HI Total	1E-01

Total Risk Across All Media = 1E-05

Total Hazard Across All Media = 1E-01

TABLE 9.1g CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Petroleum Storage Area	ARSENIC	2.5E-06		4.9E-07	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	4.4E-02		8.4E-03	5E-02
			CHROMIUM					None Reported (O)	1.8E-03			2E-03
			IRON					Gastrointestinal effects	8.0E-03			8E-03
			MANGANESE					CNS (N)	6.8E-04			7E-04
			MERCURY					Autoimmune effects	9.2E-03			9E-03
			VANADIUM					Decreased hair cystine	4.4E-04			4E-04
			HIGHLY CHLORINATED PCBs	3.6E-08		3.2E-08	7E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	7.0E-03		6.3E-03	1E-02
			DELTA-BHC	1.9E-10			2E-10	--				
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	4.0E-07		3.3E-07	7E-07	--				
			BENZO(A)PYRENE	3.8E-06		3.2E-06	7E-06	--				
			BENZO(B)FLUORANTHENE	5.5E-07		4.5E-07	1E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.4E-05		3.6E-05	8E-05
			BENZO(K)FLUORANTHENE	1.5E-08		1.3E-08	3E-08	--				
			DIBENZO(A,H)ANTHRACENE	9.3E-07		7.7E-07	2E-06	--				
			INDENO(1,2,3-CD)PYRENE	3.3E-07		2.8E-07	6E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.9E-05		2.4E-05	5E-05
			BENZENE	1.2E-10			1E-10	Reduced lymphocyte count	4.2E-06			4E-06
			Chemical Total	8.6E-06	--	5.5E-06	1E-05		7.1E-02	--	1.5E-02	9E-02
		Exposure Point Total					1E-05					9E-02
	Exposure Medium Total						1E-05					9E-02
Medium Total							1E-05					9E-02
Receptor Total							1E-05				Receptor HI Total	9E-02

Total Risk Across All Media = 1E-05

Total Hazard Across All Media = 9E-02

TABLE 9.1h CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Chlorobenzene Hot-Spot Area	ARSENIC	5.1E-07		9.8E-08	6E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	8.9E-03		1.7E-03	1E-02
			CHROMIUM					None Reported (O)	1.7E-03			2E-03
			IRON					Gastrointestinal effects	6.5E-03			7E-03
			MANGANESE					CNS (N)	4.6E-04			5E-04
			MERCURY					Autoimmune effects	1.8E-03			2E-03
			VANADIUM					Decreased hair cystine	2.7E-04			3E-04
			HIGHLY CHLORINATED PCBs	5.7E-06		5.1E-06	1E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.1E+00		9.8E-01	2E+00
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	7.4E-07		6.1E-07	1E-06	--				
			BENZO(A)PYRENE	4.2E-06		3.5E-06	8E-06	--				
			BENZO(B)FLUORANTHENE	9.8E-07		8.1E-07	2E-06	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.5E-05		2.9E-05	6E-05
			BENZO(K)FLUORANTHENE	3.0E-08		2.4E-08	5E-08	--				
			DIBENZO(A,H)ANTHRACENE	9.9E-07		8.2E-07	2E-06	--				
			HEXACHLOROBENZENE	1.2E-07		7.5E-08	2E-07	Hepatic (H)	7.1E-04		4.6E-04	1E-03
			INDENO(1,2,3-CD)PYRENE	3.4E-07		2.8E-07	6E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.6E-04		1.3E-04	3E-04
			1,2,4-TRICHLOROBENZENE	1.2E-09			1E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	2.6E-04			3E-04
			1,4-DICHLOROBENZENE	8.0E-10			8E-10	Liver	1.7E-05			2E-05
			BENZENE	1.1E-11			1E-11	Reduced lymphocyte count	3.9E-07			4E-07
			Chemical Total	1.4E-05	--	1.1E-05	2E-05		1.1E+00	--	9.8E-01	2E+00
		Exposure Point Total					2E-05					2E+00
	Exposure Medium Total						2E-05					2E+00
Medium Total							2E-05					2E+00
Receptor Total							2E-05				Receptor HI Total	2E+00

Total Risk Across All Media =	2E-05
Total Hazard Across All Media =	2E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	1E-03
Total Kidney HI Across All Media =	4E-04
Total Nervous System Effects HI Across All Media =	1E-02
Total Immune/Lymphocyte Effects HI Across All Media =	2E+00
Total Ocular Effects HI Across All Media =	2E+00

TABLE 9.1i CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment (0-1 ft bgs)	Tributary 5A	2,3,7,8-TCDD Equivalent	1.0E-07		1.9E-08	1E-07	Developmental effects	5.2E-03		9.9E-04	6E-03
			ALUMINUM					Neurotoxicology	1.6E-03			2E-03
			ANTIMONY					Longevity (M); Blood glucose (E); Cholesterol (E)	1.2E-02			1E-02
			ARSENIC	1.3E-06		2.4E-07	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.2E-02		4.2E-03	3E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	9.0E-04			9E-04
			CHROMIUM					None Reported (O)	8.1E-01			8E-01
			COBALT					--				
			COPPER					Gastrointestinal effects	1.4E-03			1E-03
			IRON					Gastrointestinal effects	4.4E-02			4E-02
			LEAD					--				
			MANGANESE					CNS (N)	1.7E-03			2E-03
			NICKEL					Decreased body and organ weight (W)	1.7E-02			2E-02
			SELENIUM					Clinical selenosis	9.1E-04			9E-04
			VANADIUM					Decreased hair cystine	2.1E-01			2E-01
			HIGHLY CHLORINATED PCBs	2.8E-07		2.5E-07	5E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	5.5E-02		4.9E-02	1E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.8E-07		1.5E-07	3E-07	--				
			BENZO(A)PYRENE	2.5E-06		2.1E-06	5E-06	--				
			BENZO(B)FLUORANTHENE	3.1E-07		2.6E-07	6E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.5E-05		1.2E-05	3E-05
			BENZO(K)FLUORANTHENE	1.2E-08		1.0E-08	2E-08	--				
			DIBENZO(A,H)ANTHRACENE	6.0E-07		5.0E-07	1E-06	--				
			INDENO(1,2,3-CD)PYRENE	1.1E-07		9.5E-08	2E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.2E-05		2.6E-05	6E-05
			BENZENE	1.8E-08			2E-08	Reduced lymphocyte count	6.3E-04			6E-04
			Chemical Total	5.4E-06	--	3.6E-06	9E-06		1.2E+00	--	5.4E-02	1E+00
		Exposure Point Total					9E-06					1E+00
	Exposure Medium Total						9E-06					1E+00
Medium Total							9E-06					1E+00

TABLE 9.1i CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Surface Water	Tributary 5A	ANTIMONY					Longevity (M); Blood glucose (E); Cholesterol (E)	1.3E-04		7.6E-04	9E-04
			ARSENIC	1.7E-08		1.5E-08	3E-08	Hyperpigmentation (In); Vascular (V); PNS (N)	3.0E-04		2.5E-04	6E-04
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.8E-05		2.1E-04	2E-04
			CHROMIUM					None Reported (O)	2.1E-04		1.5E-02	1E-02
			COBALT					--				
			MANGANESE					CNS (N)	1.4E-05		3.0E-04	3E-04
			NICKEL					Decreased body and organ weight (W)	5.1E-04		2.2E-03	3E-03
			VANADIUM					Decreased hair cystine	7.6E-04		2.5E-02	3E-02
			DELTA-BHC	8.5E-11			9E-11	--				
			DIELDRIN	6.8E-10		4.2E-08	4E-08	Hepatic (H)	6.6E-06		4.0E-04	4E-04
			BIS(2-ETHYLHEXYL)PHTHALATE	3.1E-08		4.1E-06	4E-06	Increased relative liver weight (H)	8.5E-04		1.1E-01	1E-01
			NAPHTHALENE					Decreased body weight (W)	9.7E-07		5.8E-05	6E-05
			N-NITROSODIPHENYLAMINE	8.6E-10		3.3E-08	3E-08	--				
			PENTACHLOROPHENOL	1.8E-09		1.9E-06	2E-06	Liver (H) and kidney (R) pathology	3.9E-06		4.1E-03	4E-03
			1,4-DICHLOROBENZENE	2.7E-11		1.6E-09	2E-09	Liver	5.6E-07		3.3E-05	3E-05
			BENZENE	7.5E-09		1.2E-07	1E-07	Reduced lymphocyte count	2.6E-04		4.1E-03	4E-03
			BROMODICHLOROMETHANE	3.1E-10		2.2E-09	3E-09	Renal cytomegaly (R)	1.9E-06		1.4E-05	2E-05
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	2.2E-05		1.9E-04	2E-04
			Chemical Total	5.9E-08	--	6.3E-06	6E-06		3.1E-03	--	1.7E-01	2E-01
		Exposure Point Total					6E-06					2E-01
	Exposure Medium Total						6E-06					2E-01
Medium Total							6E-06					2E-01
Receptor Total							2E-05				Receptor HI Total	1E+00

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 1E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	1E-01
Total Kidney HI Across All Media =	5E-03
Total Nervous System Effects HI Across All Media =	3E-02
Total Immune/Lymphocyte Effects HI Across All Media =	1E-01
Total Ocular Effects HI Across All Media =	1E-01

TABLE 9.2a CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	2,3,7,8-TCDD Equivalent	8.1E-07		4.2E-07	1E-06	Developmental effects	4.2E-02		2.2E-02	6E-02
			ALUMINUM					Neurotoxicology	5.2E-04			5E-04
			ARSENIC	3.2E-07		1.6E-07	5E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	5.5E-03		2.8E-03	8E-03
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.1E-04			1E-04
			CHROMIUM					None Reported (O)	3.9E-04			4E-04
			IRON					Gastrointestinal effects	2.0E-03			2E-03
			MANGANESE					CNS (N)	1.6E-04			2E-04
			MERCURY					Autoimmune effects	2.0E-01			2E-01
			NICKEL					Decreased body and organ weight (W)	1.2E-02			1E-02
			VANADIUM					Decreased hair cystine	1.6E-04			2E-04
			HIGHLY CHLORINATED PCBs	5.0E-08		1.2E-07	2E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	9.7E-03		2.3E-02	3E-02
			DELTA-BHC	9.6E-08			1E-07	--				
			DIELDRIN	4.8E-07			5E-07	Hepatic (H)	4.6E-03			5E-03
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	5.3E-08		1.2E-07	2E-07	--				
			BENZO(A)PYRENE	6.8E-07		1.5E-06	2E-06	--				
			BENZO(B)FLUORANTHENE	7.4E-08		1.6E-07	2E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.2E-05		4.8E-05	7E-05
			BENZO(K)FLUORANTHENE	3.3E-09		7.4E-09	1E-08	--				
			DIBENZO(A,H)ANTHRACENE	1.3E-07		3.0E-07	4E-07	--				
			HEXACHLOROBENZENE	9.2E-08		1.6E-07	2E-07	Hepatic (H)	5.6E-04		9.5E-04	2E-03
			HEXACHLOROBUTADIENE	1.1E-09		1.9E-09	3E-09	--				
			INDENO(1,2,3-CD)PYRENE	6.0E-08		1.3E-07	2E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.1E-05		6.8E-05	1E-04
			1,2,4-TRICHLOROBENZENE	1.2E-10			1E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	2.6E-05			3E-05
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	2.7E-04			3E-04
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.1E-07			1E-07	Liver	2.2E-03			2E-03
			BENZENE	2.7E-12			3E-12	Reduced lymphocyte count	9.4E-08			9E-08

TABLE 9.2a CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	CHLOROBENZENE					Histopathologic changes in liver	4.3E-04			4E-04
			Chemical Total	3.0E-06	--	3.1E-06	6E-06		2.8E-01	--	4.9E-02	3E-01
		Exposure Point Total					6E-06					3E-01
	Exposure Medium Total						6E-06					3E-01
Medium Total							6E-06					3E-01
Receptor Total							6E-06				Receptor HI Total	3E-01

Total Risk Across All Media = 6E-06

Total Hazard Across All Media = 3E-01

TABLE 9.2b CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft	On-Site Ditches	2,3,7,8-TCDD Equivalent	9.1E-06		4.7E-06	1E-05	Developmental effects	4.7E-01		2.4E-01	7E-01
			ARSENIC	4.8E-07		2.5E-07	7E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	8.3E-03		4.3E-03	1E-02
			CHROMIUM					None Reported (O)	4.0E-03			4E-03
			COPPER					Gastrointestinal effects	5.1E-04			5E-04
			IRON					Gastrointestinal effects	4.8E-03			5E-03
			LEAD					--				
			MANGANESE					CNS (N)	1.9E-04			2E-04
			MERCURY					Autoimmune effects	7.4E-01			7E-01
			METHYL MERCURY					Developmental neuropsychological impairment (N)	4.3E-04			4E-04
			NICKEL					Decreased body and organ weight (W)	9.4E-04			9E-04
			VANADIUM					Decreased hair cystine	4.4E-04			4E-04
			HIGHLY CHLORINATED PCBs	2.3E-07		5.4E-07	8E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.4E-02		1.0E-01	1E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.2E-08		2.7E-08	4E-08	--				
			BENZO(A)PYRENE	1.2E-07		2.6E-07	4E-07	--				
			BENZO(B)FLUORANTHENE	1.8E-08		3.9E-08	6E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.9E-06		6.5E-06	9E-06
			DIBENZO(A,H)ANTHRACENE	2.6E-08		5.7E-08	8E-08	--				
			INDENO(1,2,3-CD)PYRENE	7.1E-09		1.6E-08	2E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.2E-06		9.3E-06	1E-05
			Chemical Total	1.0E-05	--	5.9E-06	2E-05		1.3E+00	--	3.5E-01	2E+00
		Exposure Point Total					2E-05					2E+00
	Exposure Medium Total						2E-05					2E+00
Medium Total							2E-05					2E+00
Receptor Total							2E-05				Receptor HI Total	2E+00

Total Risk Across All Media =	2E-05
Total Hazard Across All Media =	2E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Kidney HI Across All Media =	2E-05
Total Nervous System Effects HI Across All Media =	1E-02
Total Immune/Lymphocyte Effects HI Across All Media =	9E-01
Total Ocular Effects HI Across All Media =	1E-01

TABLE 9.2c CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	7.6E-05		3.9E-05	1E-04	Developmental effects	3.9E+00		2.0E+00	6E+00
			ARSENIC	1.3E-07		6.4E-08	2E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	2.2E-03		1.1E-03	3E-03
			CHROMIUM					None Reported (O)	2.8E-04			3E-04
			IRON					Gastrointestinal effects	7.7E-04			8E-04
			MANGANESE					CNS (N)	1.5E-04			2E-04
			MERCURY					Autoimmune effects	1.7E-03			2E-03
			VANADIUM					Decreased hair cystine	8.6E-05			9E-05
			HIGHLY CHLORINATED PCBs	8.9E-08		2.1E-07	3E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.7E-02		4.1E-02	6E-02
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	9.4E-09		2.1E-08	3E-08	--				
			BENZO(A)PYRENE	8.8E-08		2.0E-07	3E-07	--				
			BENZO(B)FLUORANTHENE	1.6E-08		3.7E-08	5E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.3E-06		5.1E-06	7E-06
			DIBENZO(A,H)ANTHRACENE	1.8E-08		4.1E-08	6E-08	--				
			INDENO(1,2,3-CD)PYRENE	5.2E-09		1.1E-08	2E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.0E-06		8.8E-06	1E-05
			1,2,4-TRICHLOROBENZENE	5.8E-10			6E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.3E-04			1E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	5.4E-05			5E-05
			1,4-DICHLOROBENZENE	7.8E-10			8E-10	Liver	1.6E-05			2E-05
			Chemical Total	7.6E-05	--	3.9E-05	1E-04		3.9E+00	--	2.1E+00	6E+00
		Exposure Point Total					1E-04					6E+00
	Exposure Medium Total						1E-04					6E+00
Medium Total							1E-04					6E+00
Receptor Total							1E-04				Receptor HI Total	6E+00

Total Risk Across All Media =	1E-04
Total Hazard Across All Media =	6E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	2E-05
Total Kidney HI Across All Media =	2E-05
Total Nervous System Effects HI Across All Media =	3E-03
Total Immune/Lymphocyte Effects HI Across All Media =	6E-02
Total Ocular Effects HI Across All Media =	6E-02

TABLE 9.2d CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/ OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	8.4E-07		4.3E-07	1E-06	Developmental effects	4.4E-02		2.2E-02	7E-02
			ALUMINUM					Neurotoxicology	4.9E-04			5E-04
			ARSENIC	3.3E-07		1.7E-07	5E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	5.8E-03		3.0E-03	9E-03
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	2.1E-04			2E-04
			CHROMIUM					None Reported (O)	3.8E-03			4E-03
			IRON					Gastrointestinal effects	2.4E-03			2E-03
			LEAD					--				
			MANGANESE					CNS (N)	1.3E-04			1E-04
			MERCURY					Autoimmune effects	2.3E-01			2E-01
			VANADIUM					Decreased hair cystine	7.4E-04			7E-04
			HIGHLY CHLORINATED PCBs	5.6E-07		1.3E-06	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.1E-01		2.6E-01	4E-01
			ALDRIN	1.5E-08			1E-08	Liver toxicity (H)	2.3E-04			2E-04
			DELTA-BHC	1.8E-10			2E-10	--				
			ENDOSULFAN I					Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	3.3E-08			3E-08
			HEPTACHLOR	4.3E-09			4E-09	Liver weight increase	1.5E-05			2E-05
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	3.9E-08		8.8E-08	1E-07	--				
			BENZO(A)PYRENE	4.6E-07		1.0E-06	1E-06	--				
			BENZO(B)FLUORANTHENE	7.6E-08		1.7E-07	2E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.2E-05		2.7E-05	4E-05
			BENZO(K)FLUORANTHENE	1.9E-09		4.3E-09	6E-09	--				
			DIBENZO(A,H)ANTHRACENE	1.4E-07		3.1E-07	5E-07	--				
			HEXACHLOROBENZENE	4.8E-08		8.2E-08	1E-07	Hepatic (H)	2.9E-04		5.0E-04	8E-04
			INDENO(1,2,3-CD)PYRENE	3.0E-08		6.7E-08	1E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.8E-05		4.1E-05	6E-05

TABLE 9.2d CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/ OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	BENZENE	8.9E-13			9E-13	Reduced lymphocyte count	3.1E-08			3E-08
			TRICHLOROETHENE	1.2E-10			1E-10	--				
			Chemical Total	2.6E-06	--	3.7E-06	6E-06		4.0E-01	--	2.9E-01	7E-01
		Exposure Point Total					6E-06					7E-01
	Exposure Medium Total						6E-06					7E-01
Medium Total							6E-06					7E-01
Receptor Total							6E-06				Receptor HI Total	7E-01

Total Risk Across All Media = 6E-06

Total Hazard Across All Media = 7E-01

TABLE 9.2e CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	2,3,7,8-TCDD Equivalent	6.4E-07		3.3E-07	1E-06	Developmental effects	3.3E-02		1.7E-02	5E-02
			MERCURY					Autoimmune effects	3.3E-02			3E-02
			HIGHLY CHLORINATED PCBs	2.4E-08		5.8E-08	8E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.7E-03		1.1E-02	2E-02
			1,2,3-TRICHLOROBENZENE					--				
			BENZENE	6.2E-13			6E-13	Reduced lymphocyte count	2.2E-08			2E-08
			Chemical Total	6.6E-07	--	3.8E-07	1E-06		7.1E-02	--	2.8E-02	1E-01
		Exposure Point Total					1E-06					1E-01
	Exposure Medium Total						1E-06					1E-01
Medium Total							1E-06					1E-01
Receptor Total							1E-06				Receptor HI Total	1E-01

Total Risk Across All Media = 1E-06

Total Hazard Across All Media = 1E-01

TABLE 9.2f CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
LAKESHORE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft	Lakeshore Area	2,3,7,8-TCDD Equivalent	7.1E-08		3.7E-08	1E-07	Developmental effects	3.7E-03		1.9E-03	6E-03
			ALUMINUM					Neurotoxicology	5.1E-04			5E-04
			ARSENIC	1.3E-07		6.9E-08	2E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	2.3E-03		1.2E-03	3E-03
			CHROMIUM					None Reported (O)	9.2E-04			9E-04
			IRON					Gastrointestinal effects	1.6E-03			2E-03
			MANGANESE					CNS (N)	1.7E-04			2E-04
			MERCURY					Autoimmune effects	6.4E-04			6E-04
			VANADIUM					Decreased hair cystine	1.4E-04			1E-04
			ZINC					Decreased ESOD (B)	2.1E-05			2E-05
			HIGHLY CHLORINATED PCBs	6.0E-08		1.4E-07	2E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	1.2E-02		2.8E-02	4E-02
			ENDOSULFAN I					Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	2.6E-07			3E-07
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	6.5E-08		1.4E-07	2E-07	--				
			BENZO(A)PYRENE	5.2E-07		1.2E-06	2E-06	--				
			BENZO(B)FLUORANTHENE	7.1E-08		1.6E-07	2E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.9E-06		1.1E-05	2E-05
			BENZO(K)FLUORANTHENE	1.8E-09		3.9E-09	6E-09	--				
			DIBENZO(A,H)ANTHRACENE	7.1E-08		1.6E-07	2E-07	--				
			INDENO(1,2,3-CD)PYRENE	1.4E-08		3.1E-08	5E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.6E-05		1.3E-04	2E-04
			Chemical Total	1.0E-06	--	1.9E-06	3E-06		2.2E-02	--	3.1E-02	5E-02
		Exposure Point Total					3E-06					5E-02
	Exposure Medium Total						3E-06					5E-02
Medium Total							3E-06					5E-02
Receptor Total							3E-06				Receptor HI Total	5E-02

Total Risk Across All Media = 3E-06

Total Hazard Across All Media = 5E-02

TABLE 9.2g CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Petroleum Storage Area	ARSENIC	8.2E-07		4.2E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.4E-02		7.2E-03	2E-02
			CHROMIUM					None Reported (O)	5.8E-04			6E-04
			IRON					Gastrointestinal effects	2.6E-03			3E-03
			MANGANESE					CNS (N)	2.2E-04			2E-04
			MERCURY					Autoimmune effects	3.0E-03			3E-03
			VANADIUM					Decreased hair cystine	1.4E-04			1E-04
			HIGHLY CHLORINATED PCBs	1.2E-08		2.8E-08	4E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	2.3E-03		5.4E-03	8E-03
			DELTA-BHC	6.1E-11			6E-11	--				
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	4.3E-08		9.5E-08	1E-07	--				
			BENZO(A)PYRENE	4.1E-07		9.1E-07	1E-06	--				
			BENZO(B)FLUORANTHENE	5.9E-08		1.3E-07	2E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.4E-05		3.1E-05	5E-05
			BENZO(K)FLUORANTHENE	1.6E-09		3.7E-09	5E-09	--				
			DIBENZO(A,H)ANTHRACENE	1.0E-07		2.2E-07	3E-07	--				
			INDENO(1,2,3-CD)PYRENE	3.6E-08		8.0E-08	1E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	9.2E-06		2.0E-05	3E-05
			BENZENE	3.8E-11			4E-11	Reduced lymphocyte count	1.3E-06			1E-06
			Chemical Total	1.5E-06	--	1.9E-06	3E-06		2.3E-02	--	1.3E-02	4E-02
		Exposure Point Total					3E-06					4E-02
	Exposure Medium Total						3E-06					4E-02
Medium Total							3E-06					4E-02
Receptor Total							3E-06				Receptor HI Total	4E-02

Total Risk Across All Media = 3E-06

Total Hazard Across All Media = 4E-02

TABLE 9.2h CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Chlorobenzene Hot-Spot Area	ARSENIC	1.7E-07		8.5E-08	3E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	2.9E-03		1.5E-03	4E-03
			CHROMIUM					None Reported (O)	5.5E-04			5E-04
			IRON					Gastrointestinal effects	2.1E-03			2E-03
			MANGANESE					CNS (N)	1.5E-04			1E-04
			MERCURY					Autoimmune effects	5.8E-04			6E-04
			VANADIUM					Decreased hair cystine	8.6E-05			9E-05
			HIGHLY CHLORINATED PCBs	1.8E-06		4.4E-06	6E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	3.5E-01		8.5E-01	1E+00
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	7.9E-08		1.8E-07	3E-07	--				
			BENZO(A)PYRENE	4.5E-07		1.0E-06	1E-06	--				
			BENZO(B)FLUORANTHENE	1.0E-07		2.3E-07	3E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.1E-05		2.5E-05	4E-05
			BENZO(K)FLUORANTHENE	3.2E-09		7.0E-09	1E-08	--				
			DIBENZO(A,H)ANTHRACENE	1.1E-07		2.4E-07	3E-07	--				
			HEXACHLOROBENZENE	3.8E-08		6.5E-08	1E-07	Hepatic (H)	2.3E-04		3.9E-04	6E-04
			INDENO(1,2,3-CD)PYRENE	3.7E-08		8.1E-08	1E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.2E-05		1.2E-04	2E-04
			1,2,4-TRICHLOROBENZENE	3.9E-10			4E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	8.5E-05			8E-05
			1,4-DICHLOROBENZENE	2.6E-10			3E-10	Liver	5.3E-06			5E-06
			BENZENE	3.5E-12			4E-12	Reduced lymphocyte count	1.3E-07			1E-07
			Chemical Total	2.8E-06	--	6.2E-06	9E-06		3.6E-01	--	8.5E-01	1E+00
		Exposure Point Total					9E-06					1E+00
	Exposure Medium Total						9E-06					1E+00
Medium Total							9E-06					1E+00
Receptor Total							9E-06				Receptor HI Total	1E+00

Total Risk Across All Media =	9E-06
Total Hazard Across All Media =	1E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	6E-04
Total Kidney HI Across All Media =	2E-04
Total Nervous System Effects HI Across All Media =	4E-03
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	1E+00

TABLE 9.2i CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment (0-1 ft bgs)	Tributary 5A	2,3,7,8-TCDD Equivalent	3.2E-08		1.6E-08	5E-08	Developmental effects	1.7E-03		8.5E-04	3E-03
			ALUMINUM					Neurotoxicology	5.1E-04			5E-04
			ANTIMONY					Longevity (M); Blood glucose (E); Cholesterol (E)	4.0E-03			4E-03
			ARSENIC	4.1E-07		2.1E-07	6E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	7.0E-03		3.6E-03	1E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	2.9E-04			3E-04
			CHROMIUM					None Reported (O)	2.6E-01			3E-01
			COBALT					--				
			COPPER					Gastrointestinal effects	4.5E-04			5E-04
			IRON					Gastrointestinal effects	1.4E-02			1E-02
			LEAD					--				
			MANGANESE					CNS (N)	5.6E-04			6E-04
			NICKEL					Decreased body and organ weight (W)	5.4E-03			5E-03
			SELENIUM					Clinical selenosis	2.9E-04			3E-04
			VANADIUM					Decreased hair cystine	6.7E-02			7E-02
			HIGHLY CHLORINATED PCBs	9.0E-08		2.2E-07	3E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	1.8E-02		4.2E-02	6E-02
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.9E-08		4.3E-08	6E-08	--				
			BENZO(A)PYRENE	2.7E-07		6.0E-07	9E-07	--				
			BENZO(B)FLUORANTHENE	3.4E-08		7.5E-08	1E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.7E-06		1.0E-05	2E-05
			BENZO(K)FLUORANTHENE	1.3E-09		3.0E-09	4E-09	--				
			DIBENZO(A,H)ANTHRACENE	6.5E-08		1.4E-07	2E-07	--				
			INDENO(1,2,3-CD)PYRENE	1.2E-08		2.7E-08	4E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.0E-05		2.3E-05	3E-05
			BENZENE	5.8E-09			6E-09	Reduced lymphocyte count	2.0E-04			2E-04
			Chemical Total	9.4E-07	--	1.3E-06	2E-06		3.8E-01	--	4.6E-02	4E-01
		Exposure Point Total					2E-06					4E-01
	Exposure Medium Total						2E-06					4E-01
Medium Total							2E-06					4E-01

TABLE 9.2i CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Surface Water	Tributary 5A	ANTIMONY					Longevity (M); Blood glucose (E); Cholesterol (E)	8.7E-05		6.6E-04	7E-04
			ARSENIC	1.1E-08		1.3E-08	2E-08	Hyperpigmentation (In); Vascular (V); PNS (N)	1.9E-04		2.2E-04	4E-04
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.1E-05		1.8E-04	2E-04
			CHROMIUM					None Reported (O)	1.4E-04		1.3E-02	1E-02
			COBALT					--				
			MANGANESE					CNS (N)	9.2E-06		2.6E-04	3E-04
			NICKEL					Decreased body and organ weight (W)	3.3E-04		1.9E-03	2E-03
			VANADIUM					Decreased hair cystine	4.9E-04		2.1E-02	2E-02
			DELTA-BHC	5.5E-11			5E-11	--				
			DIELDRIN	4.4E-10		3.6E-08	4E-08	Hepatic (H)	4.3E-06		3.5E-04	4E-04
			BIS(2-ETHYLHEXYL)PHTHALATE	2.0E-08		3.6E-06	4E-06	Increased relative liver weight (H)	5.4E-04		9.9E-02	1E-01
			NAPHTHALENE					Decreased body weight (W)	6.3E-07		5.0E-05	5E-05
			N-NITROSODIPHENYLAMINE	5.5E-10		2.8E-08	3E-08	--				
			PENTACHLOROPHENOL	1.2E-09		1.7E-06	2E-06	Liver (H) and kidney (R) pathology	2.5E-06		3.6E-03	4E-03
			1,4-DICHLOROBENZENE	1.7E-11		1.4E-09	1E-09	Liver	3.6E-07		2.9E-05	3E-05
			BENZENE	4.8E-09		1.0E-07	1E-07	Reduced lymphocyte count	1.7E-04		3.6E-03	4E-03
			BROMODICHLOROMETHANE	2.0E-10		1.9E-09	2E-09	Renal cytomegaly (R)	1.3E-06		1.2E-05	1E-05
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	1.4E-05		1.6E-04	2E-04
			Chemical Total	3.8E-08	--	5.4E-06	5E-06		2.0E-03	--	1.4E-01	1E-01
		Exposure Point Total					5E-06					1E-01
	Exposure Medium Total						5E-06					1E-01
Medium Total							5E-06					1E-01
Receptor Total							8E-06				Receptor HI Total	6E-01

Total Risk Across All Media = 8E-06

Total Hazard Across All Media = 6E-01

TABLE 9.3a CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	2,3,7,8-TCDD Equivalent	1.3E-07		7.5E-08	2E-07	Developmental effects	6.6E-03		3.9E-03	1E-02
			ALUMINUM					Neurotoxicology	8.2E-05			8E-05
			ARSENIC	5.0E-08		3.0E-08	8E-08	Hyperpigmentation (In); Vascular (V); PNS (N)	8.6E-04		5.1E-04	1E-03
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.6E-05			2E-05
			CHROMIUM					None Reported (O)	6.1E-05			6E-05
			IRON					Gastrointestinal effects	3.2E-04			3E-04
			MANGANESE					CNS (N)	2.4E-05			2E-05
			MERCURY					Autoimmune effects	3.1E-02			3E-02
			NICKEL					Decreased body and organ weight (W)	1.8E-03			2E-03
			VANADIUM					Decreased hair cystine	2.4E-05			2E-05
			HIGHLY CHLORINATED PCBs	7.8E-09		2.2E-08	3E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	1.5E-03		4.2E-03	6E-03
			DELTA-BHC	1.5E-08			2E-08	--				
			DIELDRIN	7.4E-08			7E-08	Hepatic (H)	7.2E-04			7E-04
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	8.3E-09		2.1E-08	3E-08	--				
			BENZO(A)PYRENE	1.1E-07		2.7E-07	4E-07	--				
			BENZO(B)FLUORANTHENE	1.2E-08		3.0E-08	4E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.4E-06		8.7E-06	1E-05
			BENZO(K)FLUORANTHENE	5.2E-10		1.3E-09	2E-09	--				
			DIBENZO(A,H)ANTHRACENE	2.1E-08		5.3E-08	7E-08	--				
			HEXACHLOROBENZENE	1.4E-08		2.8E-08	4E-08	Hepatic (H)	8.7E-05		1.7E-04	3E-04
			HEXACHLOROBUTADIENE	1.8E-10		3.5E-10	5E-10	--				
			INDENO(1,2,3-CD)PYRENE	9.4E-09		2.4E-08	3E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.8E-06		1.2E-05	2E-05
			1,2,4-TRICHLOROBENZENE	1.9E-11			2E-11	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	4.1E-06			4E-06
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	4.2E-05			4E-05
			1,3-DICHLOROBENZENE					--				

TABLE 9.3a CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	1,4-DICHLOROBENZENE	1.7E-08			2E-08	Liver	3.4E-04			3E-04
			BENZENE	4.2E-13			4E-13	Reduced lymphocyte count	1.5E-08			1E-08
			CHLOROBENZENE					Histopathologic changes in liver	6.8E-05			7E-05
			Chemical Total	4.6E-07	--	5.6E-07	1E-06		4.4E-02	--	8.8E-03	5E-02
		Exposure Point Total					1E-06					5E-02
	Exposure Medium Total						1E-06					5E-02
Medium Total							1E-06					5E-02
Receptor Total							1E-06				Receptor HI Total	5E-02

Total Risk Across All Media = 1E-06

Total Hazard Across All Media = 5E-02

TABLE 9.3b CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	On-Site Ditches	2,3,7,8-TCDD Equivalent	1.4E-06		8.5E-07	2E-06	Developmental effects	7.4E-02		4.4E-02	1E-01
			ARSENIC	7.5E-08		4.5E-08	1E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	1.3E-03		7.7E-04	2E-03
			CHROMIUM					None Reported (O)	6.3E-04			6E-04
			COPPER					Gastrointestinal effects	8.0E-05			8E-05
			IRON					Gastrointestinal effects	7.5E-04			8E-04
			LEAD					--				
			MANGANESE					CNS (N)	3.0E-05			3E-05
			MERCURY					Autoimmune effects	1.2E-01			1E-01
			METHYL MERCURY					Developmental neuropsychological impairment (N)	6.7E-05			7E-05
			NICKEL					Decreased body and organ weight (W)	1.5E-04			1E-04
			VANADIUM					Decreased hair cystine	6.9E-05			7E-05
			HIGHLY CHLORINATED PCBs	3.5E-08		9.8E-08	1E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	6.8E-03		1.9E-02	3E-02
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.9E-09		5.0E-09	7E-09	--				
			BENZO(A)PYRENE	1.8E-08		4.7E-08	7E-08	--				
			BENZO(B)FLUORANTHENE	2.8E-09		7.1E-09	1E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.6E-07		1.2E-06	2E-06
			DIBENZO(A,H)ANTHRACENE	4.0E-09		1.0E-08	1E-08	--				
			INDENO(1,2,3-CD)PYRENE	1.1E-09		2.8E-09	4E-09	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.5E-07		1.7E-06	2E-06
			Chemical Total	1.6E-06	--	1.1E-06	3E-06		2.0E-01	--	6.4E-02	3E-01
		Exposure Point Total					3E-06					3E-01
	Exposure Medium Total						3E-06					3E-01
Medium Total							3E-06					3E-01
Receptor Total							3E-06				Receptor HI Total	3E-01

Total Risk Across All Media = 3E-06

Total Hazard Across All Media = 3E-01

TABLE 9.3c CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BULIDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	1.2E-05		7.0E-06	2E-05	Developmental effects	6.1E-01		3.6E-01	1E+00
			ARSENIC	2.0E-08		1.2E-08	3E-08	Hyperpigmentation (In); Vascular (V); PNS (N)	3.4E-04		2.0E-04	5E-04
			CHROMIUM					None Reported (O)	4.4E-05			4E-05
			IRON					Gastrointestinal effects	1.2E-04			1E-04
			MANGANESE					CNS (N)	2.4E-05			2E-05
			MERCURY					Autoimmune effects	2.7E-04			3E-04
			VANADIUM					Decreased hair cystine	1.3E-05			1E-05
			HIGHLY CHLORINATED PCBs	1.4E-08		3.8E-08	5E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	2.7E-03		7.5E-03	1E-02
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.5E-09		3.8E-09	5E-09	--				
			BENZO(A)PYRENE	1.4E-08		3.5E-08	5E-08	--				
			BENZO(B)FLUORANTHENE	2.6E-09		6.6E-09	9E-09	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.6E-07		9.2E-07	1E-06
			DIBENZO(A,H)ANTHRACENE	2.8E-09		7.3E-09	1E-08	--				
			INDENO(1,2,3-CD)PYRENE	8.1E-10		2.1E-09	3E-09	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.2E-07		1.6E-06	2E-06
			1,2,4-TRICHLOROBENZENE	9.1E-11			9E-11	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	2.0E-05			2E-05
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	8.5E-06			8E-06
			1,4-DICHLOROBENZENE	1.2E-10			1E-10	Liver	2.5E-06			3E-06
			Chemical Total	1.2E-05	--	7.1E-06	2E-05		6.2E-01	--	3.7E-01	1E+00
		Exposure Point Total					2E-05					1E+00
	Exposure Medium Total						2E-05					1E+00
Medium Total							2E-05					1E+00
Receptor Total							2E-05				Receptor HI Total	1E+00

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 1E+00

TABLE 9.4a CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	2,3,7,8-TCDD Equivalent	4.2E-06		1.6E-07	4E-06	Developmental effects	2.2E-01		8.6E-03	2E-01
			ALUMINUM					Neurotoxicology	2.7E-03			3E-03
			ARSENIC	1.6E-06		6.5E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.8E-02		1.1E-03	3E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	5.4E-04			5E-04
			CHROMIUM					None Reported (O)	2.0E-03			2E-03
			IRON					Gastrointestinal effects	1.0E-02			1E-02
			MANGANESE					CNS (N)	8.0E-04			8E-04
			MERCURY					Autoimmune effects	1.0E+00			1E+00
			NICKEL					Decreased body and organ weight (W)	5.9E-02			6E-02
			VANADIUM					Decreased hair cystine	8.0E-04			8E-04
			HIGHLY CHLORINATED PCBs	2.6E-07		4.7E-08	3E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	5.0E-02		9.2E-03	6E-02
			DELTA-BHC	4.9E-07			5E-07	--				
			DIELDRIN	2.4E-06			2E-06	Hepatic (H)	2.4E-02			2E-02
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.7E-07		4.7E-08	3E-07	--				
			BENZO(A)PYRENE	3.5E-06		6.0E-07	4E-06	--				
			BENZO(B)FLUORANTHENE	3.8E-07		6.5E-08	4E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.1E-04		1.9E-05	1E-04
			BENZO(K)FLUORANTHENE	1.7E-08		2.9E-09	2E-08	--				
			DIBENZO(A,H)ANTHRACENE	6.8E-07		1.2E-07	8E-07	--				
			HEXACHLOROBENZENE	4.7E-07		6.2E-08	5E-07	Hepatic (H)	2.9E-03		3.8E-04	3E-03
			HEXACHLOROBUTADIENE	5.8E-09		7.6E-10	7E-09	--				
			INDENO(1,2,3-CD)PYRENE	3.1E-07		5.3E-08	4E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.6E-04		2.7E-05	2E-04
			1,2,4-TRICHLOROBENZENE	6.2E-10			6E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.3E-04			1E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.4E-03			1E-03
			1,3-DICHLOROBENZENE					--				

TABLE 9.4a CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Plant Area	1,4-DICHLOROBENZENE	5.4E-07			5E-07	Liver	1.1E-02			1E-02
			BENZENE	1.4E-11			1E-11	Reduced lymphocyte count	4.8E-07			5E-07
			CHLOROBENZENE					Histopathologic changes in liver	2.2E-03			2E-03
			Chemical Total	1.5E-05	--	1.2E-06	2E-05		1.4E+00	--	1.9E-02	1E+00
		Exposure Point Total					2E-05					1E+00
	Exposure Medium Total						2E-05					1E+00
Medium Total							2E-05					1E+00
Receptor Total							2E-05				Receptor HI Total	1E+00

Total Risk Across All Media =	2E-05
Total Hazard Across All Media =	1E+00
Total Liver HI Across All Media =	4E-02
Total Kidney HI Across All Media =	9E-04
Total Nervous System Effects HI Across All Media =	3E-02
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	6E-02

TABLE 9.4b CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	On-Site Ditches	2,3,7,8-TCDD Equivalent	4.7E-05		1.8E-06	5E-05	Developmental effects	2.4E+00		9.6E-02	3E+00
			ARSENIC	2.5E-06		9.8E-08	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	4.3E-02		1.7E-03	4E-02
			CHROMIUM					None Reported (O)	2.1E-02			2E-02
			COPPER					Gastrointestinal effects	2.6E-03			3E-03
			IRON					Gastrointestinal effects	2.5E-02			2E-02
			LEAD					--				
			MANGANESE					CNS (N)	9.9E-04			1E-03
			MERCURY					Autoimmune effects	3.8E+00			4E+00
			METHYL MERCURY					Developmental neuropsychological impairment (N)	2.2E-03			2E-03
			NICKEL					Decreased body and organ weight (W)	4.8E-03			5E-03
			VANADIUM					Decreased hair cystine	2.3E-03			2E-03
			HIGHLY CHLORINATED PCBs	1.2E-06		2.1E-07	1E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	2.2E-01		4.2E-02	3E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	6.3E-08		1.1E-08	7E-08	--				
			BENZO(A)PYRENE	6.0E-07		1.0E-07	7E-07	--				
			BENZO(B)FLUORANTHENE	9.0E-08		1.6E-08	1E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.5E-05		2.6E-06	2E-05
			DIBENZO(A,H)ANTHRACENE	1.3E-07		2.3E-08	2E-07	--				
			INDENO(1,2,3-CD)PYRENE	3.6E-08		6.2E-09	4E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.1E-05		3.7E-06	3E-05
			Chemical Total	5.1E-05	--	2.3E-06	5E-05		6.6E+00	--	1.4E-01	7E+00
		Exposure Point Total					5E-05					7E+00
	Exposure Medium Total						5E-05					7E+00
Medium Total							5E-05					7E+00
Receptor Total							5E-05				Receptor HI Total	7E+00

Total Risk Across All Media =	5E-05
Total Hazard Across All Media =	7E+00
Total Kidney HI Across All Media =	4E-05
Total Nervous System Effects HI Across All Media =	5E-02
Total Immune/Lymphocyte Effects HI Across All Media =	4E+00
Total Ocular Effects HI Across All Media =	3E-01

TABLE 9.4c CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	3.9E-04		1.5E-05	4E-04	Developmental effects	2.0E+01		8.0E-01	2E+01
			ARSENIC	6.4E-07		2.5E-08	7E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	1.1E-02		4.4E-04	1E-02
			CHROMIUM					None Reported (O)	1.4E-03			1E-03
			IRON					Gastrointestinal effects	3.9E-03			4E-03
			MANGANESE					CNS (N)	7.7E-04			8E-04
			MERCURY					Autoimmune effects	8.8E-03			9E-03
			VANADIUM					Decreased hair cystine	4.4E-04			4E-04
			HIGHLY CHLORINATED PCBs	4.5E-07		8.4E-08	5E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	8.8E-02		1.6E-02	1E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	4.8E-08		8.3E-09	6E-08	--				
			BENZO(A)PYRENE	4.5E-07		7.8E-08	5E-07	--				
			BENZO(B)FLUORANTHENE	8.4E-08		1.4E-08	1E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.2E-05		2.0E-06	1E-05
			DIBENZO(A,H)ANTHRACENE	9.3E-08		1.6E-08	1E-07	--				
			INDENO(1,2,3-CD)PYRENE	2.7E-08		4.5E-09	3E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.0E-05		3.5E-06	2E-05
			1,2,4-TRICHLOROBENZENE	3.0E-09			3E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	6.4E-04			6E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	2.8E-04			3E-04
			1,4-DICHLOROBENZENE	4.0E-09			4E-09	Liver	8.3E-05			8E-05
			Chemical Total	3.9E-04	--	1.6E-05	4E-04		2.0E+01	--	8.1E-01	2E+01
		Exposure Point Total					4E-04					2E+01
	Exposure Medium Total						4E-04					2E+01
Medium Total							4E-04					2E+01
Receptor Total							4E-04				Receptor HI Total	2E+01

Total Risk Across All Media =	4E-04
Total Hazard Across All Media =	2E+01
Total Liver HI Across All Media =	8E-05
Total Kidney HI Across All Media =	4E-05
Total Nervous System Effects HI Across All Media =	1E-02
Total Immune/Lymphocyte Effects HI Across All Media =	1E-01
Total Ocular Effects HI Across All Media =	1E-01

TABLE 9.4d CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/OUFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	4.3E-06		1.7E-07	4E-06	Developmental effects	2.2E-01		8.8E-03	2E-01
			ALUMINUM					Neurotoxicology	2.5E-03			2E-03
			ARSENIC	1.7E-06		6.8E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	3.0E-02		1.2E-03	3E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.1E-03			1E-03
			CHROMIUM					None Reported (O)	2.0E-02			2E-02
			IRON					Gastrointestinal effects	1.2E-02			1E-02
			LEAD					--				
			MANGANESE					CNS (N)	6.8E-04			7E-04
			MERCURY					Autoimmune effects	1.2E+00			1E+00
			VANADIUM					Decreased hair cystine	3.8E-03			4E-03
			HIGHLY CHLORINATED PCBs	2.9E-06		5.3E-07	3E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	5.6E-01		1.0E-01	7E-01
			ALDRIN	7.6E-08			8E-08	Liver toxicity (H)	1.2E-03			1E-03
			DELTA-BHC	9.4E-10			9E-10	--				
			ENDOSULFAN I					Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	1.7E-07			2E-07
			HEPTACHLOR	2.2E-08			2E-08	Liver weight increase	7.7E-05			8E-05
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.0E-07		3.5E-08	2E-07	--				
			BENZO(A)PYRENE	2.3E-06		4.0E-07	3E-06	--				
			BENZO(B)FLUORANTHENE	3.9E-07		6.7E-08	5E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.2E-05		1.1E-05	7E-05
			BENZO(K)FLUORANTHENE	9.9E-09		1.7E-09	1E-08	--				
			DIBENZO(A,H)ANTHRACENE	7.2E-07		1.2E-07	8E-07	--				
			HEXACHLOROBENZENE	2.5E-07		3.2E-08	3E-07	Hepatic (H)	1.5E-03		2.0E-04	2E-03
			INDENO(1,2,3-CD)PYRENE	1.5E-07		2.6E-08	2E-07	--				

TABLE 9.4d CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/OUFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Southwest Off-Site/Outfall 006 Exposure Area	PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	9.4E-05		1.6E-05	1E-04
			BENZENE	4.5E-12			5E-12	Reduced lymphocyte count	1.6E-07			2E-07
			TRICHLOROETHENE	6.3E-10			6E-10	--				
			Chemical Total	1.3E-05	--	1.5E-06	1E-05		2.0E+00	--	1.1E-01	2E+00
		Exposure Point Total					1E-05					2E+00
	Exposure Medium Total						1E-05					2E+00
Medium Total							1E-05					2E+00
Receptor Total							1E-05				Receptor HI Total	2E+00

Total Risk Across All Media =	1E-05
Total Hazard Across All Media =	2E+00
Total Liver HI Across All Media =	3E-03
Total Kidney HI Across All Media =	1E-03
Total Nervous System Effects HI Across All Media =	3E-02
Total Immune/Lymphocyte Effects HI Across All Media =	2E+00
Total Ocular Effects HI Across All Media =	7E-01

TABLE 9.4e CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Petroleum Storage Area	ARSENIC	4.2E-06		1.7E-07	4E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	7.2E-02		2.9E-03	8E-02
			CHROMIUM					None Reported (O)	3.0E-03			3E-03
			IRON					Gastrointestinal effects	1.3E-02			1E-02
			MANGANESE					CNS (N)	1.1E-03			1E-03
			MERCURY					Autoimmune effects	1.5E-02			2E-02
			VANADIUM					Decreased hair cystine	7.2E-04			7E-04
			HIGHLY CHLORINATED PCBs	5.9E-08		1.1E-08	7E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.2E-02		2.1E-03	1E-02
			DELTA-BHC	3.1E-10			3E-10	--				
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.2E-07		3.8E-08	3E-07	--				
			BENZO(A)PYRENE	2.1E-06		3.6E-07	2E-06	--				
			BENZO(B)FLUORANTHENE	3.0E-07		5.2E-08	4E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	7.2E-05		1.2E-05	8E-05
			BENZO(K)FLUORANTHENE	8.4E-09		1.4E-09	1E-08	--				
			DIBENZO(A,H)ANTHRACENE	5.1E-07		8.8E-08	6E-07	--				
			INDENO(1,2,3-CD)PYRENE	1.8E-07		3.2E-08	2E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.7E-05		8.1E-06	6E-05
			BENZENE	2.0E-10			2E-10	Reduced lymphocyte count	6.9E-06			7E-06
			Chemical Total	7.6E-06	--	7.5E-07	8E-06		1.2E-01	--	5.0E-03	1E-01
		Exposure Point Total					8E-06					1E-01
	Exposure Medium Total						8E-06					1E-01
Medium Total							8E-06					1E-01
Receptor Total							8E-06				Receptor HI Total	1E-01

Total Risk Across All Media = 8E-06

Total Hazard Across All Media = 1E-01

TABLE 9.4f CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft bgs)	Chlorobenzene Hot-Spot Area	ARSENIC	8.5E-07		3.4E-08	9E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	1.5E-02		5.8E-04	2E-02
			CHROMIUM					None Reported (O)	2.8E-03			3E-03
			IRON					Gastrointestinal effects	1.1E-02			1E-02
			MANGANESE					CNS (N)	7.6E-04			8E-04
			MERCURY					Autoimmune effects	3.0E-03			3E-03
			VANADIUM					Decreased hair cystine	4.4E-04			4E-04
			HIGHLY CHLORINATED PCBs	9.3E-06		1.7E-06	1E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.8E+00		3.4E-01	2E+00
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	4.0E-07		6.9E-08	5E-07	--				
			BENZO(A)PYRENE	2.3E-06		4.0E-07	3E-06	--				
			BENZO(B)FLUORANTHENE	5.4E-07		9.2E-08	6E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.7E-05		9.8E-06	7E-05
			BENZO(K)FLUORANTHENE	1.6E-08		2.8E-09	2E-08	--				
			DIBENZO(A,H)ANTHRACENE	5.4E-07		9.3E-08	6E-07	--				
			HEXACHLOROBENZENE	1.9E-07		2.6E-08	2E-07	Hepatic (H)	1.2E-03		1.6E-04	1E-03
			INDENO(1,2,3-CD)PYRENE	1.9E-07		3.2E-08	2E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.7E-04		4.6E-05	3E-04
			1,2,4-TRICHLOROBENZENE	2.0E-09			2E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	4.3E-04			4E-04
			1,4-DICHLOROBENZENE	1.3E-09			1E-09	Liver	2.7E-05			3E-05
			BENZENE	1.8E-11			2E-11	Reduced lymphocyte count	6.4E-07			6E-07
			Chemical Total	1.4E-05	--	2.5E-06	2E-05		1.8E+00	--	3.4E-01	2E+00
		Exposure Point Total					2E-05					2E+00
	Exposure Medium Total						2E-05					2E+00
Medium Total							2E-05					2E+00
Receptor Total							2E-05				Receptor HI Total	2E+00

Total Risk Across All Media =	2E-05
Total Hazard Across All Media =	2E+00
Total Liver HI Across All Media =	1E-03
Total Kidney HI Across All Media =	4E-04
Total Nervous System Effects HI Across All Media =	2E-02
Total Immune/Lymphocyte Effects HI Across All Media =	2E+00
Total Ocular Effects HI Across All Media =	2E+00

TABLE 9.5a CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Plant Area	2,3,7,8-TCDD Equivalent	1.8E-06		5.5E-08	2E-06	Developmental effects	8.6E-01		2.6E-02	9E-01
			ALUMINUM					Neurotoxicity, Psychomotor and cognitive impairments	1.1E-02	4.4E-01		4E-01
			ARSENIC	6.8E-07	3.8E-07	2.0E-08	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.1E-01	1.2E-01	3.2E-03	2E-01
			BARIUM					Humans - none observed (O); Rats - Kidney (R), Renal toxicity	1.7E-03	1.3E-01		1E-01
			CHROMIUM		7.6E-07		8E-07	Respiratory (P)	7.7E-03	4.4E-02		5E-02
			IRON					Gastrointestinal effects	3.9E-02			4E-02
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	3.1E-03	1.7E+00		2E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	1.4E+00	2.7E-01		2E+00
			NICKEL		2.9E-06		3E-06	Decreased body and organ weight (W) , Respiratory (P)	2.0E-01	8.8E+00		9E+00
			VANADIUM					Decreased hair cystine	3.7E-03			4E-03
			HIGHLY CHLORINATED PCBs	7.1E-08	3.9E-09	1.0E-08	9E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	1.2E-01		1.7E-02	1E-01
			DELTA-BHC	2.2E-07	1.2E-08		2E-07	--				
			DIELDRIN	1.1E-06	6.0E-08		1E-06	Hepatic (H)	9.6E-02			1E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.4E-07		1.8E-08	2E-07	--				
			BENZO(A)PYRENE	1.5E-06		1.9E-07	2E-06	--				
			BENZO(B)FLUORANTHENE	2.0E-07		2.6E-08	2E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights)	5.3E-04		6.9E-05	6E-04
			BENZO(K)FLUORANTHENE	7.2E-09		9.4E-10	8E-09	--				
			DIBENZO(A,H)ANTHRACENE	3.0E-07		4.0E-08	3E-07	--				
			HEXACHLOROBENZENE	5.5E-07	3.0E-08	5.5E-08	6E-07	Hepatic (H)	3.0E-02		3.0E-03	3E-02
			HEXACHLOROBUTADIENE	1.8E-09	9.9E-11	1.8E-10	2E-09	--				
			INDENO(1,2,3-CD)PYRENE	1.3E-07		1.7E-08	1E-07	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	5.9E-04		7.7E-05	7E-04
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	3.1E-10			3E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	6.0E-04			6E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	3.9E-03	3.0E-02		3E-02
			1,3-DICHLOROBENZENE					--				

TABLE 9.5a CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Plant Area	1,4-DICHLOROBENZENE	1.6E-07	4.7E-06		5E-06	Liver	3.0E-02	3.6E-02		7E-02
			BENZENE	2.1E-09	1.9E-08		2E-08	Reduced lymphocyte count	6.8E-04	5.8E-03		6E-03
			CHLOROBENZENE					Histopathologic changes in liver	8.3E-03			8E-03
			Chemical Total	6.9E-06	8.9E-06	4.3E-07	2E-05		2.9E+00	1.2E+01	5.0E-02	1E+01
		Exposure Point Total					2E-05					1E+01
	Exposure Medium Total						2E-05					1E+01
Medium Total							2E-05					1E+01
Receptor Total							2E-05				Receptor HI Total	1E+01

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	2E-01
Total Kidney HI Across All Media =	1E-01
Total Nervous System Effects HI Across All Media =	4E+00
Total Immune/Lymphocyte Effects HI Across All Media =	2E+00
Total Nasal/Respiratory Effects HI Across All Media =	9E+00
Total Ocular Effects HI Across All Media =	1E-01

TABLE 9.5b CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	On-Site Ditches	2,3,7,8-TCDD Equivalent	2.1E-05		6.3E-07	2E-05	Developmental effects	9.7E+00		2.9E-01	1E+01
			ARSENIC	1.1E-06	6.1E-07	3.3E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.7E-01	2.0E-01	5.2E-03	4E-01
			CHROMIUM		8.2E-06		8E-06	Respiratory (P)	8.3E-02	4.8E-01		6E-01
			COPPER					Gastrointestinal effects	1.1E-02			1E-02
			IRON					Gastrointestinal effects	9.9E-02			1E-01
			LEAD					--				
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	4.0E-03	2.2E+00		2E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	2.1E+01	4.0E+00		2E+01
			METHYL MERCURY					Developmental neuropsychological impairment (N), PNS (N); CNS (N)	8.9E-03	5.7E-04		9E-03
			NICKEL		2.8E-07		3E-07	Decreased body and organ weight (W) , Respiratory (P)	1.9E-02	8.4E-01		9E-01
			VANADIUM					Decreased hair cystine	9.2E-03			9E-03
			HIGHLY CHLORINATED PCBs	3.6E-07	2.0E-08	5.1E-08	4E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	6.4E-01		8.9E-02	7E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.8E-08		3.7E-09	3E-08	--				
			BENZO(A)PYRENE	2.7E-07		3.5E-08	3E-07	--				
			BENZO(B)FLUORANTHENE	4.0E-08		5.3E-09	5E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights)	6.0E-05		7.8E-06	7E-05
			DIBENZO(A,H)ANTHRACENE	5.9E-08		7.7E-09	7E-08	--				
			INDENO(1,2,3-CD)PYRENE	1.6E-08		2.1E-09	2E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	8.6E-05		1.1E-05	1E-04
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	5.0E-10			5E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	9.7E-04			1E-03
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	2.7E-03	2.1E-02		2E-02
			1,3-DICHLOROBENZENE					--				

TABLE 9.5b CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	On-Site Ditches	1,4-DICHLOROBENZENE	4.3E-08	1.2E-06		1E-06	Liver	7.9E-03	9.3E-03		2E-02
			BENZENE	1.2E-10	1.1E-09		1E-09	Reduced lymphocyte count	3.9E-05	3.3E-04		4E-04
			CHLOROBENZENE					Histopathologic changes in liver	4.6E-03			5E-03
			Chemical Total	2.3E-05	1.0E-05	7.6E-07	3E-05		3.1E+01	7.7E+00	3.9E-01	4E+01
		Exposure Point Total					3E-05					4E+01
	Exposure Medium Total						3E-05					4E+01
Medium Total							3E-05					4E+01
Receptor Total							3E-05				Receptor HI Total	4E+01

Total Risk Across All Media =	3E-05
Total Hazard Across All Media =	4E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	2E-02
Total Kidney HI Across All Media =	2E-04
Total Nervous System Effects HI Across All Media =	3E+01
Total Immune/Lymphocyte Effects HI Across All Media =	3E+01
Total Nasal/Respiratory Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	7E-01

TABLE 9.5c CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	7.0E-04		2.1E-05	7E-04	Developmental effects	3.3E+02		9.8E+00	3E+02
			ARSENIC	2.9E-07	1.6E-07	8.6E-09	5E-07	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	4.5E-02	5.2E-02	1.3E-03	1E-01
			CHROMIUM		5.8E-07		6E-07	Respiratory (P)	5.8E-03	3.4E-02		4E-02
			IRON					Gastrointestinal effects	1.6E-02			2E-02
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	3.1E-03	1.7E+00		2E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	6.5E-01	1.2E-01		8E-01
			VANADIUM					Decreased hair cystine	1.8E-03			2E-03
			HIGHLY CHLORINATED PCBs	2.0E-07	1.1E-08	2.8E-08	2E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	3.6E-01		5.0E-02	4E-01
			LESS CHLORINATED PCBs	4.1E-08	2.2E-09	5.7E-09	5E-08	Reduced birth weights (W)	2.0E-02		2.8E-03	2E-02
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.2E-08		2.8E-09	2E-08	--				
			BENZO(A)PYRENE	2.0E-07		2.6E-08	2E-07	--				
			BENZO(B)FLUORANTHENE	3.8E-08		4.9E-09	4E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights)	4.7E-05		6.2E-06	5E-05
			DIBENZO(A,H)ANTHRACENE	4.2E-08		5.4E-09	5E-08	--				
			HEXACHLOROBENZENE	3.5E-08	2.0E-09	3.5E-09	4E-08	Hepatic (H)	1.9E-03		1.9E-04	2E-03
			INDENO(1,2,3-CD)PYRENE	1.2E-08		1.5E-09	1E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	8.2E-05		1.1E-05	9E-05

TABLE 9.5c CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Former Chlorination Building	1,2,4-TRICHLOROBENZENE	1.3E-09			1E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	2.6E-03			3E-03
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.1E-03	8.6E-03		1E-02
			1,4-DICHLOROBENZENE	1.8E-09	5.1E-08		5E-08	Liver	3.3E-04	3.9E-04		7E-04
			Chemical Total	7.0E-04	8.0E-07	2.1E-05	7E-04		3.3E+02	1.9E+00	9.8E+00	3E+02
		Exposure Point Total					7E-04					3E+02
	Exposure Medium Total						7E-04					3E+02
Medium Total							7E-04					3E+02
Receptor Total							7E-04				Receptor HI Total	3E+02

Total Risk Across All Media =	7E-04
Total Hazard Across All Media =	3E+02

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	3E-03
Total Kidney HI Across All Media =	1E-04
Total Nervous System Effects HI Across All Media =	3E+00
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Nasal/Respiratory Effects HI Across All Media =	4E-02
Total Ocular Effects HI Across All Media =	4E-01

TABLE 9.5dCT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	1.9E-06		5.8E-08	2E-06	Developmental effects	9.0E-01		2.7E-02	9E-01
			ALUMINUM					Neurotoxicity, Psychomotor and cognitive impairments	1.0E-02	3.9E-01		4E-01
			ARSENIC	7.6E-07	4.2E-07	2.3E-08	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.2E-01	1.4E-01	3.6E-03	3E-01
			BARIUM					Humans - none observed (O); Rats - Kidney (R), Renal toxicity	4.3E-03	3.4E-01		3E-01
			CHROMIUM		7.8E-06		8E-06	Respiratory (P)	7.9E-02	4.6E-01		5E-01
			IRON					Gastrointestinal effects	4.9E-02			5E-02
			LEAD					--				
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	2.7E-03	1.5E+00		1E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	8.1E+00	1.6E+00		1E+01
			VANADIUM					Decreased hair cystine	1.5E-02			2E-02
			HIGHLY CHLORINATED PCBs	1.3E-06	7.1E-08	1.8E-07	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	2.3E+00		3.2E-01	3E+00
			ALDRIN	2.8E-08	1.5E-09		3E-08	Liver toxicity (H)	3.8E-03			4E-03
			HEPTACHLOR	1.0E-08	5.5E-10		1E-08	Liver weight increase	3.1E-04			3E-04
			BENZO(A)ANTHRACENE	9.0E-08		1.2E-08	1E-07	--				
			BENZO(A)PYRENE	1.1E-06		1.4E-07	1E-06	--				
			BENZO(B)FLUORANTHENE	1.8E-07		2.3E-08	2E-07	--				
			BENZO(K)FLUORANTHENE	4.4E-09		5.8E-10	5E-09	--				
			DIBENZO(A,H)ANTHRACENE	3.2E-07		4.2E-08	4E-07	--				
			HEXACHLOROBENZENE	9.1E-08	5.0E-09	9.1E-09	1E-07	Hepatic (H)	5.0E-03		5.0E-04	5E-03
			INDENO(1,2,3-CD)PYRENE	6.9E-08		8.9E-09	8E-08	--				
			NAPHTHALENE		3.9E-07		4E-07	Decreased body weight (W) , Nasal/respiratory (P)	2.1E-01	2.7E-01	2.7E-02	5E-01
			1,2,4-TRIMETHYLBENZENE					NA, Hematological and Pulmonary		1.0E-01		1E-01
			1,3,5-TRIMETHYLBENZENE					--				
			1,4-DICHLOROBENZENE	6.0E-09	1.7E-07		2E-07	Liver	1.1E-03	1.3E-03		2E-03
			BENZENE	7.7E-06	7.0E-05		8E-05	Reduced lymphocyte count	2.5E+00	2.1E+01		2E+01
			ETHYLBENZENE					Liver (H) and kidney (R) toxicity, Developmental toxicity	1.1E-03	3.7E-03		5E-03
			SEC-BUTYLBENZENE					--				
			TERT-BUTYLBENZENE					--				

TABLE 9.5dCT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Southwest Off-Site/Outfall 006 Exposure Area	TOLUENE					Increased kidney weight (R), Neurological effects	5.0E-02	3.5E-02		9E-02
			TRICHLOROETHENE	2.5E-10	3.8E-09		4E-09	--				
			XYLENES, TOTAL					Decreased body weight (W), increased mortality (M), Impaired motor coordination (decreased rotarod performance)	1.1E-02	4.3E+00		4E+00
			Chemical Total	1.4E-05	7.9E-05	4.9E-07	9E-05		1.4E+01	3.0E+01	3.7E-01	4E+01
		Exposure Point Total					9E-05					4E+01
	Exposure Medium Total						9E-05					4E+01
Medium Total							9E-05					4E+01
Receptor Total							9E-05				Receptor HI Total	4E+01

Total Risk Across All Media =	9E-05
Total Hazard Across All Media =	4E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	2E-02
Total Kidney HI Across All Media =	4E-01
Total Nervous System Effects HI Across All Media =	2E+01
Total Immune/Lymphocyte Effects HI Across All Media =	4E+01
Total Nasal/Respiratory Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	3E+00

TABLE 9.5e CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Petroleum Storage Area	ALUMINUM					Neurotoxicity, Psychomotor and cognitive impairments	1.2E-02	4.6E-01		5E-01
			ARSENIC	1.1E-06	5.9E-07	3.2E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.7E-01	1.9E-01	5.0E-03	4E-01
			CHROMIUM		8.8E-07		9E-07	Respiratory (P)	8.9E-03	5.1E-02		6E-02
			IRON					Gastrointestinal effects	4.5E-02			5E-02
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	4.1E-03	2.2E+00		2E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	4.4E-02	8.6E-03		5E-02
			VANADIUM					Decreased hair cystine	2.5E-03			2E-03
			HIGHLY CHLORINATED PCBs	2.7E-08	1.5E-09	3.7E-09	3E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	4.6E-02		6.5E-03	5E-02
			DELTA-BHC	1.4E-10	7.7E-12		1E-10	--				
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	5.4E-08		7.0E-09	6E-08	--				
			BENZO(A)PYRENE	5.1E-07		6.6E-08	6E-07	--				
			BENZO(B)FLUORANTHENE	7.6E-08		9.8E-09	9E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights)	1.6E-04		2.1E-05	2E-04
			BENZO(K)FLUORANTHENE	2.3E-09		3.0E-10	3E-09	--				
			DIBENZO(A,H)ANTHRACENE	1.3E-07		1.7E-08	1E-07	--				
			INDENO(1,2,3-CD)PYRENE	4.2E-08		5.5E-09	5E-08	--				
			NAPHTHALENE		2.7E-09		3E-09	Decreased body weight (W) , Nasal/respiratory (P)	1.4E-03	1.9E-03	1.9E-04	4E-03
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	1.5E-04		1.9E-05	2E-04
			BENZENE	1.0E-10	9.4E-10		1E-09	Reduced lymphocyte count	3.3E-05	2.8E-04		3E-04
			Chemical Total	1.9E-06	1.5E-06	1.4E-07	4E-06		3.3E-01	2.9E+00	1.2E-02	3E+00
		Exposure Point Total					4E-06					3E+00
	Exposure Medium Total						4E-06					3E+00
Medium Total							4E-06					3E+00

TABLE 9.5e CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Shallow Groundwater (0-10 ft bgs)	Petroleum Storage Area	ALUMINUM					Neurotoxicity, Psychomotor and cognitive impairments	1.0E-03		2.7E-03	4E-03
			BARIUM					Humans - none observed (O); Rats - Kidney (R), Renal toxicity	6.4E-05		2.4E-03	2E-03
			CHROMIUM					Respiratory (P)	6.7E-04		1.4E-01	1E-01
			COPPER					Gastrointestinal effects	1.8E-04		4.6E-04	6E-04
			IRON					Gastrointestinal effects	2.5E-03		6.7E-03	9E-03
			LEAD					--				
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	4.8E-04		3.2E-02	3E-02
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	3.2E-04		1.2E-02	1E-02
			NICKEL					Decreased body and organ weight (W) , Respiratory (P)	1.4E-04		1.8E-03	2E-03
			VANADIUM					Decreased hair cystine	2.6E-04		2.6E-02	3E-02
			DIBENZOFURAN					Reduced length and organ weight. Excess abdominal fat (O)	7.8E-05			8E-05
			NAPHTHALENE					Decreased body weight (W) , Nasal/respiratory (P)	4.5E-04		5.6E-02	6E-02
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	7.8E-06		2.9E-03	3E-03
			BENZENE	8.9E-08		3.5E-06	4E-06	Reduced lymphocyte count	2.8E-02		1.1E+00	1E+00
			XYLENES, TOTAL					Decreased body weight (W), increased mortality (M), Impaired motor coordination (decreased rotarod performance)	8.0E-06			8E-06
			Chemical Total	8.9E-08	--	3.5E-06	4E-06		3.5E-02	--	1.4E+00	1E+00
		Exposure Point Total					4E-06					1E+00
	Exposure Medium Total						4E-06					1E+00
Medium Total							4E-06					1E+00
Receptor Total							7E-06				Receptor HI Total	5E+00

Total Risk Across All Media =	7E-06
Total Hazard Across All Media =	5E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Kidney HI Across All Media =	6E-03
Total Nervous System Effects HI Across All Media =	3E+00
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Nasal/Respiratory Effects HI Across All Media =	3E-01
Total Ocular Effects HI Across All Media =	5E-02

TABLE 9.5f CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREAS - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobenzene Hot-Spot Areas
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Chlorobenzene Hot-Spot Area	ARSENIC	2.8E-07	1.6E-07	8.5E-09	4E-07	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	4.4E-02	5.1E-02	1.3E-03	1E-01
			CHROMIUM		9.5E-07		1E-06	Respiratory (P)	9.6E-03	5.6E-02		7E-02
			IRON					Gastrointestinal effects	3.4E-02			3E-02
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	3.5E-03	1.9E+00		2E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	1.6E-02	3.1E-03		2E-02
			VANADIUM					Decreased hair cystine	1.6E-03			2E-03
			HIGHLY CHLORINATED PCBs	2.3E-06	1.3E-07	3.2E-07	3E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.0E+00		5.6E-01	5E+00
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.3E-07		3.0E-08	3E-07	--				
			BENZO(A)PYRENE	9.7E-07		1.3E-07	1E-06	--				
			BENZO(B)FLUORANTHENE	1.4E-07		1.9E-08	2E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights)	2.4E-04		3.1E-05	3E-04
			BENZO(K)FLUORANTHENE	7.6E-09		9.8E-10	9E-09	--				
			DIBENZO(A,H)ANTHRACENE	2.6E-07		3.4E-08	3E-07	--				
			HEXACHLOROBENZENE	1.1E-07	6.0E-09	1.1E-08	1E-07	Hepatic (H)	5.9E-03		5.9E-04	6E-03
			INDENO(1,2,3-CD)PYRENE	6.3E-08		8.2E-09	7E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	6.9E-04		9.0E-05	8E-04
			1,2,4-TRICHLOROBENZENE	1.7E-07			2E-07	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	3.3E-01			3E-01
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.7E-02	1.3E-01		1E-01
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.7E-07	4.8E-06		5E-06	Liver	3.1E-02	3.7E-02		7E-02
			BENZENE	5.4E-10	4.9E-09		5E-09	Reduced lymphocyte count	1.7E-04	1.5E-03		2E-03
			CHLOROBENZENE					Histopathologic changes in liver	3.1E-03			3E-03
			Chemical Total	4.7E-06	6.1E-06	5.6E-07	1E-05		4.5E+00	2.2E+00	5.6E-01	7E+00
		Exposure Point Total					1E-05					7E+00
	Exposure Medium Total						1E-05					7E+00
Medium Total							1E-05					7E+00

TABLE 9.5f CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREAS - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobenzene Hot-Spot Areas
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Shallow Groundwater (0-10 ft bgs)	Chlorobenzene Hot-Spot Area	ALUMINUM					Neurotoxicity, Psychomotor and cognitive impairments	1.1E-03		3.0E-03	4E-03
			ARSENIC	1.5E-07		3.9E-07	5E-07	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	2.3E-02		6.1E-02	8E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R), Renal toxicity	8.7E-05		3.3E-03	3E-03
			CHROMIUM					Respiratory (P)	5.9E-03		1.2E+00	1E+00
			COBALT					--				
			COPPER					Gastrointestinal effects	1.5E-04		4.0E-04	5E-04
			CYANIDE					Weight loss, thyroid effects, myelin degeneration	8.4E-04		2.2E-03	3E-03
			IRON					Gastrointestinal effects	4.8E-03		1.3E-02	2E-02
			LEAD					--				
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	4.8E-04		3.1E-02	3E-02
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	3.2E-04		1.2E-02	1E-02
			NICKEL					Decreased body and organ weight (W) , Respiratory (P)	7.9E-04		1.0E-02	1E-02
			VANADIUM					Decreased hair cystine	5.6E-04		5.7E-02	6E-02
			HEXACHLOROBENZENE	1.8E-09		1.1E-06	1E-06	Hepatic (H)	9.8E-05		6.1E-02	6E-02
			NAPHTHALENE					Decreased body weight (W) , Nasal/respiratory (P)	1.1E-05		1.3E-03	1E-03
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights)	2.6E-06		9.7E-04	1E-03
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	2.7E-10		5.3E-08	5E-08	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	5.2E-04		1.0E-01	1E-01
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	4.8E-04		5.4E-02	5E-02
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	6.2E-09		7.2E-07	7E-07	Liver	1.1E-03		1.3E-01	1E-01

TABLE 9.5f CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREAS - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobenzene Hot-Spot Areas
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Shallow Groundwater (0-10 ft bgs)	Chlorobenzene Hot-Spot Area	BENZENE	1.0E-07		4.0E-06	4E-06	Reduced lymphocyte count	3.2E-02		1.3E+00	1E+00
			CHLOROBENZENE					Histopathologic changes in liver	7.9E-03		6.0E-01	6E-01
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT, Hepatic effects	3.9E-06		7.9E-05	8E-05
			Chemical Total	2.6E-07	--	6.2E-06	7E-06		8.1E-02	--	3.6E+00	4E+00
		Exposure Point Total					7E-06					4E+00
	Exposure Medium Total						7E-06					4E+00
Medium Total							7E-06					4E+00
Receptor Total							2E-05				Receptor HI Total	1E+01

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	9E-01
Total Kidney HI Across All Media =	5E-03
Total Nervous System Effects HI Across All Media =	2E+00
Total Immune/Lymphocyte Effects HI Across All Media =	6E+00
Total Nasal/Respiratory Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	5E+00

TABLE 9.6 CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
STATE FAIR BLVD/ NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Transient Trespasser
\	State Fair Blvd/Northwest Off-Site/ Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	2,3,7,8-TCDD Equivalent	8.0E-08		1.4E-09	8E-08	Developmental effects	4.1E-03		7.1E-05	4E-03
			MERCURY					Autoimmune effects	4.2E-03			4E-03
			HIGHLY CHLORINATED PCBs	3.0E-09		2.4E-10	3E-09	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	5.9E-04		4.7E-05	6E-04
			1,2,3-TRICHLOROBENZENE					--				
			BENZENE	7.7E-14			8E-14	Reduced lymphocyte count	2.7E-09			3E-09
			Chemical Total	8.3E-08	--	1.6E-09	8E-08		8.9E-03	--	1.2E-04	9E-03
		Exposure Point Total					8E-08					9E-03
Medium Total							8E-08					9E-03
Receptor Total							8E-08				Receptor HI Total	9E-03

Total Risk Across All Media = 8E-08

Total Hazard Across All Media = 9E-03

TABLE 9.7a CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils (0 - 20 ft)	Plant Area	2,3,7,8-TCDD Equivalent	2.5E-09		1.5E-10	3E-09	Developmental effects	1.2E-03		7.0E-05	1E-03
			ALUMINUM					Neurotoxicology	1.2E-02			1E-02
			ARSENIC	4.2E-07		2.5E-08	4E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	6.5E-02		3.9E-03	7E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.5E-03			2E-03
			CHROMIUM					None Reported (O)	5.5E-03			5E-03
			IRON					Gastrointestinal effects	2.5E-02			2E-02
			MANGANESE					CNS (N)	2.1E-03			2E-03
			MERCURY					Autoimmune effects	3.2E+00			3E+00
			NICKEL					Decreased body and organ weight (W)	1.1E-01			1E-01
			VANADIUM					Decreased hair cystine	3.1E-03			3E-03
			HIGHLY CHLORINATED PCBs	5.3E-08		1.5E-08	7E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep	9.3E-02		2.6E-02	1E-01
			DELTA-BHC	1.7E-07			2E-07	--				
			DIELDRIN	8.2E-07			8E-07	Hepatic (H)	7.2E-02			7E-02
			ACENAPHTHYLENE					--				
			BENZ(A)ANTHRACENE	6.3E-08		1.6E-08	8E-08	--				
			BENZO(A)PYRENE	6.5E-07		1.7E-07	8E-07	--				
			BENZO(B)FLUORANTHENE	9.1E-08		2.4E-08	1E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.3E-04		6.0E-05	3E-04
			BENZO(K)FLUORANTHENE	4.4E-09		1.2E-09	6E-09	--				
			DIBENZ(A,H)ANTHRACENE	2.0E-07		5.1E-08	2E-07	--				
			HEXACHLOROBENZENE	3.9E-07		7.8E-08	5E-07	Hepatic (H)	2.1E-02		4.3E-03	3E-02
			HEXACHLOROBUTADIENE	1.3E-09		2.6E-10	2E-09	--				
			INDENO(1,2,3-CD)PYRENE	5.5E-08		1.4E-08	7E-08	--				
			NAPHTHALENE					Decreased body weight (W)	3.5E-04		9.0E-05	4E-04
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.9E-04		1.0E-04	5E-04
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	2.4E-09			2E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	4.6E-03			5E-03
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	5.8E-03			6E-03
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.0E-07			1E-07	Liver	1.9E-02			2E-02
			BENZENE	2.2E-09			2E-09	Reduced lymphocyte count	7.1E-04			7E-04
			CHLOROBENZENE					Histopathologic changes in liver	8.1E-03			8E-03
			Chemical Total	3.0E-06	--	3.9E-07	3E-06		3.6E+00	--	3.5E-02	4E+00
		Exposure Point Total					3E-06					4E+00
	Exposure Medium Total						3E-06					4E+00
Medium Total							3E-06					4E+00

TABLE 9.7a CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Intermediate Groundwater	Plant Area	ALUMINUM					Neurotoxicology	1.5E-03		3.9E-03	5E-03
			ARSENIC	6.6E-08		1.7E-07	2E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	1.0E-02		2.7E-02	4E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	2.7E-04		1.0E-02	1E-02
			COPPER					Gastrointestinal effects	2.8E-04		7.4E-04	1E-03
			IRON					Gastrointestinal effects	2.0E-03		5.2E-03	7E-03
			LEAD					--				
			MANGANESE					CNS (N)	8.9E-05		5.9E-03	6E-03
			MERCURY					Autoimmune effects	6.5E-04		2.4E-02	3E-02
			NICKEL					Decreased body and organ weight (W)	2.1E-04		2.8E-03	3E-03
			VANADIUM					Decreased hair cystine	1.3E-03		1.3E-01	1E-01
			2,4-DICHLOROPHENOL					Decreased delayed hypersensitivity response (O)	1.8E-04		1.1E-02	1E-02
			2-CHLOROPHENOL					Reproductive efforts	2.3E-05		5.7E-04	6E-04
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	9.8E-07			1E-06
			CHRYSENE	1.2E-11		2.1E-08	2E-08	--				
			INDENO(1,2,3-CD)PYRENE	6.1E-10		1.8E-06	2E-06	--				
			NAPHTHALENE					Decreased body weight (W)	4.8E-05		6.0E-03	6E-03
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.9E-06		2.2E-03	2E-03
			1,2,4-TRICHLOROBENZENE	2.9E-11		5.6E-09	6E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	5.6E-05		1.1E-02	1E-02
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	8.5E-05		9.6E-03	1E-02
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.5E-09		1.7E-07	2E-07	Liver	2.7E-04		3.2E-02	3E-02
			BENZENE	3.9E-08		1.5E-06	2E-06	Reduced lymphocyte count	1.2E-02		4.9E-01	5E-01
			CHLOROBENZENE					Histopathologic changes in liver	7.5E-03		5.7E-01	6E-01
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	1.5E-04		3.1E-03	3E-03
			METHYLENE CHLORIDE	4.7E-10		4.7E-09	5E-09	Liver toxicity (H)	7.3E-05		7.3E-04	8E-04
			Chemical Total	1.1E-07	--	3.8E-06	4E-06		3.7E-02	--	1.3E+00	1E+00
		Exposure Point Total					4E-06					1E+00
	Exposure Medium Total						4E-06					1E+00
Medium Total							4E-06					1E+00
Receptor Total							7E-06				Receptor HI Total	5E+00

Total Risk Across All Media =	7E-06
Total Hazard Across All Media =	5E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	7E-01
Total Kidney HI Across All Media =	1E-02
Total Nervous System Effects HI Across All Media =	1E-01
Total Immune/Lymphocyte Effects HI Across All Media =	4E+00
Total Ocular Effects HI Across All Media =	1E-01

TABLE 9.7b CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils (0-20 ft bgs)	On-Site Ditches	2,3,7,8-TCDD Equivalent	1.6E-05		9.4E-07	2E-05	Developmental effects	7.3E+00		4.4E-01	8E+00
			ARSENIC	8.3E-07		5.0E-08	9E-07	Hyperpigmentation (In); Vascular (V); PNS	1.3E-01		7.7E-03	1E-01
			CHROMIUM					None Reported (O)	6.2E-02			6E-02
			COPPER					Gastrointestinal effects	7.9E-03			8E-03
			IRON					Gastrointestinal effects	7.5E-02			7E-02
			LEAD					--				
			MANGANESE					CNS (N)	3.0E-03			3E-03
			MERCURY					Autoimmune effects	1.5E+01			2E+01
			NICKEL					Decreased body and organ weight (W)	1.5E-02			1E-02
			VANADIUM					Decreased hair cystine	6.9E-03			7E-03
			METHYL MERCURY					Developmental neuropsychological impairment (N)	6.6E-03			7E-03
			HIGHLY CHLORINATED PCBs	2.7E-07		7.7E-08	3E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.8E-01		1.3E-01	6E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	2.1E-08		5.5E-09	3E-08	--				
			BENZO(A)PYRENE	2.0E-07		5.3E-08	3E-07	--				
			BENZO(B)FLUORANTHENE	3.0E-08		7.9E-09	4E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	4.5E-05		1.2E-05	6E-05
			DIBENZO(A,H)ANTHRACENE	4.4E-08		1.2E-08	6E-08	--				
			INDENO(1,2,3-CD)PYRENE	1.2E-08		3.2E-09	2E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.5E-05		1.7E-05	8E-05
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	3.7E-10			4E-10	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	7.3E-04			7E-04
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	2.0E-03			2E-03
			1,3-DICHLOROBENZENE					--				

TABLE 9.7b CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils (0-20 ft bgs)	On-Site Ditches	1,4-DICHLOROBENZENE	3.2E-08			3E-08	Liver	6.0E-03			6E-03
			BENZENE	9.1E-11			9E-11	Reduced lymphocyte count	2.9E-05			3E-05
			CHLOROBENZENE					Histopathologic changes in liver	3.4E-03			3E-03
			Chemical Total	1.7E-05	--	1.1E-06	2E-05		2.4E+01	--	5.8E-01	2E+01
		Exposure Point Total					2E-05					2E+01
	Exposure Medium Total						2E-05					2E+01
Medium Total							2E-05					2E+01
Receptor Total							2E-05				Receptor HI Total	2E+01

Total Risk Across All Media =	2E-05
Total Hazard Across All Media =	2E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	9E-03
Total Kidney HI Across All Media =	6E-05
Total Nervous System Effects HI Across All Media =	1E-01
Total Immune/Lymphocyte Effects HI Across All Media =	2E+01
Total Ocular Effects HI Across All Media =	6E-01

TABLE 9.7c CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils (0-20 ft bgs)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	5.2E-04		3.1E-05	6E-04	Developmental effects	2.4E+02		1.5E+01	3E+02
			ARSENIC	2.2E-07		1.3E-08	2E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	3.4E-02		2.0E-03	4E-02
			CHROMIUM					None Reported (O)	4.4E-03			4E-03
			IRON					Gastrointestinal effects	1.2E-02			1E-02
			MANGANESE					CNS (N)	2.3E-03			2E-03
			MERCURY					Autoimmune effects	4.8E-01			5E-01
			VANADIUM					Decreased hair cystine	1.3E-03			1E-03
			HIGHLY CHLORINATED PCBs	1.5E-07		4.3E-08	2E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep	2.7E-01		7.5E-02	3E-01
			LESS CHLORINATED PCBs	3.0E-08		8.5E-09	4E-08	Reduced birth weights (W)	1.5E-02		4.3E-03	2E-02
			ALDRIN	5.9E-09			6E-09	Liver toxicity (H)	8.1E-04			8E-04
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.6E-08		4.2E-09	2E-08	--				
			BENZO(A)PYRENE	1.5E-07		3.9E-08	2E-07	--				
			BENZO(B)FLUORANTHENE	2.8E-08		7.4E-09	4E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	3.6E-05		9.2E-06	4E-05
			DIBENZO(A,H)ANTHRACENE	3.1E-08		8.1E-09	4E-08	--				
			HEXACHLOROBENZENE	2.7E-08		5.3E-09	3E-08	Hepatic (H)	1.5E-03		2.9E-04	2E-03
			INDENO(1,2,3-CD)PYRENE	8.9E-09		2.3E-09	1E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	6.1E-05		1.6E-05	8E-05
			1,2,4-TRICHLOROBENZENE	1.0E-09			1E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	1.9E-03			2E-03
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	8.4E-04			8E-04
			1,4-DICHLOROBENZENE	1.3E-09			1E-09	Liver	2.5E-04			2E-04
			Chemical Total	5.2E-04	--	3.2E-05	6E-04		2.5E+02	--	1.5E+01	3E+02
		Exposure Point Total					6E-04					3E+02
	Exposure Medium Total						6E-04					3E+02
Medium Total							6E-04					3E+02
Receptor Total							6E-04				Receptor HI Total	3E+02

Total Risk Across All Media = 6E-04

Total Hazard Across All Media = 3E+02

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	3E-03
Total Kidney HI Across All Media =	1E-04
Total Nervous System Effects HI Across All Media =	4E-02
Total Immune/Lymphocyte Effects HI Across All Media =	8E-01
Total Ocular Effects HI Across All Media =	3E-01

TABLE 9.7d CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
STATE FAIR BLVD/NORHTWEST OFF-SITE/ OUTFALL 004 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	2,3,7,8-TCDD Equivalent	1.1E-06		6.6E-08	1E-06	Developmental effects	5.1E-01		3.1E-02	5E-01
			MERCURY					Autoimmune effects	3.7E-01			4E-01
			HIGHLY CHLORINATED PCBs	4.2E-08		1.2E-08	5E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	7.3E-02		2.0E-02	9E-02
			LESS CHLORINATED PCBs	1.9E-08		5.3E-09	2E-08	Reduced birth weights (W)	9.5E-03		2.7E-03	1E-02
			HEXACHLOROBENZENE	1.6E-08		3.2E-09	2E-08	Hepatic (H)	8.8E-04		1.8E-04	1E-03
			1,2,3-TRICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.8E-07			2E-07	Liver	3.3E-02			3E-02
			BENZENE	1.1E-12			1E-12	Reduced lymphocyte count	3.4E-07			3E-07
			TRICHLOROETHENE	3.2E-09			3E-09	--				
			Chemical Total	1.4E-06	--	8.6E-08	1E-06		1.0E+00	--	5.4E-02	1E+00
		Exposure Point Total					1E-06					1E+00
	Exposure Medium Total						1E-06					1E+00
Medium Total							1E-06					1E+00
Receptor Total							1E-06				Receptor HI Total	1E+00

Total Risk Across All Media =	1E-06
Total Hazard Across All Media =	1E+00
Total Liver HI Across All Media =	3E-02
Total Immune/Lymphocyte Effects HI Across All Media =	5E-01
Total Ocular Effects HI Across All Media =	9E-02

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 9.7e CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
LAKESHORE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Lakeshore Area	2,3,7,8-TCDD Equivalent	1.6E-07		9.5E-09	2E-07	Developmental effects	7.4E-02		4.4E-03	8E-02
			ALUMINUM					Neurotoxicology	8.0E-03			8E-03
			ARSENIC	2.3E-07		1.4E-08	2E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	3.6E-02		2.1E-03	4E-02
			CHROMIUM					None Reported (O)	1.4E-02			1E-02
			IRON					Gastrointestinal effects	2.4E-02			2E-02
			MANGANESE					CNS (N)	2.7E-03			3E-03
			MERCURY					Autoimmune effects	9.9E-03			1E-02
			VANADIUM					Decreased hair cystine	2.2E-03			2E-03
			ZINC					Decreased ESOD (B)	3.3E-04			3E-04
			HIGHLY CHLORINATED PCBs	1.0E-07		2.9E-08	1E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.8E-01		5.0E-02	2E-01
			ENDOSULFAN I					Reduced body weight gain in males and females (W); increased incidence of marked progressive glomerulonephrosis and blood vessel aneurysms in males (B)	4.0E-06			4E-06
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.1E-07		2.9E-08	1E-07	--				
			BENZO(A)PYRENE	9.0E-07		2.3E-07	1E-06	--				
			BENZO(B)FLUORANTHENE	1.2E-07		3.2E-08	2E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	7.6E-05		2.0E-05	1E-04
			BENZO(K)FLUORANTHENE	3.0E-09		7.9E-10	4E-09	--				
			DIBENZO(A,H)ANTHRACENE	1.2E-07		3.2E-08	2E-07	--				
			INDENO(1,2,3-CD)PYRENE	2.4E-08		6.3E-09	3E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	8.7E-04		2.3E-04	1E-03
			Chemical Total	1.8E-06	--	3.8E-07	2E-06		3.5E-01	--	5.7E-02	4E-01
		Exposure Point Total					2E-06					4E-01
	Exposure Medium Total						2E-06					4E-01
Medium Total							2E-06					4E-01

TABLE 9.7e CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
LAKESHORE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Shallow Groundwater	Lakeshore Area	ARSENIC	1.1E-08		3.0E-08	4E-08	Hyperpigmentation (In); Vascular (V); PNS (N)	1.7E-03		4.6E-03	6E-03
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	4.8E-05		1.8E-03	2E-03
			BERYLLIUM					Small intestinal lesions	4.2E-04		1.6E-01	2E-01
			CHROMIUM					None Reported (O)	3.4E-04		7.3E-02	7E-02
			IRON					Gastrointestinal effects	1.2E-04		3.3E-04	5E-04
			MANGANESE					CNS (N)	2.0E-05		1.3E-03	1E-03
			MERCURY					Autoimmune effects	5.9E-04		2.2E-02	2E-02
			VANADIUM					Decreased hair cystine	2.6E-04		2.6E-02	3E-02
			2,4-DICHLOROPHENOL					Decreased delayed hypersensitivity response (O)	2.3E-04		1.4E-02	1E-02
			2-CHLOROPHENOL					Reproductive efforts	2.4E-04		5.8E-03	6E-03
			2-METHYLNAPHTHALENE					Pulmonary alveolar proteinosis	4.4E-05			4E-05
			4-CHLORO-3-METHYLPHENOL					--				
			4-METHYLPHENOL					--				
			NAPHTHALENE					Decreased body weight (W)	2.1E-04		2.6E-02	3E-02
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.0E-06		7.3E-04	7E-04
			1,2,4-TRICHLOROBENZENE	3.2E-11		6.2E-09	6E-09	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	6.2E-05		1.2E-02	1E-02
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	2.2E-03		2.4E-01	2E-01
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	2.7E-08		3.1E-06	3E-06	Liver	5.0E-03		5.8E-01	6E-01
			BENZENE	6.9E-07		2.7E-05	3E-05	Reduced lymphocyte count	2.2E-01		8.6E+00	9E+00
			CARBON DISULFIDE					Fetal toxicity/malformations	7.3E-05		3.3E-03	3E-03
			CHLOROBENZENE					Histopathologic changes in liver	3.7E-02		2.8E+00	3E+00
			TOLUENE					Increased kidney weight (R)	9.9E-03		8.2E-01	8E-01
			Chemical Total	7.3E-07	--	3.0E-05	3E-05		2.8E-01	--	1.3E+01	1E+01
		Exposure Point Total					3E-05					1E+01
	Exposure Medium Total						3E-05					1E+01
Medium Total							3E-05					1E+01
Receptor Total							3E-05				Receptor HI Total	1E+01

Total Risk Across All Media =	3E-05
Total Hazard Across All Media =	1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	3E+00
Total Kidney HI Across All Media =	8E-01
Total Nervous System Effects HI Across All Media =	6E-02
Total Immune/Lymphocyte Effects HI Across All Media =	9E+00
Total Nasal/Respiratory Effects HI Across All Media =	4E-05
Total Ocular Effects HI Across All Media =	2E-01

TABLE 9.7f CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Petroleum Storage Area	ALUMINUM					Neurotoxicology	8.8E-03			9E-03
			ARSENIC	8.0E-07		4.8E-08	8E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	1.2E-01		7.5E-03	1E-01
			CHROMIUM					None Reported (O)	6.7E-03			7E-03
			IRON					Gastrointestinal effects	3.4E-02			3E-02
			MANGANESE					CNS (N)	3.1E-03			3E-03
			MERCURY					Autoimmune effects	3.3E-02			3E-02
			VANADIUM					Decreased hair cystine	1.9E-03			2E-03
			HIGHLY CHLORINATED PCBs	2.0E-08		5.6E-09	3E-08	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep	3.5E-02		9.8E-03	4E-02
			DELTA-BHC	1.0E-10			1E-10	--				
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	4.0E-08		1.0E-08	5E-08	--				
			BENZO(A)PYRENE	3.8E-07		9.9E-08	5E-07	--				
			BENZO(B)FLUORANTHENE	5.7E-08		1.5E-08	7E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.2E-04		3.1E-05	1E-04
			BENZO(K)FLUORANTHENE	1.7E-09		4.5E-10	2E-09	--				
			DIBENZO(A,H)ANTHRACENE	9.6E-08		2.5E-08	1E-07	--				
			INDENO(1,2,3-CD)PYRENE	3.2E-08		8.3E-09	4E-08	--				
			NAPHTHALENE					Decreased body weight (W)	1.1E-03		2.8E-04	1E-03
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.1E-04		2.8E-05	1E-04
			BENZENE	7.8E-11			8E-11	Reduced lymphocyte count	2.5E-05			2E-05
			Chemical Total	1.4E-06	--	2.1E-07	2E-06		2.5E-01	--	1.8E-02	3E-01
		Exposure Point Total					2E-06					3E-01
	Exposure Medium Total						2E-06					3E-01
Medium Total							2E-06					3E-01
Groundwater	Shallow Groundwater	Petroleum Storage Area	ALUMINUM					Neurotoxicology	7.8E-04		2.0E-03	3E-03
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	4.8E-05		1.8E-03	2E-03
			CHROMIUM					None Reported (O)	5.0E-04		1.1E-01	1E-01
			COPPER					Gastrointestinal effects	1.3E-04		3.5E-04	5E-04
			IRON					Gastrointestinal effects	1.9E-03		5.0E-03	7E-03
			LEAD					--				
			MANGANESE					CNS (N)	3.6E-04		2.4E-02	2E-02
			MERCURY					Autoimmune effects	2.4E-04		9.0E-03	9E-03
			NICKEL					Decreased body and organ weight (W)	1.0E-04		1.3E-03	1E-03
			VANADIUM					Decreased hair cystine	1.9E-04		2.0E-02	2E-02
			2-METHYLNAPHTHALENE					Pulmonary alveolar proteinosis	1.8E-04			2E-04
			DIBENZOFURAN					Reduced length and organ weight. Excess abdominal fat (O).	5.9E-05			6E-05

TABLE 9.7f CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Shallow Groundwater	Petroleum Storage Area	NAPHTHALENE					Decreased body weight (W)	3.4E-04		4.2E-02	4E-02
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.9E-06		2.2E-03	2E-03
			BENZENE	6.7E-08		2.6E-06	3E-06	Reduced lymphocyte count	2.1E-02		8.3E-01	9E-01
			XYLENES, TOTAL					Decreased body weight (W), increased mortality (M)	6.0E-06			6E-06
			Chemical Total	6.7E-08	--	2.6E-06	3E-06		2.6E-02	--	1.0E+00	1E+00
		Exposure Point Total					3E-06					1E+00
	Exposure Medium Total						3E-06					1E+00
Medium Total							3E-06					1E+00
Receptor Total							4E-06				Receptor HI Total	1E+00

Total Risk Across All Media = 4E-06

Total Hazard Across All Media = 1E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Kidney HI Across All Media =	4E-03
Total Nervous System Effects HI Across All Media =	2E-01
Total Immune/Lymphocyte Effects HI Across All Media =	9E-01
Total Nasal/Respiratory Effects HI Across All Media =	2E-04
Total Ocular Effects HI Across All Media =	4E-02

TABLE 9.7g CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft bgs)	Chlorobenzene Hot-Spot Area	ARSENIC	2.1E-07		1.3E-08	2E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	3.3E-02		2.0E-03	3E-02
			CHROMIUM					None Reported (O)	7.2E-03			7E-03
			IRON					Gastrointestinal effects	2.5E-02			3E-02
			MANGANESE					CNS (N)	2.6E-03			3E-03
			MERCURY					Autoimmune effects	1.2E-02			1E-02
			VANADIUM					Decreased hair cystine	1.2E-03			1E-03
			HIGHLY CHLORINATED PCBs	1.7E-06		4.8E-07	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep	3.0E+00		8.4E-01	4E+00
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	1.7E-07		4.5E-08	2E-07	--				
			BENZO(A)PYRENE	7.3E-07		1.9E-07	9E-07	--				
			BENZO(B)FLUORANTHENE	1.1E-07		2.8E-08	1E-07	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.8E-04		4.6E-05	2E-04
			BENZO(K)FLUORANTHENE	5.7E-09		1.5E-09	7E-09	--				
			DIBENZO(A,H)ANTHRACENE	2.0E-07		5.2E-08	2E-07	--				
			HEXACHLOROBENZENE	8.1E-08		1.6E-08	1E-07	Hepatic (H)	4.4E-03		8.9E-04	5E-03
			INDENO(1,2,3-CD)PYRENE	4.7E-08		1.2E-08	6E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	5.2E-04		1.4E-04	7E-04
			1,2,4-TRICHLOROBENZENE	1.3E-07			1E-07	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	2.5E-01			3E-01
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.3E-02			1E-02
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.3E-07			1E-07	Liver	2.4E-02			2E-02
			BENZENE	4.1E-10			4E-10	Reduced lymphocyte count	1.3E-04			1E-04
			CHLOROBENZENE					Histopathologic changes in liver	2.3E-03			2E-03
			Chemical Total	3.5E-06	--	8.3E-07	4E-06		3.4E+00	--	8.4E-01	4E+00
		Exposure Point Total					4E-06					4E+00
	Exposure Medium Total						4E-06					4E+00
Medium Total							4E-06					4E+00
Groundwater	Shallow Groundwater	Chlorobenzene Hot-Spot Area	ALUMINUM					Neurotoxicology	8.6E-04		2.3E-03	3E-03
			ARSENIC	1.1E-07		3.0E-07	4E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	1.7E-02		4.6E-02	6E-02
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	6.5E-05		2.5E-03	3E-03
			CHROMIUM					None Reported (O)	4.4E-03		9.3E-01	9E-01
			COBALT					--				
			COPPER					Gastrointestinal effects	1.1E-04		3.0E-04	4E-04
			CYANIDE					Weight loss, thyroid effects, myelin degeneration	6.3E-04		1.7E-03	2E-03

TABLE 9.7g CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Shallow Groundwater	Chlorobenzene Hot-Spot Area	IRON					Gastrointestinal effects	3.6E-03		9.5E-03	1E-02
			LEAD					--				
			MANGANESE					CNS (N)	3.6E-04		2.4E-02	2E-02
			MERCURY					Autoimmune effects	2.4E-04		9.2E-03	9E-03
			NICKEL					Decreased body and organ weight (W)	5.9E-04		7.8E-03	8E-03
			VANADIUM					Decreased hair cystine	4.2E-04		4.3E-02	4E-02
			HEXACHLOROBENZENE	1.3E-09		8.3E-07	8E-07	Hepatic (H)	7.3E-05		4.6E-02	5E-02
			NAPHTHALENE					Decreased body weight (W)	7.9E-06		9.8E-04	1E-03
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.0E-06		7.3E-04	7E-04
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	2.0E-10		3.9E-08	4E-08	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	3.9E-04		7.7E-02	8E-02
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	3.6E-04		4.1E-02	4E-02
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	4.7E-09		5.4E-07	5E-07	Liver	8.6E-04		1.0E-01	1E-01
			BENZENE	7.6E-08		3.0E-06	3E-06	Reduced lymphocyte count	2.4E-02		9.5E-01	1E+00
			CHLOROBENZENE					Histopathologic changes in liver	5.9E-03		4.5E-01	5E-01
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	2.9E-06		5.9E-05	6E-05
			Chemical Total	1.9E-07	--	4.7E-06	5E-06		6.0E-02	--	2.7E+00	3E+00
		Exposure Point Total					5E-06					3E+00
	Exposure Medium Total						5E-06					3E+00
Medium Total							5E-06					3E+00
Receptor Total							9E-06				Receptor HI Total	7E+00

Total Risk Across All Media =	9E-06
Total Hazard Across All Media =	7E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	6E-01
Total Kidney HI Across All Media =	4E-03
Total Nervous System Effects HI Across All Media =	1E-01
Total Immune/Lymphocyte Effects HI Across All Media =	5E+00
Total Ocular Effects HI Across All Media =	4E+00

TABLE 9.7h CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Upper Sediment (0-10 ft bgs)	Tributary 5A	2,3,7,8-TCDD Equivalent	5.5E-08		3.3E-09	6E-08	Developmental effects	2.6E-02		1.5E-03	3E-02
			ALUMINUM					Neurotoxicology	7.8E-03			8E-03
			ANTIMONY					Longevity (M); Blood glucose (E); Cholesterol (E)	6.2E-02			6E-02
			ARSENIC	7.0E-07		4.2E-08	7E-07	Hyperpigmentation (In); Vascular (V); PNS (N)	1.1E-01		6.5E-03	1E-01
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	4.5E-03			4E-03
			CHROMIUM					None Reported (O)	4.0E+00			4E+00
			COBALT					--				
			COPPER					Gastrointestinal effects	7.0E-03			7E-03
			IRON					Gastrointestinal effects	2.2E-01			2E-01
			LEAD					--				
			MANGANESE					CNS (N)	8.6E-03			9E-03
			NICKEL					Decreased body and organ weight (W)	8.3E-02			8E-02
			SELENIUM					Clinical selenosis	4.5E-03			5E-03
			VANADIUM					Decreased hair cystine	1.0E+00			1E+00
			HIGHLY CHLORINATED PCBs	1.5E-07		4.3E-08	2E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	2.7E-01		7.6E-02	3E-01
			ACENAPHTHYLENE					--				
			BENZO(A)ANTHRACENE	3.3E-08		8.6E-09	4E-08	--				
			BENZO(A)PYRENE	4.6E-07		1.2E-07	6E-07	--				
			BENZO(B)FLUORANTHENE	5.8E-08		1.5E-08	7E-08	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	7.3E-05		1.9E-05	9E-05
			BENZO(K)FLUORANTHENE	2.3E-09		6.0E-10	3E-09	--				
			DIBENZO(A,H)ANTHRACENE	1.1E-07		2.9E-08	1E-07	--				
			INDENO(1,2,3-CD)PYRENE	2.1E-08		5.5E-09	3E-08	--				
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.6E-04		4.1E-05	2E-04
			BENZENE	9.9E-09			1E-08	Reduced lymphocyte count	3.1E-03			3E-03
			Chemical Total	1.6E-06	--	2.7E-07	2E-06		5.8E+00	--	8.4E-02	6E+00
		Exposure Point Total					2E-06					6E+00
	Exposure Medium Total						2E-06					6E+00
Medium Total							2E-06					6E+00

TABLE 9.7h CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Water	Surface Water	Tributary 5A	ANTIMONY					Longevity (M); Blood glucose (E); Cholesterol (E)	2.0E-04		3.6E-03	4E-03
			ARSENIC	2.9E-09		7.7E-09	1E-08	Hyperpigmentation (In); Vascular (V); PNS (N)	4.5E-04		1.2E-03	2E-03
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	2.6E-05		1.0E-03	1E-03
			CHROMIUM					None Reported (O)	3.2E-04		6.8E-02	7E-02
			COBALT					--				
			MANGANESE					CNS (N)	2.2E-05		1.4E-03	1E-03
			NICKEL					Decreased body and organ weight (W)	7.7E-04		1.0E-02	1E-02
			VANADIUM					Decreased hair cystine	1.1E-03		1.2E-01	1E-01
			DELTA-BHC	1.4E-11			1E-11	--				
			DIELDRIN	1.1E-10		1.1E-08	1E-08	Hepatic (H)	1.0E-05		9.5E-04	1E-03
			BIS(2-ETHYLHEXYL)PHTHALATE	5.1E-09		1.1E-06	1E-06	Increased relative liver weight (H)	1.3E-03		2.7E-01	3E-01
			NAPHTHALENE					Decreased body weight (W)	1.5E-06		1.8E-04	2E-04
			N-NITROSODIPHENYLAMINE	1.4E-10		9.6E-09	1E-08	--				
			PENTACHLOROPHENOL	3.0E-10		5.0E-07	5E-07	Liver (H) and kidney (R) pathology	5.9E-06		9.7E-03	1E-02
			1,4-DICHLOROBENZENE	4.5E-12		5.2E-10	5E-10	Liver	8.4E-07		9.7E-05	1E-04
			BENZENE	1.2E-09		4.9E-08	5E-08	Reduced lymphocyte count	4.0E-04		1.6E-02	2E-02
			BROMODICHLOROMETHANE	5.2E-11		7.7E-10	8E-10	Renal cytomegaly (R)	2.9E-06		4.3E-05	5E-05
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	3.3E-05		6.6E-04	7E-04
			Chemical Total	9.9E-09	--	1.7E-06	2E-06		4.7E-03	--	5.0E-01	5E-01
		Exposure Point Total					2E-06					5E-01
	Exposure Medium Total						2E-06					5E-01
Medium Total							2E-06					5E-01
Receptor Total							4E-06				Receptor HI Total	6E+00

Total Risk Across All Media =	4E-06
Total Hazard Across All Media =	6E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	3E-01
Total Kidney HI Across All Media =	2E-02
Total Nervous System Effects HI Across All Media =	1E-01
Total Immune/Lymphocyte Effects HI Across All Media =	4E-01
Total Ocular Effects HI Across All Media =	3E-01

TABLE 9.8 CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
POTABLE WATER - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	ALUMINUM					Neurotoxicology	7.9E-01			8E-01
			ARSENIC	6.5E-04			6E-04	Hyperpigmentation (In); Vascular (V); PNS (N)	1.1E+01			1E+01
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	1.8E-01			2E-01
			BERYLLIUM					Small intestinal lesions	7.6E-02			8E-02
			CHROMIUM					None Reported (O)	3.5E+00			3E+00
			COBALT					--				
			COPPER					Gastrointestinal effects	5.6E-02			6E-02
			CYANIDE					Weight loss, thyroid effects, myelin degeneration	1.3E-01			1E-01
			IRON					Gastrointestinal effects	2.4E+00			2E+00
			LEAD					--				
			MANGANESE					CNS (N)	5.6E-01			6E-01
			MERCURY					Autoimmune effects	1.8E+00			2E+00
			NICKEL					Decreased body and organ weight (W)	2.0E-01			2E-01
			SELENIUM					Clinical selenosis	2.6E-02			3E-02
			SILVER					Argyria (In)	3.2E-02			3E-02
			VANADIUM					Decreased hair cystine	1.8E+00			2E+00
			ZINC					Decreased ESOD (B)	3.5E-02			3E-02
			2,4,6-TRICHLOROPHENOL	1.2E-07			1E-07	No adverse effects observed (O)	8.2E-02			8E-02
			2,4-DICHLOROPHENOL					Decreased delayed hypersensitivity response (O)	7.4E-02			7E-02
			2-CHLOROPHENOL					Reproductive efforts	1.5E-01			1E-01
			2-METHYLNAPHTHALENE					Pulmonary alveolar proteinosis	4.5E-02			5E-02
			2-NITROPHENOL					--				
			4-CHLORO-3-METHYLPHENOL					--				
			4-METHYLPHENOL					--				
			4-NITROPHENOL					--				
			BENZO(B)FLUORANTHENE	1.3E-05			1E-05	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	9.1E-04			9E-04
			BENZO(K)FLUORANTHENE	5.1E-07			5E-07	--				
			BIS(2-ETHYLHEXYL)PHTHALATE	1.9E-06			2E-06	Increased relative liver weight (H)	5.3E-02			5E-02
			CHRYSENE	1.0E-07			1E-07	--				
			DIBENZOFURAN					Reduced length and organ weight. Excess abdominal fat (O).	1.4E-01			1E-01
			HEXACHLOROBENZENE	1.1E-05			1E-05	Hepatic (H)	6.8E-02			7E-02
			INDENO(1,2,3-CD)PYRENE	5.1E-06			5E-06	--				
			NAPHTHALENE					Decreased body weight (W)	1.6E-01			2E-01
			PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	1.1E-02			1E-02

TABLE 9.8 CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
POTABLE WATER - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	1,1,2,2-TETRACHLOROETHANE	7.0E-07			7E-07	--				
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	1.5E-06			1E-06	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	3.1E-01			3E-01
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	6.4E-01			6E-01
			1,2-DICHLOROETHANE	9.6E-07			1E-06	Cardiac arrhythmia, bronchitis, central nervous system depression, and injury to the liver, kidneys, and gastrointestinal tract	4.1E-03			4E-03
			1,2-DICHLOROPROPANE	2.8E-07			3E-07	Liver (H)	6.6E-04			7E-04
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.1E-04			1E-04	Liver	2.2E+00			2E+00
			ACETONE					Nephropathy	1.2E-02			1E-02
			BENZENE	3.4E-03			3E-03	Reduced lymphocyte count	1.2E+02			1E+02
			CARBON DISULFIDE					Fetal toxicity/malformations	1.4E-02			1E-02
			CHLOROBENZENE					Histopathologic changes in liver	2.3E+01			2E+01
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	2.2E-02			2E-02
			METHYLENE CHLORIDE	2.0E-06			2E-06	Liver toxicity (H)	3.4E-02			3E-02
			TETRACHLOROETHENE	7.6E-06			8E-06	Hepatotoxicity in mice (H), weight gain in rats	1.1E-02			1E-02
			TOLUENE					Increased kidney weight (R)	5.0E+00			5E+00
			XYLENES, TOTAL					Decreased body weight (W), increased mortality (M)	9.8E-04			1E-03
			Chemical Total	4.2E-03	--	--	4E-03		1.7E+02	--	--	2E+02
		Exposure Point Total					4E-03					2E+02
	Exposure Medium Total						4E-03					2E+02
Medium Total							4E-03					2E+02
Receptor Total							4E-03				Receptor HI Total	2E+02

Total Risk Across All Media =	4E-03
Total Hazard Across All Media =	2E+02

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	3E+01
Total Kidney HI Across All Media =	5E+00
Total Nervous System Effects HI Across All Media =	1E+01
Total Immune/Lymphocyte Effects HI Across All Media =	1E+02
Total Nasal/Respiratory Effects HI Across All Media =	5E-02
Total Other Effects HI Across All Media =	1E+01

TABLE 9.9 CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
POTABLE WATER - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Child (Ages 0-6 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	ALUMINUM					Neurotoxicology	1.8E+00			2E+00
			ARSENIC	1.0E-03			1E-03	Hyperpigmentation (In); Vascular (V); PNS (N)	2.6E+01			3E+01
			BARIUM					Humans - none observed (O); Rats - Kidney (R)	4.2E-01			4E-01
			BERYLLIUM					Small intestinal lesions	1.8E-01			2E-01
			CHROMIUM					None Reported (O)	8.1E+00			8E+00
			COBALT					--				
			COPPER					Gastrointestinal effects	1.3E-01			1E-01
			CYANIDE					Weight loss, thyroid effects, myelin degeneration	2.9E-01			3E-01
			IRON					Gastrointestinal effects	5.6E+00			6E+00
			LEAD					--				
			MANGANESE					CNS (N)	1.3E+00			1E+00
			MERCURY					Autoimmune effects	4.3E+00			4E+00
			NICKEL					Decreased body and organ weight (W)	4.8E-01			5E-01
			SELENIUM					Clinical selenosis	6.1E-02			6E-02
			SILVER					Argyria (In)	7.4E-02			7E-02
			VANADIUM					Decreased hair cystine	4.2E+00			4E+00
			ZINC					Decreased ESOD (B)	8.1E-02			8E-02
			2,4,6-TRICHLOROPHENOL	1.8E-07			2E-07	No adverse effects observed (O)	1.9E-01			2E-01
			2,4-DICHLOROPHENOL					Decreased delayed hypersensitivity response (O)	1.7E-01			2E-01
			2-CHLOROPHENOL					Reproductive efforts	3.4E-01			3E-01
			2-METHYLNAPHTHALENE					Pulmonary alveolar proteinosis	1.1E-01			1E-01
			2-NITROPHENOL					--				
			4-CHLORO-3-METHYLPHENOL					--				
			4-METHYLPHENOL					--				
			4-NITROPHENOL					--				
			BENZO(B)FLUORANTHENE	2.0E-05			2E-05	--				
			BENZO(G,H,I)PERYLENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.1E-03			2E-03
			BENZO(K)FLUORANTHENE	8.0E-07			8E-07	--				
			BIS(2-ETHYLHEXYL)PHTHALATE	3.0E-06			3E-06	Increased relative liver weight (H)	1.2E-01			1E-01
			CHRYSENE	1.6E-07			2E-07	--				
			DIBENZOFURAN					Reduced length and organ weight. Excess abdominal fat (O).	3.2E-01			3E-01
			HEXACHLOROBENZENE	1.8E-05			2E-05	Hepatic (H)	1.6E-01			2E-01
			INDENO(1,2,3-CD)PYRENE	8.0E-06			8E-06	--				
			NAPHTHALENE					Decreased body weight (W)	3.7E-01			4E-01

TABLE 9.9 CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
POTABLE WATER - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Child (Ages 0-6 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	PHENANTHRENE					Kidney effects (renal tubular pathology, decreased kidney weights) (R)	2.6E-02			3E-02
			1,1,2,2-TETRACHLOROETHANE	1.1E-06			1E-06	--				
			1,2,3-TRICHLOROBENZENE					--				
			1,2,4-TRICHLOROBENZENE	2.3E-06			2E-06	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	7.3E-01			7E-01
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.5E+00			1E+00
			1,2-DICHLOROETHANE	1.5E-06			1E-06	Cardiac arrhythmia, bronchitis, central nervous system depression, and injury to the liver, kidneys, and gastrointestinal tract	9.6E-03			1E-02
			1,2-DICHLOROPROPANE	4.3E-07			4E-07	Liver (H)	1.5E-03			2E-03
			1,3-DICHLOROBENZENE					--				
			1,4-DICHLOROBENZENE	1.7E-04			2E-04	Liver	5.1E+00			5E+00
			ACETONE					Nephropathy	2.8E-02			3E-02
			BENZENE	5.3E-03			5E-03	Reduced lymphocyte count	2.8E+02			3E+02
			CARBON DISULFIDE					Fetal toxicity/malformations	3.3E-02			3E-02
			CHLOROBENZENE					Histopathologic changes in liver	5.4E+01			5E+01
			CHLOROFORM					Moderate/marked fatty cyst formation in the liver and elevated SGPT	5.1E-02			5E-02
			METHYLENE CHLORIDE	3.0E-06			3E-06	Liver toxicity (H)	7.9E-02			8E-02
			TETRACHLOROETHENE	1.2E-05			1E-05	Hepatotoxicity in mice (H), weight gain in rats	2.6E-02			3E-02
			TOLUENE					Increased kidney weight (R)	1.2E+01			1E+01
			XYLENES, TOTAL					Decreased body weight (W), increased mortality (M)	2.3E-03			2E-03
			Chemical Total	6.5E-03	--	--	7E-03		4.1E+02	--	--	4E+02
		Exposure Point Total					7E-03					4E+02
	Exposure Medium Total						7E-03					4E+02
Medium Total							7E-03					4E+02
Receptor Total							7E-03				Receptor HI Total	4E+02

Total Risk Across All Media =	7E-03
Total Hazard Across All Media =	4E+02

Total Liver HI Across All Media =	6E+01
Total Kidney HI Across All Media =	1E+01
Total Nervous System Effects HI Across All Media =	3E+01
Total Immune/Lymphocyte Effects HI Across All Media =	3E+02
Total Nasal/Respiratory Effects HI Across All Media =	1E-01
Total Other Effects HI Across All Media =	2E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Attachment A
RAGS Table 10 CT Series

TABLE 10.1a CT
RISK SUMMARY
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Plant Area	2,3,7,8-TCDD Equivalent	2.5E-06		4.8E-07	3E-06	Developmental effects	1.3E-01		2.5E-02	2E-01
			ARSENIC	9.9E-07		1.9E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.7E-02		3.3E-03	2E-02
			DIELDRIN	1.5E-06			1E-06	Hepatic (H)	1.4E-02			1E-02
			BENZO(A)PYRENE	6.4E-06		5.3E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	6.9E-07		5.7E-07	1E-06	--				
			DIBENZO(A,H)ANTHRACENE	1.2E-06		1.0E-06	2E-06	--				
			INDENO(1,2,3-CD)PYRENE	5.6E-07		4.7E-07	1E-06	--				
			Chemical Total	1.4E-05	--	8.0E-06	2E-05		1.6E-01	--	2.8E-02	2E-01
		Exposure Point Total					2E-05					2E-01
	Exposure Medium Total						2E-05					2E-01
Medium Total							2E-05					2E-01
Receptor Total							2E-05				Receptor HI Total	2E-01

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 2E-01

TABLE 10.1b CT
RISK SUMMARY
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	On-Site Ditches
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	On-Site Ditches	2,3,7,8-TCDD Equivalent	2.8E-05		5.4E-06	3E-05	Developmental effects	1.5E+00		2.8E-01	2E+00
			ARSENIC	1.5E-06		2.9E-07	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.6E-02		5.0E-03	3E-02
			MERCURY					Autoimmune effects	2.3E+00			2E+00
			HIGHLY CHLORINATED PCBs	7.0E-07		6.3E-07	1E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.4E-01		1.2E-01	3E-01
			BENZO(A)PYRENE	1.1E-06		9.1E-07	2E-06	--				
			Chemical Total	3.2E-05	--	7.2E-06	4E-05		3.9E+00	--	4.1E-01	4E+00
		Exposure Point Total					4E-05					4E+00
	Exposure Medium Total						4E-05					4E+00
Medium Total							4E-05					4E+00
Receptor Total							4E-05				Receptor HI Total	4E+00

Total Risk Across All Media = 4E-05

Total Hazard Across All Media = 4E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 3E-02
Total Immune/Lymphocyte Effects HI Across All Media = 3E+00
Total Ocular Effects HI Across All Media = 3E-01

TABLE 10.1c CT
RISK SUMMARY
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Former Chlorination Building
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	2.4E-04		4.5E-05	3E-04	Developmental effects	1.2E+01		2.3E+00	1E+01
			BENZO(A)PYRENE	8.2E-07		6.8E-07	2E-06	--				
			Chemical Total	2.4E-04	--	4.6E-05	3E-04		1.2E+01	--	2.3E+00	1E+01
		Exposure Point Total					3E-04					1E+01
	Exposure Medium Total						3E-04					1E+01
Medium Total							3E-04					1E+01
Receptor Total							3E-04				Receptor HI Total	1E+01

Total Risk Across All Media = 3E-04

Total Hazard Across All Media = 1E+01

TABLE 10.1d CT
RISK SUMMARY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA- CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	2.6E-06		5.0E-07	3E-06	Developmental effects	1.4E-01		2.6E-02	2E-01
			ARSENIC	1.0E-06		2.0E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.8E-02		3.4E-03	2E-02
			HIGHLY CHLORINATED PCBs	1.8E-06		1.6E-06	3E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	3.4E-01		3.0E-01	6E-01
			BENZO(A)PYRENE	4.3E-06		3.5E-06	8E-06	--				
			BENZO(B)FLUORANTHENE	7.1E-07		5.9E-07	1E-06	--				
			DIBENZO(A,H)ANTHRACENE	1.3E-06		1.1E-06	2E-06	--				
			Chemical Total	1.2E-05	--	7.5E-06	2E-05		4.9E-01	--	3.3E-01	8E-01
		Exposure Point Total					2E-05					8E-01
	Exposure Medium Total						2E-05					8E-01
Medium Total							2E-05					8E-01
Receptor Total							2E-05				Receptor HI Total	8E-01

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 8E-01

TABLE 10.1e CT
RISK SUMMARY
STATE FAIR BLVD/ NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004	2,3,7,8-TCDD Equivalent	2.0E-06		3.8E-07	2E-06	Developmental effects	1.0E-01		2.0E-02	1E-01
		Expsoure Area	Chemical Total	2.0E-06	--	3.8E-07	2E-06		1.0E-01	--	2.0E-02	1E-01
		Exposure Point Total					2E-06					1E-01
	Exposure Medium Total						2E-06					1E-01
Medium Total							2E-06					1E-01
Receptor Total							2E-06				Receptor HI Total	1E-01

Total Risk Across All Media = 2E-06

Total Hazard Across All Media = 1E-01

TABLE 10.1f CT
RISK SUMMARY
LAKESHORE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Lakeshore Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Lakeshore Area	BENZO(A)ANTHRACENE	6.0E-07		5.0E-07	1E-06	--				
			BENZO(A)PYRENE	4.9E-06		4.0E-06	9E-06	--				
			BENZO(B)FLUORANTHENE	6.6E-07		5.5E-07	1E-06	--				
			DIBENZO(A,H)ANTHRACENE	6.6E-07		5.5E-07	1E-06	--				
			Chemical Total	6.8E-06	--	5.6E-06	1E-05		--	--	--	0E+00
		Exposure Point Total					1E-05					0E+00
	Exposure Medium Total						1E-05					0E+00
Medium Total							1E-05					0E+00
Receptor Total							1E-05				Receptor HI Total	0E+00

Total Risk Across All Media = 1E-05

Total Hazard Across All Media = 0E+00

TABLE 10.1g CT
RISK SUMMARY
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Petroleum Storage Area	ARSENIC	2.5E-06		4.9E-07	3E-06	Hyperpigmentation (In); Vascular (V); PNS	4.4E-02		8.4E-03	5E-02
			BENZO(A)PYRENE	3.8E-06		3.2E-06	7E-06	--				
			BENZO(B)FLUORANTHENE	5.5E-07		4.5E-07	1E-06	--				
			DIBENZO(A,H)ANTHRACENE	9.3E-07		7.7E-07	2E-06	--				
			Chemical Total	7.9E-06	--	4.9E-06	1E-05		4.4E-02	--	8.4E-03	5E-02
		Exposure Point Total					1E-05					5E-02
	Exposure Medium Total						1E-05					5E-02
Medium Total							1E-05					5E-02
Receptor Total							1E-05				Receptor HI Total	5E-02

Total Risk Across All Media = 1E-05

Total Hazard Across All Media = 5E-02

TABLE 10.1h CT
RISK SUMMARY
CHLORBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area	HIGHLY CHLORINATED PCBs	5.7E-06		5.1E-06	1E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.1E+00		9.8E-01	2E+00
			BENZ(A)ANTHRACENE	7.4E-07		6.1E-07	1E-06	--				
			BENZO(A)PYRENE	4.2E-06		3.5E-06	8E-06	--				
			BENZO(B)FLUORANTHENE	9.8E-07		8.1E-07	2E-06	--				
			DIBENZO(A,H)ANTHRACENE	9.9E-07		8.2E-07	2E-06	--				
			Chemical Total	1.3E-05	--	1.1E-05	2E-05		1.1E+00	--	9.8E-01	2E+00
		Exposure Point Total					2E-05					2E+00
	Exposure Medium Total						2E-05					2E+00
Medium Total							2E-05					2E+00
Receptor Total							2E-05				Receptor HI Total	2E+00

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 2E+00

Total Immune/Lymphocyte Effects HI Across All Media = 2E+00

Total Ocular Effects HI Across All Media = 2E+00

TABLE 10.1i CT
RISK SUMMARY
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment (0-1 ft bgs)	Tributary 5A	ARSENIC	1.3E-06		2.4E-07	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.2E-02		4.2E-03	3E-02
			BENZO(A)PYRENE	2.5E-06		2.1E-06	5E-06	--				
			DIBENZO(A,H)ANTHRACENE	6.0E-07		5.0E-07	1E-06	--				
			Chemical Total	4.4E-06	--	2.8E-06	7E-06		2.2E-02	--	4.2E-03	3E-02
		Exposure Point Total					7E-06					3E-02
	Exposure Medium Total						7E-06					3E-02
Medium Total							7E-06					3E-02
Water	Surface Water	Tributary 5A	BIS(2-ETHYLHEXYL)PHTHALATE	3.1E-08		4.1E-06	4E-06	Increased relative liver weight (H)	8.5E-04		1.1E-01	1E-01
			PENTACHLOROPHENOL	1.8E-09		1.9E-06	2E-06	Liver (H) and kidney (R) pathology	3.9E-06		4.1E-03	4E-03
			Chemical Total	3.2E-08	--	6.1E-06	6E-06		8.5E-04	--	1.2E-01	1E-01
		Exposure Point Total					6E-06					1E-01
	Exposure Medium Total						6E-06					1E-01
Medium Total							6E-06					1E-01
Receptor Total							1E-05				Receptor HI Total	1E-01

Total Risk Across All Media = 1E-05

Total Hazard Across All Media = 1E-01

TABLE 10.2a CT
RISK SUMMARY
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Plant Area	2,3,7,8-TCDD Equivalent	8.1E-07		4.2E-07	1E-06	Developmental effects	4.2E-02		2.2E-02	6E-02
			BENZO(A)PYRENE	6.8E-07		1.5E-06	2E-06	--				
			Chemical Total	1.5E-06	--	1.9E-06	3E-06		4.2E-02	--	2.2E-02	6E-02
		Exposure Point Total					3E-06					6E-02
	Exposure Medium Total						3E-06					6E-02
Medium Total							3E-06					6E-02
Receptor Total							3E-06				Receptor HI Total	6E-02

Total Risk Across All Media = 3E-06

Total Hazard Across All Media = 6E-02

TABLE 10.2b CT
RISK SUMMARY
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	On-Site Ditches	2,3,7,8-TCDD Equivalent	9.1E-06		4.7E-06	1E-05	Developmental effects	4.7E-01		2.4E-01	7E-01
			Chemical Total	9.1E-06	--	4.7E-06	1E-05		4.7E-01	--	2.4E-01	7E-01
		Exposure Point Total					1E-05					7E-01
	Exposure Medium Total						1E-05					7E-01
Medium Total							1E-05					7E-01
Receptor Total							1E-05				Receptor HI Total	7E-01

Total Risk Across All Media = 1E-05

Total Hazard Across All Media = 7E-01

TABLE 10.2c CT
RISK SUMMARY
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	7.6E-05		3.9E-05	1E-04	Developmental effects	3.9E+00		2.0E+00	6E+00
			Chemical Total	7.6E-05	--	3.9E-05	1E-04		3.9E+00	--	2.0E+00	6E+00
		Exposure Point Total					1E-04					6E+00
	Exposure Medium Total						1E-04					6E+00
Medium Total							1E-04					6E+00
Receptor Total							1E-04				Receptor HI Total	6E+00

Total Risk Across All Media = 1E-04

Total Hazard Across All Media = 6E+00

TABLE 10.2d CT
RISK SUMMARY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	8.4E-07		4.3E-07	1E-06	Developmental effects	4.4E-02		2.2E-02	7E-02
			HIGHLY CHLORINATED PCBs	5.6E-07		1.3E-06	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.1E-01		2.6E-01	4E-01
			BENZO(A)PYRENE	4.6E-07		1.0E-06	1E-06	--				
			Chemical Total	1.9E-06	--	2.8E-06	5E-06		1.5E-01	--	2.8E-01	4E-01
		Exposure Point Total					5E-06					4E-01
	Exposure Medium Total						5E-06					4E-01
Medium Total							5E-06					4E-01
Receptor Total							5E-06				Receptor HI Total	4E-01

Total Risk Across All Media = 5E-06

Total Hazard Across All Media = 4E-01

TABLE 10.2e CT
RISK SUMMARY
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA- CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004 Exposure Area	None	--	--	--	0E+00	--	--	--	--	0E+00
			Chemical Total	--	--	--	0E+00		--	--	--	0E+00
		Exposure Point Total					0E+00					0E+00
	Exposure Medium Total						0E+00					0E+00
Medium Total							0E+00					0E+00
Receptor Total							0E+00				Receptor HI Total	0E+00

Total Risk Across All Media = 0E+00

Total Hazard Across All Media = 0E+00

TABLE 10.2f CT
RISK SUMMARY
LAKESHORE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Lakeshore Area	BENZO(A)PYRENE	5.2E-07		1.2E-06	2E-06	--				0E+00
			Chemical Total	5.2E-07	--	1.2E-06	2E-06		--	--	--	0E+00
		Exposure Point Total					2E-06					0E+00
	Exposure Medium Total						2E-06					0E+00
Medium Total							2E-06					0E+00
Receptor Total							2E-06				Receptor HI Total	0E+00

Total Risk Across All Media = 2E-06

Total Hazard Across All Media = 0E+00

TABLE 10.2g CT
RISK SUMMARY
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Petroleum Storage Area	ARSENIC	8.2E-07		4.2E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.4E-02		7.2E-03	2E-02
			BENZO(A)PYRENE	4.1E-07		9.1E-07	1E-06	--				
			Chemical Total	1.2E-06	--	1.3E-06	3E-06		1.4E-02	--	7.2E-03	2E-02
		Exposure Point Total					3E-06					2E-02
	Exposure Medium Total						3E-06					2E-02
Medium Total							3E-06					2E-02
Receptor Total							3E-06				Receptor HI Total	2E-02

Total Risk Across All Media = 3E-06

Total Hazard Across All Media = 2E-02

TABLE 10.2h CT
RISK SUMMARY
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area	HIGHLY CHLORINATED PCBs	1.8E-06		4.4E-06	6E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	3.5E-01		8.5E-01	1E+00
			BENZO(A)PYRENE	4.5E-07		1.0E-06	1E-06	--				
			Chemical Total	2.3E-06	--	5.4E-06	8E-06		3.5E-01	--	8.5E-01	1E+00
		Exposure Point Total					8E-06					1E+00
	Exposure Medium Total						8E-06					1E+00
Medium Total							8E-06					1E+00
Receptor Total							8E-06				Receptor HI Total	1E+00

Total Risk Across All Media = 8E-06

Total Hazard Across All Media = 1E+00

Total Ocular Effects HI Across All Media = 1E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 10.2i CT
RISK SUMMARY
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment	Tributary 5A	None	--	--	--	0E+00	--	--	--	--	0E+00
			Chemical Total	--	--	--	0E+00		--	--	--	0E+00
		Exposure Point Total					0E+00					0E+00
	Exposure Medium Total						0E+00					0E+00
Medium Total							0E+00					0E+00
Water	Surface Water	Tributary 5A	BIS(2-ETHYLHEXYL)PHTHALATE	2.0E-08		3.6E-06	4E-06	Increased relative liver weight (H)	5.4E-04		9.9E-02	1E-01
			PENTACHLOROPHENOL	1.2E-09		1.7E-06	2E-06	Liver (H) and kidney (R) pathology	2.5E-06		3.6E-03	4E-03
			Chemical Total	2.1E-08	--	5.2E-06	5E-06		5.5E-04	--	1.0E-01	1E-01
		Exposure Point Total					5E-06					1E-01
	Exposure Medium Total						5E-06					1E-01
Medium Total							5E-06					1E-01
Receptor Total							5E-06				Receptor HI Total	1E-01

Total Risk Across All Media = 5E-06

Total Hazard Across All Media = 1E-01

TABLE 10.3a CT
RISK SUMMARY
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Plant Area	None	--	--	--	0E+00	--	--	--	--	0E+00
			Chemical Total	--	--	--	0E+00		--	--	--	0E+00
		Exposure Point Total					0E+00					0E+00
	Exposure Medium						0E+00					0E+00
Medium Total							0E+00					0E+00
Receptor Total							0E+00				Receptor HI Total	0E+00

Total Risk Across All Media = 0E+00

Total Hazard Across All Media = 0E+00

TABLE 10.3b CT
RISK SUMMARY
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	On-Site Ditches	2,3,7,8-TCDD Equivalent	1.4E-06		8.5E-07	2E-06	Developmental effects	7.4E-02		4.4E-02	1E-01
			Chemical Total	1.4E-06	--	8.5E-07	2E-06		7.4E-02	--	4.4E-02	1E-01
		Exposure Point Total					2E-06					1E-01
	Exposure Medium						2E-06					1E-01
Medium Total							2E-06					1E-01
Receptor Total							2E-06				Receptor HI Total	1E-01

Total Risk Across All Media = 2E-06

Total Hazard Across All Media = 1E-01

TABLE 10.3c CT
RISK SUMMARY
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	1.2E-05		7.0E-06	2E-05	Developmental effects	6.1E-01		3.6E-01	1E+00
			Chemical Total	1.2E-05	--	7.0E-06	2E-05		6.1E-01	--	3.6E-01	1E+00
		Exposure Point Total					2E-05					1E+00
	Exposure Medium Total						2E-05					1E+00
Medium Total							2E-05					1E+00
Receptor Total							2E-05				Receptor HI Total	1E+00

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 1E+00

TABLE 10.4a CT
RISK SUMMARY
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Plant Area	2,3,7,8-TCDD Equivalent	4.2E-06		1.6E-07	4E-06	Developmental effects	2.2E-01		8.6E-03	2E-01
			ARSENIC	1.6E-06		6.5E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.8E-02		1.1E-03	3E-02
			MERCURY					Autoimmune effects	1.0E+00			1E+00
			DIELDRIN	2.4E-06			2E-06	Hepatic (H)	2.4E-02			2E-02
			BENZO(A)PYRENE	3.5E-06		6.0E-07	4E-06	--				
			Chemical Total	1.2E-05	--	8.3E-07	1E-05		1.3E+00	--	9.7E-03	1E+00
		Exposure Point Total					1E-05					1E+00
	Exposure Medium Total						1E-05					1E+00
Medium Total							1E-05					1E+00
Receptor Total							1E-05				Receptor HI Total	1E+00

Total Risk Across All Media =	1E-05
Total Hazard Across All Media =	1E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	2E-02
Total Nervous System Effects HI Across All Media =	3E-02
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00

TABLE 10.4b CT
RISK SUMMARY
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	On-Site Ditches	2,3,7,8-TCDD Equivalent	4.7E-05		1.8E-06	5E-05	Developmental effects	2.4E+00		9.6E-02	3E+00
			ARSENIC	2.5E-06		9.8E-08	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	4.3E-02		1.7E-03	4E-02
			MERCURY					Autoimmune effects	3.8E+00			4E+00
			HIGHLY CHLORINATED PCBs	1.2E-06		2.1E-07	1E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	2.2E-01		4.2E-02	3E-01
			Chemical Total	5.0E-05	--	2.2E-06	5E-05		6.5E+00	--	1.4E-01	7E+00
		Exposure Point Total					5E-05					7E+00
	Exposure Medium Total						5E-05					7E+00
Medium Total							5E-05					7E+00
Receptor Total							5E-05				Receptor HI Total	7E+00

Total Risk Across All Media = 5E-05

Total Hazard Across All Media = 7E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 4E-02
Total Immune/Lymphocyte Effects HI Across All Media = 4E+00
Total Ocular Effects HI Across All Media = 3E-01

TABLE 10.4c CT
RISK SUMMARY
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	3.9E-04		1.5E-05	4E-04	Developmental effects	2.0E+01		8.0E-01	2E+01
			Chemical Total	3.9E-04	--	1.5E-05	4E-04		2.0E+01	--	8.0E-01	2E+01
		Exposure Point Total					4E-04					2E+01
	Exposure Medium Total						4E-04					2E+01
Medium Total							4E-04					2E+01
Receptor Total							4E-04				Receptor HI Total	2E+01

Total Risk Across All Media = 4E-04

Total Hazard Across All Media = 2E+01

TABLE 10.4d CT
RISK SUMMARY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	4.3E-06		1.7E-07	4E-06	Developmental effects	2.2E-01		8.8E-03	2E-01
			ARSENIC	1.7E-06		6.8E-08	2E-06	Hyperpigmentation (ln); Vascular (V); PNS (N)	3.0E-02		1.2E-03	3E-02
			MERCURY					Autoimmune effects	1.2E+00			1E+00
			HIGHLY CHLORINATED PCBs	2.9E-06		5.3E-07	3E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	5.6E-01		1.0E-01	7E-01
			BENZO(A)PYRENE	2.3E-06		4.0E-07	3E-06	--				
			Chemical Total	1.1E-05	--	1.2E-06	1E-05		2.0E+00	--	1.1E-01	2E+00
		Exposure Point Total					1E-05					2E+00
	Exposure Medium Total						1E-05					2E+00
Medium Total							1E-05					2E+00
Receptor Total							1E-05				Receptor HI Total	2E+00

Total Risk Across All Media =	1E-05
Total Hazard Across All Media =	2E+00
Total Nervous System Effects HI Across All Media =	3E-02
Total Immune/Lymphocyte Effects HI Across All Media =	2E+00
Total Ocular Effects HI Across All Media =	7E-01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 10.4e CT
RISK SUMMARY
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Petroleum Storage Area	ARSENIC	4.2E-06		1.7E-07	4E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	7.2E-02		2.9E-03	8E-02
			BENZO(A)PYRENE	2.1E-06		3.6E-07	2E-06	--				
			Chemical Total	6.3E-06	--	5.3E-07	7E-06		7.2E-02	--	2.9E-03	8E-02
		Exposure Point Total					7E-06					8E-02
	Exposure Medium Total						7E-06					8E-02
Medium Total							7E-06					8E-02
Receptor Total							7E-06				Receptor HI Total	8E-02

Total Risk Across All Media = 7E-06

Total Hazard Across All Media = 8E-02

Total Nervous System Effects HI Across All Media = 8E-02

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 10.4f CT
RISK SUMMARY
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area	HIGHLY CHLORINATED PCBs	9.3E-06		1.7E-06	1E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.8E+00		3.4E-01	2E+00
			BENZO(A)PYRENE	2.3E-06		4.0E-07	3E-06	--				
			Chemical Total	1.2E-05	--	2.1E-06	1E-05		1.8E+00	--	3.4E-01	2E+00
		Exposure Point Total					1E-05					2E+00
	Exposure Medium Total						1E-05					2E+00
Medium Total							1E-05					2E+00
Receptor Total							1E-05				Receptor HI Total	2E+00

Total Risk Across All Media = 1E-05

Total Hazard Across All Media = 2E+00

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Immune/Lymphocyte Effects HI Across All Media = 2E+00

Total Ocular Effects HI Across All Media = 2E+00

TABLE 10.5a CT
RISK SUMMARY
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Plant Area	2,3,7,8-TCDD Equivalent	1.8E-06		5.5E-08	2E-06	Developmental effects	8.6E-01		2.6E-02	9E-01
			ARSENIC	6.8E-07	3.8E-07	2.0E-08	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.1E-01	1.2E-01	3.2E-03	2E-01
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	3.1E-03	1.7E+00		2E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	1.4E+00	2.7E-01		2E+00
			NICKEL		2.9E-06		3E-06	Decreased body and organ weight (W) , Respiratory (P)	2.0E-01	8.8E+00		9E+00
			DIELDRIN	1.1E-06	6.0E-08		1E-06	Hepatic (H)	9.6E-02			1E-01
			BENZO(A)PYRENE	1.5E-06		1.9E-07	2E-06	--				
			1,4-DICHLOROBENZENE	1.6E-07	4.7E-06		5E-06	Liver	3.0E-02	3.6E-02		7E-02
			Chemical Total	5.2E-06	8.0E-06	2.7E-07	1E-05		2.7E+00	1.1E+01	2.9E-02	1E+01
		Exposure Point Total					1E-05					1E+01
	Exposure Medium Total						1E-05					1E+01
Medium Total							1E-05					1E+01
Receptor Total							1E-05				Receptor HI Total	1E+01

Total Risk Across All Media = 1E-05

Total Hazard Across All Media = 1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media = 2E-01
Total Nervous System Effects HI Across All Media = 4E+00
Total Nasal/Respiratory Effects HI Across All Media = 9E+00

TABLE 10.5b CT
RISK SUMMARY
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	On-Site Ditches	2,3,7,8-TCDD Equivalent	2.1E-05		6.3E-07	2E-05	Developmental effects	9.7E+00		2.9E-01	1E+01
			ARSENIC	1.1E-06	6.1E-07	3.3E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.7E-01	2.0E-01	5.2E-03	4E-01
			CHROMIUM		8.2E-06		8E-06	Respiratory (P)	8.3E-02	4.8E-01		6E-01
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	4.0E-03	2.2E+00		2E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	2.1E+01	4.0E+00		2E+01
			1,4-DICHLOROBENZENE	4.3E-08	1.2E-06		1E-06	Liver	7.9E-03	9.3E-03		2E-02
			Chemical Total	2.2E-05	1.0E-05	6.6E-07	3E-05		3.1E+01	6.8E+00	3.0E-01	4E+01
		Exposure Point Total					3E-05					4E+01
	Exposure Medium Total						3E-05					4E+01
Medium Total							3E-05					4E+01
Receptor Total							3E-05				Receptor HI Total	4E+01

Total Risk Across All Media = 3E-05

Total Hazard Across All Media = 4E+01

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media = 2E-02
Total Nervous System Effects HI Across All Media = 3E+01
Total Nasal/Respiratory Effects HI Across All Media = 6E-01

TABLE 10.5c CT
RISK SUMMARY
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	7.0E-04		2.1E-05	7E-04	Developmental effects	3.3E+02		9.8E+00	3E+02
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	3.1E-03	1.7E+00		2E+00
			Chemical Total	7.0E-04	--	2.1E-05	7E-04		3.3E+02	1.7E+00	9.8E+00	3E+02
		Exposure Point Total					7E-04					3E+02
	Exposure Medium Total						7E-04					3E+02
Medium Total							7E-04					3E+02
Receptor Total							7E-04				Receptor HI Total	3E+02

Total Risk Across All Media = 7E-04

Total Hazard Across All Media = 3E+02

Total Nervous System Effects HI Across All Media = 2E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 10.5d CT
RISK SUMMARY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	1.9E-06		5.8E-08	2E-06	Developmental effects	9.0E-01		2.7E-02	9E-01
			ARSENIC	7.6E-07	4.2E-07	2.3E-08	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.2E-01	1.4E-01	3.6E-03	3E-01
			CHROMIUM		7.8E-06		8E-06	Respiratory (P)	7.9E-02	4.6E-01		5E-01
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	2.7E-03	1.5E+00		1E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	8.1E+00	1.6E+00		1E+01
			HIGHLY CHLORINATED PCBs	1.3E-06	7.1E-08	1.8E-07	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep	2.3E+00		3.2E-01	3E+00
			BENZO(A)PYRENE	1.1E-06		1.4E-07	1E-06	--				
			BENZENE	7.7E-06	7.0E-05		8E-05	Reduced lymphocyte count	2.5E+00	2.1E+01		2E+01
			XYLENES, TOTAL					Decreased body weight (W), increased mortality (M), Impaired motor coordination (decreased rotarod performance)	1.1E-02	4.3E+00		4E+00
			Chemical Total	1.3E-05	7.8E-05	4.0E-07	9E-05		1.4E+01	2.9E+01	3.5E-01	4E+01
		Exposure Point Total					9E-05					4E+01
	Exposure Medium Total						9E-05					4E+01
Medium Total							9E-05					4E+01
Receptor Total							9E-05				Receptor HI Total	4E+01

Total Risk Across All Media =	9E-05
Total Hazard Across All Media =	4E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media =	2E+01
Total Immune/Lymphocyte Effects HI Across All Media =	2E+01
Total Nasal/Respiratory Effects HI Across All Media =	5E-01
Total Ocular Effects HI Across All Media =	3E+00

TABLE 10.5e CT
RISK SUMMARY
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Petroleum Storage Area	ARSENIC	1.1E-06	5.9E-07	3.2E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.7E-01	1.9E-01	5.0E-03	4E-01
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	4.1E-03	2.2E+00		2E+00
			Chemical Total	1.1E-06	5.9E-07	3.2E-08	2E-06		1.7E-01	2.4E+00	5.0E-03	3E+00
		Exposure Point Total					2E-06					3E+00
	Exposure Medium Total						2E-06					3E+00
Medium Total							2E-06					3E+00
Water	Shallow Groundwater (0-10 ft bgs)	Petroleum Storage Area	BENZENE	8.9E-08		3.5E-06	4E-06	Reduced lymphocyte count	2.8E-02		1.1E+00	1E+00
			Chemical Total	8.9E-08	--	3.5E-06	4E-06		2.8E-02	--	1.1E+00	1E+00
		Exposure Point Total					4E-06					1E+00
	Exposure Medium Total						4E-06					1E+00
Medium Total							4E-06					1E+00
Receptor Total							5E-06				Receptor HI Total	4E+00

Total Risk Across All Media = 5E-06

Total Hazard Across All Media = 4E+00

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 3E+00

Total Immune/Lymphocyte Effects HI Across All Media = 1E+00

TABLE 10.5f CT
RISK SUMMARY
CHLORBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Chlorobenzene Hot-Spot Area	CHROMIUM		9.5E-07		1E-06	Respiratory (P)	9.6E-03	5.6E-02		7E-02
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	3.5E-03	1.9E+00		2E+00
			HIGHLY CHLORINATED PCBs	2.3E-06	1.3E-07	3.2E-07	3E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.0E+00		1.5E-06	4E+00
			BENZO(A)PYRENE	9.7E-07		1.3E-07	1E-06	--				
			1,4-DICHLOROBENZENE	1.7E-07	4.8E-06		5E-06	Liver	3.1E-02	3.7E-02		7E-02
			Chemical Total	3.4E-06	5.0E-06	4.4E-07	9E-06		4.0E+00	1.9E+00	1.5E-06	6E+00
		Exposure Point Total					9E-06					6E+00
	Exposure Medium Total						9E-06					6E+00
Medium Total							9E-06					6E+00
Water	Shallow Groundwater (0-10 ft bgs)	Chlorobenzene Hot-Spot Area	CHROMIUM					Respiratory (P)	5.9E-03		1.2E+00	1E+00
			HEXACHLOROBENZENE	1.8E-09		1.1E-06	1E-06	Hepatic (H)	9.8E-05		6.1E-02	6E-02
			BENZENE	1.0E-07		4.0E-06	4E-06	Reduced lymphocyte count	3.2E-02		1.3E+00	1E+00
			Chemical Total	1.0E-07	--	5.1E-06	5E-06		3.8E-02	--	2.6E+00	3E+00
		Exposure Point Total					5E-06					3E+00
	Exposure Medium Total						5E-06					3E+00
Medium Total							5E-06					3E+00
Receptor Total							1E-05				Receptor HI Total	9E+00

Total Risk Across All Media = 1E-05

Total Hazard Across All Media = 9E+00

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	1E-01
Total Nervous System Effects HI Across All Media =	2E+00
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Nasal/Respiratory Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	4E+00

TABLE 10.6 CT
RISK SUMMARY
STATE FAIR BLVD/ NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Transient Trespasser
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/Outfall 004	None	--	--	--	--	--	--	--	--	--
		Exposure Area	Chemical Total	--	--	--	0E+00		--	--	--	0E+00
		Exposure Point Total					0E+00					0E+00
Medium Total							0E+00					0E+00
Receptor Total							0E+00				Receptor HI Total	0E+00

Total Risk Across All Media = 0E+00

Total Hazard Across All Media = 0E+00

TABLE 10.7a CT
RISK SUMMARY
PLANT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils	Plant Area	MERCURY					Autoimmune effects	3.2E+00			3E+00
			Chemical Total	0.0E+00	--	0.0E+00	0E+00		3.2E+00	--	0.0E+00	3E+00
		Exposure Point Total					0E+00					3E+00
	Exposure Medium Total						0E+00					3E+00
Medium Total							0E+00					3E+00
Groundwater	Intermediate Groundwater	Plant Area	INDENO(1,2,3-CD)PYRENE	6.1E-10		1.8E-06	2E-06	--				
			BENZENE	3.9E-08		1.5E-06	2E-06	Reduced lymphocyte count	1.2E-02		4.9E-01	5E-01
			Chemical Total	4.0E-08	--	3.4E-06	3E-06		1.2E-02	--	4.9E-01	5E-01
		Exposure Point Total					3E-06					5E-01
	Exposure Medium Total						3E-06					5E-01
Medium Total							3E-06					5E-01
Receptor Total							3E-06				Receptor HI Total	4E+00

Total Risk Across All Media = 3E-06

Total Hazard Across All Media = 4E+00

Total Immune/Lymphocyte Effects HI Across All Media = 4E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 10.7b CT
RISK SUMMARY
ON-SITE DITCHES - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils	On-Site Ditches	2,3,7,8-TCDD Equivalent	1.6E-05		9.4E-07	2E-05	Developmental effects	7.3E+00		4.4E-01	8E+00
			MERCURY					Autoimmune effects	1.5E+01			2E+01
			Chemical Total	1.6E-05	--	9.4E-07	2E-05		2.3E+01	--	4.4E-01	2E+01
		Exposure Point Total					2E-05					2E+01
	Exposure Medium Total						2E-05					2E+01
Medium Total							2E-05					2E+01
Receptor Total							2E-05				Receptor HI Total	2E+01

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 2E+01

Total Immune/Lymphocyte Effects HI Across All Media = 2E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 10.7c CT
RISK SUMMARY
FORMER CHLORINATION BUILDING - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils	Former Chlorination Building	2,3,7,8-TCDD Equivalent	5.2E-04		3.1E-05	6E-04	Developmental effects	2.4E+02		1.5E+01	3E+02
			Chemical Total	5.2E-04	--	3.1E-05	6E-04		2.4E+02	--	1.5E+01	3E+02
		Exposure Point Total					6E-04					3E+02
	Exposure Medium Total						6E-04					3E+02
Medium Total							6E-04					3E+02
Receptor Total							6E-04				Receptor HI Total	3E+02

Total Risk Across All Media = 6E-04

Total Hazard Across All Media = 3E+02

TABLE 10.7d CT
RISK SUMMARY
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	State Fair Blvd/ Northwest Off-Site/Outfall 004	2,3,7,8-TCDD Equivalent	1.1E-06		6.6E-08	1E-06	Developmental effects	5.1E-01		3.1E-02	5E-01
		Exposure Area	Chemical Total	1.1E-06	--	6.6E-08	1E-06		5.1E-01	--	3.1E-02	5E-01
		Exposure Point Total					1E-06					5E-01
	Exposure Medium Total						1E-06					5E-01
Medium Total							1E-06					5E-01
Receptor Total							1E-06				Receptor HI Total	5E-01

Total Risk Across All Media = 1E-06

Total Hazard Across All Media = 5E-01

TABLE 10.7e CT
RISK SUMMARY
LAKESHORE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Lakeshore Area	BENZO(A)PYRENE	9.0E-07		2.3E-07	1E-06	--				
			Chemical Total	9.0E-07	--	2.3E-07	1E-06		0.0E+00	--	0.0E+00	0E+00
		Exposure Point Total					1E-06					0E+00
	Exposure Medium Total						1E-06					0E+00
Medium Total							1E-06					0E+00
Groundwater	Shallow Groundwater	Lakeshore Area	1,4-DICHLOROBENZENE	2.7E-08		3.1E-06	3E-06	Liver	5.0E-03		5.8E-01	6E-01
			BENZENE	6.9E-07		2.7E-05	3E-05	Reduced lymphocyte count	2.2E-01		8.6E+00	9E+00
			CHLOROBENZENE					Histopathologic changes in liver	3.7E-02		2.8E+00	3E+00
			Chemical Total	7.2E-07	--	3.0E-05	3E-05		2.6E-01	--	1.2E+01	1E+01
		Exposure Point Total					3E-05					1E+01
	Exposure Medium Total						3E-05					1E+01
Medium Total							3E-05					1E+01
Receptor Total							3E-05				Receptor HI Total	1E+01

Total Risk Across All Media = 3E-05

Total Hazard Across All Media = 1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media = 3E+00
Total Immune/Lymphocyte Effects HI Across All Media = 9E+00

TABLE 10.7f CT
RISK SUMMARY
PETROLEUM STORAGE AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Petroleum Storage Area	None	--	--	--	0E+00	--	--	--	--	0E+00
			Chemical Total	--	--	--	0E+00		--	--	--	0E+00
		Exposure Point Total					0E+00					0E+00
	Exposure Medium Total						0E+00					0E+00
Medium Total							0E+00					0E+00
Groundwater	Shallow Groundwater	Petroleum Storage Area	BENZENE	6.7E-08		2.6E-06	3E-06	Reduced lymphocyte count	2.1E-02		8.3E-01	9E-01
			Chemical Total	6.7E-08	--	2.6E-06	3E-06		2.1E-02	--	8.3E-01	9E-01
		Exposure Point Total					3E-06					9E-01
	Exposure Medium Total						3E-06					9E-01
Medium Total							3E-06					9E-01
Receptor Total							3E-06				Receptor HI Total	9E-01

Total Risk Across All Media = 3E-06

Total Hazard Across All Media = 9E-01

TABLE 10.7g CT
RISK SUMMARY
CHLOROBENZENE HOT-SPOT AREA - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Chlorobenzene Hot-Spot Area	HIGHLY CHLORINATED PCBs	1.7E-06		4.8E-07	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	3.0E+00		8.4E-01	4E+00
			Chemical Total	1.7E-06	--	4.8E-07	2E-06		3.0E+00	--	8.4E-01	4E+00
		Exposure Point Total					2E-06					4E+00
	Exposure Medium Total						2E-06					4E+00
Medium Total							2E-06					4E+00
Groundwater	Shallow Groundwater	Chlorobenzene Hot-Spot Area	BENZENE	7.6E-08		3.0E-06	3E-06	Reduced lymphocyte count	2.4E-02		9.5E-01	1E+00
			Chemical Total	7.6E-08	--	3.0E-06	3E-06		2.4E-02	--	9.5E-01	1E+00
		Exposure Point Total					3E-06					1E+00
	Exposure Medium Total						3E-06					1E+00
Medium Total							3E-06					1E+00
Receptor Total							5E-06				Receptor HI Total	5E+00

Total Risk Across All Media = 5E-06

Total Hazard Across All Media = 5E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Immune/Lymphocyte Effects HI Across All Media = 5E+00
Total Ocular Effects HI Across All Media = 4E+00

TABLE 10.7h CT
RISK SUMMARY
TRIBUTARY 5A - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Upper Sediment (0-10 ft bgs)	Tributary 5A	CHROMIUM					None Reported (O)	4.0E+00			4E+00
			VANADIUM					Decreased hair cystine	1.0E+00			1E+00
			Chemical Total	--	--	--	0E+00		5.0E+00	--	--	5E+00
		Exposure Point Total					0E+00					5E+00
	Exposure Medium Total						0E+00					5E+00
Medium Total							0E+00					5E+00
Water	Surface Water	Tributary 5A	BIS(2-ETHYLHEXYL)PHTHALATE	5.1E-09		1.1E-06	1E-06	Increased relative liver weight (H)	1.3E-03		2.7E-01	3E-01
			Chemical Total	5.1E-09	--	1.1E-06	1E-06		1.3E-03	--	2.7E-01	3E-01
		Exposure Point Total					1E-06					3E-01
	Exposure Medium Total						1E-06					3E-01
Medium Total							1E-06					3E-01
Receptor Total							1E-06				Receptor HI Total	5E+00

Total Risk Across All Media = 1E-06

Total Hazard Across All Media = 5E+00

Total Liver HI Across All Media = 3E-01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 10.8 CT
RISK SUMMARY
POTABLE WATER - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	ARSENIC	6.5E-04			6E-04	Hyperpigmentation (In); Vascular (V); PNS (N)	1.1E+01			1E+01
			CHROMIUM					None Reported (O)	3.5E+00			3E+00
			IRON					Gastrointestinal effects	2.4E+00			2E+00
			MERCURY					Autoimmune effects	1.8E+00			2E+00
			VANADIUM					Decreased hair cystine	1.8E+00			2E+00
			BENZO(B)FLUORANTHENE	1.3E-05			1E-05	--				
			BIS(2-ETHYLHEXYL)PHTHALATE	1.9E-06			2E-06	Increased relative liver weight (H)	5.3E-02			5E-02
			HEXACHLOROBENZENE	1.1E-05			1E-05	Hepatic (H)	6.8E-02			7E-02
			INDENO(1,2,3-CD)PYRENE	5.1E-06			5E-06	--				
			1,2,4-TRICHLOROBENZENE	1.5E-06			1E-06	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	3.1E-01			3E-01
			1,4-DICHLOROBENZENE	1.1E-04			1E-04	Liver	2.2E+00			2E+00
			BENZENE	3.4E-03			3E-03	Reduced lymphocyte count	1.2E+02			1E+02
			CHLOROBENZENE					Histopathologic changes in liver	2.3E+01			2E+01
			METHYLENE CHLORIDE	2.0E-06			2E-06	Liver toxicity (H)	3.4E-02			3E-02
			TETRACHLOROETHENE	7.6E-06			8E-06	Hepatotoxicity in mice (H), weight gain in rats	1.1E-02			1E-02
			TOLUENE					Increased kidney weight (R)	5.0E+00			5E+00
			Chemical Total	4.2E-03	--	--	4E-03		1.7E+02	--	--	2E+02
		Exposure Point Total					4E-03		1.7E+02	--	--	2E+02
	Exposure Medium Total						4E-03					2E+02
Medium Total							4E-03					2E+02
Receptor Total							4E-03				Receptor HI Total	2E+02

Total Risk Across All Media =	4E-03
Total Hazard Across All Media =	2E+02

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	3E+01
Total Kidney HI Across All Media =	5E+00
Total Nervous System Effects HI Across All Media =	1E+01
Total Immune/Lymphocyte Effects HI Across All Media =	1E+02
Total Other Effects HI Across All Media =	8E+00

TABLE 10.9 CT
RISK SUMMARY
POTABLE WATER - CENTRAL TENDENCY
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Child (Age 0-6 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	ALUMINUM					Neurotoxicology	1.8E+00			2E+00
			ARSENIC	1.0E-03			1E-03	Hyperpigmentation (In); Vascular (V); PNS (N)	2.6E+01			3E+01
			CHROMIUM					None Reported (O)	8.1E+00			8E+00
			IRON					Gastrointestinal effects	5.6E+00			6E+00
			MERCURY					Autoimmune effects	4.3E+00			4E+00
			MANGANESE					CNS (N)	1.3E+00			1E+00
			VANADIUM					Decreased hair cystine	4.2E+00			4E+00
			BENZO(B)FLUORANTHENE	2.0E-05			2E-05	--				
			BIS(2-ETHYLHEXYL)PHTHALATE	3.0E-06			3E-06	Increased relative liver weight (H)	1.2E-01			1E-01
			HEXACHLOROBENZENE	1.8E-05			2E-05	Hepatic (H)	1.6E-01			2E-01
			INDENO(1,2,3-CD)PYRENE	8.0E-06			8E-06	--				
			1,1,2,2-TETRACHLOROETHANE	1.1E-06			1E-06	--				
			1,2,4-TRICHLOROBENZENE	2.3E-06			2E-06	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	7.3E-01			7E-01
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.5E+00			1E+00
			1,2-DICHLOROETHANE	1.5E-06			1E-06	Cardiac arrhythmia, bronchitis, central nervous system depression, and injury to the liver, kidneys, and gastrointestinal tract	9.6E-03			1E-02
			1,4-DICHLOROBENZENE	1.7E-04			2E-04	Liver	5.1E+00			5E+00
			BENZENE	5.3E-03			5E-03	Reduced lymphocyte count	2.8E+02			3E+02
			CHLOROBENZENE					Histopathologic changes in liver	5.4E+01			5E+01
			METHYLENE CHLORIDE	3.0E-06			3E-06	Liver toxicity (H)	7.9E-02			8E-02
			TETRACHLOROETHENE	1.2E-05			1E-05	Hepatotoxicity in mice (H), weight gain in rats	2.6E-02			3E-02
			TOLUENE					Increased kidney weight (R)	1.2E+01			1E+01
			Chemical Total	6.5E-03	--	--	7E-03		4.0E+02	--	--	4E+02
		Exposure Point Total					7E-03					4E+02
	Exposure Medium Total						7E-03					4E+02
Medium Total							7E-03					4E+02
Receptor Total							7E-03				Receptor HI Total	4E+02

Total Risk Across All Media =	7E-03
Total Hazard Across All Media =	4E+02

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	6E+01
Total Kidney HI Across All Media =	1E+01
Total Nervous System Effects HI Across All Media =	3E+01
Total Immune/Lymphocyte Effects HI Across All Media =	3E+02
Total Nasal/Respiratory Effects HI Across All Media =	1E-02
Total Other Effects HI Across All Media =	2E+01

Attachment A
RAGS Table 10 RME Series

TABLE 10.1a RME
RISK SUMMARY
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Plant Area	2,3,7,8-TCDD Equivalent	3.3E-06		1.3E-06	5E-06	Developmental effects	1.7E-01		6.6E-02	2E-01
			ARSENIC	1.3E-06		5.0E-07	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.2E-02		8.6E-03	3E-02
			DIELDRIN	1.9E-06			2E-06	Hepatic (H)	1.9E-02			2E-02
			BENZO(A)ANTHRACENE	6.5E-07		1.1E-06	2E-06	--				
			BENZO(A)PYRENE	8.4E-06		1.4E-05	2E-05	--				
			BENZO(B)FLUORANTHENE	9.0E-07		1.5E-06	2E-06	--				
			DIBENZO(A,H)ANTHRACENE	1.6E-06		2.7E-06	4E-06	--				
			INDENO(1,2,3-CD)PYRENE	7.4E-07		1.2E-06	2E-06	--				
			Chemical Total	1.9E-05	--	2.2E-05	4E-05		2.1E-01	--	7.4E-02	3E-01
		Exposure Point Total					4E-05					3E-01
	Exposure Medium Total						4E-05					3E-01
Medium Total							4E-05					3E-01
Receptor Total							4E-05				Receptor HI Total	3E-01

Total Risk Across All Media = 4E-05

Total Hazard Across All Media = 3E-01

TABLE 10.1b RME
RISK SUMMARY
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	On-Site Ditches
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	On-Site Ditches	2,3,7,8-TCDD Equivalent	3.7E-05		1.4E-05	5E-05	Developmental effects	1.9E+00		7.4E-01	3E+00
			ARSENIC	2.0E-06		7.5E-07	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	3.4E-02		1.3E-02	5E-02
			MERCURY					Autoimmune effects	3.0E+00			3E+00
			HIGHLY CHLORINATED PCBs	9.2E-07		1.6E-06	3E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.8E-01		3.2E-01	5E-01
			BENZO(A)PYRENE	1.4E-06		2.4E-06	4E-06	--				
			Chemical Total	4.2E-05	--	1.9E-05	6E-05		5.2E+00	--	1.1E+00	6E+00
		Exposure Point Total					6E-05					6E+00
	Exposure Medium Total						6E-05					6E+00
Medium Total							6E-05					6E+00
Receptor Total							6E-05				Receptor HI Total	6E+00

Total Risk Across All Media = 6E-05

Total Hazard Across All Media = 6E+00

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 5E-02
Total Immune/Lymphocyte Effects HI Across All Media = 4E+00
Total Ocular Effects HI Across All Media = 5E-01

TABLE 10.1c RME
RISK SUMMARY
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Former Chlorination Building
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	3.1E-04		1.2E-04	4E-04	Developmental effects	1.6E+01		6.1E+00	2E+01
			HIGHLY CHLORINATED PCBs	3.6E-07		6.5E-07	1E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	7.0E-02		1.3E-01	2E-01
			BENZO(A)PYRENE	1.1E-06		1.8E-06	3E-06	--				
			Chemical Total	3.1E-04	--	1.2E-04	4E-04		1.6E+01	--	6.3E+00	2E+01
		Exposure Point Total					4E-04					2E+01
	Exposure Medium Total						4E-04					2E+01
Medium Total							4E-04					2E+01
Receptor Total							4E-04				Receptor HI Total	2E+01

Total Risk Across All Media = 4E-04

Total Hazard Across All Media = 2E+01

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Immune/Lymphocyte Effects HI Across All Media = 2E-01

Total Ocular Effects HI Across All Media = 2E-01

TABLE 10.1d RME
RISK SUMMARY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	3.4E-06		1.3E-06	5E-06	Developmental effects	1.8E-01		6.8E-02	2E-01
			ARSENIC	1.4E-06		5.2E-07	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.4E-02		9.0E-03	3E-02
			HIGHLY CHLORINATED PCBs	2.3E-06		4.1E-06	6E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.5E-01		8.0E-01	1E+00
			BENZO(A)ANTHRACENE	4.8E-07		8.0E-07	1E-06	--				
			BENZO(A)PYRENE	5.6E-06		9.3E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	9.4E-07		1.6E-06	2E-06	--				
			DIBENZO(A,H)ANTHRACENE	1.7E-06		2.9E-06	5E-06	--				
			Chemical Total	1.6E-05	--	2.0E-05	4E-05		6.5E-01	--	8.8E-01	2E+00
		Exposure Point Total					4E-05					2E+00
	Exposure Medium Total						4E-05					2E+00
Medium Total							4E-05					2E+00
Receptor Total							4E-05				Receptor HI Total	2E+00

Total Risk Across All Media = 4E-05

Total Hazard Across All Media = 2E+00

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 3E-02
Total Immune/Lymphocyte Effects HI Across All Media = 1E+00
Total Ocular Effects HI Across All Media = 1E+00

TABLE 10.1e RME
RISK SUMMARY
STATE FAIR BLVD/ NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/ Outfall 004	2,3,7,8-TCDD Equivalent	2.6E-06		1.0E-06	4E-06	Developmental effects	1.4E-01		5.2E-02	2E-01
		Exposure Area	Chemical Total	2.6E-06	--	1.0E-06	4E-06		1.4E-01	--	5.2E-02	2E-01
		Exposure Point Total					4E-06					2E-01
	Exposure Medium Total						4E-06					2E-01
Medium Total							4E-06					2E-01
Receptor Total							4E-06				Receptor HI Total	2E-01

Total Risk Across All Media = 4E-06

Total Hazard Across All Media = 2E-01

TABLE 10.1f RME
RISK SUMMARY
LAKESHORE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Lakeshore Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Lakeshore Area	BENZO(A)ANTHRACENE	7.9E-07		1.3E-06	2E-06	--				
			BENZO(A)PYRENE	6.4E-06		1.1E-05	2E-05	--				
			BENZO(B)FLUORANTHENE	8.6E-07		1.4E-06	2E-06	--				
			DIBENZO(A,H)ANTHRACENE	8.6E-07		1.4E-06	2E-06	--				
			Chemical Total	8.9E-06	--	1.5E-05	2E-05		--	--	--	0E+00
		Exposure Point Total					2E-05					0E+00
	Exposure Medium Total						2E-05					0E+00
Medium Total							2E-05					0E+00
Receptor Total							2E-05				Receptor HI Total	0E+00

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 0E+00

TABLE 10.1g RME
RISK SUMMARY
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Petroleum Storage Area	ARSENIC	3.3E-06		1.3E-06	5E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	5.8E-02		2.2E-02	8E-02
			BENZO(A)ANTHRACENE	5.3E-07		8.7E-07	1E-06	--				
			BENZO(A)PYRENE	5.0E-06		8.4E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	7.2E-07		1.2E-06	2E-06	--				
			DIBENZO(A,H)ANTHRACENE	1.2E-06		2.0E-06	3E-06	--				
			INDENO(1,2,3-CD)PYRENE	4.4E-07		7.3E-07	1E-06	--				
			Chemical Total	1.1E-05	--	1.4E-05	3E-05		5.8E-02	--	2.2E-02	8E-02
		Exposure Point Total					3E-05					8E-02
	Exposure Medium Total						3E-05					8E-02
Medium Total							3E-05					8E-02
Receptor Total							3E-05				Receptor HI Total	8E-02

Total Risk Across All Media = 3E-05

Total Hazard Across All Media = 8E-02

TABLE 10.1h RME
RISK SUMMARY
CHLORBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Chlorobenzen Hot-Spot Area
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area	HIGHLY CHLORINATED PCBs	7.4E-06		1.3E-05	2E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.4E+00		2.6E+00	4E+00
			BENZO(A)ANTHRACENE	9.7E-07		1.6E-06	3E-06	--				
			BENZO(A)PYRENE	5.5E-06		9.2E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	1.3E-06		2.1E-06	3E-06	--				
			DIBENZO(A,H)ANTHRACENE	1.3E-06		2.2E-06	3E-06	--				
			INDENO(1,2,3-CD)PYRENE	4.5E-07		7.4E-07	1E-06	--				
			Chemical Total	1.7E-05	--	2.9E-05	5E-05		1.4E+00	--	2.6E+00	4E+00
		Exposure Point Total					5E-05					4E+00
	Exposure Medium Total						5E-05					4E+00
Medium Total							5E-05					4E+00
Receptor Total							5E-05				Receptor HI Total	4E+00

Total Risk Across All Media = 5E-05

Total Hazard Across All Media = 4E+00

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Ocular Effects HI Across All Media = 4E+00

TABLE 10.1i RME
RISK SUMMARY
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adolescent (Age 7 to <16 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment (0-1 ft bgs)	Tributary 5A	ARSENIC	1.7E-06		6.3E-07	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.9E-02		1.1E-02	4E-02
			CHROMIUM					None Reported (O)	1.1E+00			1E+00
			HIGHLY CHLORINATED PCBs	3.7E-07		6.6E-07	1E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	7.2E-02		1.3E-01	2E-01
			BENZO(A)PYRENE	3.3E-06		5.5E-06	9E-06	--				
			BENZO(B)FLUORANTHENE	4.1E-07		6.8E-07	1E-06	--				
			DIBENZO(A,H)ANTHRACENE	7.9E-07		1.3E-06	2E-06	--				
			Chemical Total	6.5E-06	--	8.8E-06	2E-05		1.2E+00	--	1.4E-01	1E+00
		Exposure Point Total					2E-05					1E+00
	Exposure Medium Total						2E-05					1E+00
Medium Total							2E-05					1E+00
Water	Surface Water	Tributary 5A	BIS(2-ETHYLHEXYL)PHTHALATE	1.2E-07		5.4E-06	6E-06	Increased relative liver weight (H)	3.3E-03		1.5E-01	2E-01
			PENTACHLOROPHENOL	7.1E-09		2.5E-06	3E-06	Liver (H) and kidney (R) pathology	1.5E-05		5.4E-03	5E-03
			Chemical Total	1.3E-07	--	7.9E-06	8E-06		3.4E-03	--	1.6E-01	2E-01
		Exposure Point Total					8E-06					2E-01
	Exposure Medium Total						8E-06					2E-01
Medium Total							8E-06					2E-01
Receptor Total							2E-05				Receptor HI Total	1E+00

Total Risk Across All Media =	2E-05
Total Hazard Across All Media =	1E+00
Total Liver HI Across All Media =	2E-01
Total Kidney HI Across All Media =	5E-03
Total Nervous System Effects HI Across All Media =	4E-02
Total Immune/Lymphocyte Effects HI Across All Media =	2E-01
Total Ocular Effects HI Across All Media =	2E-01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 10.2a RME
RISK SUMMARY
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Plant Area	2,3,7,8-TCDD Equivalent	3.6E-06		3.6E-06	7E-06	Developmental effects	5.5E-02		5.7E-02	1E-01
			ARSENIC	1.4E-06		1.4E-06	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	7.2E-03		7.4E-03	1E-02
			HIGHLY CHLORINATED PCBs	2.2E-07		1.0E-06	1E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.3E-02		6.1E-02	7E-02
			DIELDRIN	2.1E-06			2E-06	Hepatic (H)	6.1E-03			6E-03
			BENZO(A)ANTHRACENE	2.3E-07		1.0E-06	1E-06	--				
			BENZO(A)PYRENE	3.0E-06		1.3E-05	2E-05	--				
			BENZO(B)FLUORANTHENE	3.2E-07		1.4E-06	2E-06	--				
			DIBENZO(A,H)ANTHRACENE	5.8E-07		2.6E-06	3E-06	--				
			HEXACHLOROBENZENE	4.0E-07		1.4E-06	2E-06	Hepatic (H)	7.3E-04		2.5E-03	3E-03
			INDENO(1,2,3-CD)PYRENE	2.6E-07		1.2E-06	1E-06	--				
			Chemical Total	1.2E-05	--	2.7E-05	4E-05		8.2E-02	--	1.3E-01	2E-01
		Exposure Point Total					4E-05					2E-01
	Exposure Medium Total						4E-05					2E-01
Medium Total							4E-05					2E-01
Receptor Total							4E-05				Receptor HI Total	4E-05

Total Risk Across All Media = 4E-05

Total Hazard Across All Media = 4E-05

TABLE 10.2b RME
RISK SUMMARY
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	On-Site Ditches	2,3,7,8-TCDD Equivalent	4.0E-05		4.1E-05	8E-05	Developmental effects	6.2E-01		6.4E-01	1E+00
			ARSENIC	2.1E-06		2.2E-06	4E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.1E-02		1.1E-02	2E-02
			MERCURY					Autoimmune effects	9.8E-01			1E+00
			HIGHLY CHLORINATED PCBs	9.9E-07		4.7E-06	6E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	5.8E-02		2.8E-01	3E-01
			BENZO(A)PYRENE	5.1E-07		2.3E-06	3E-06	--				
			Chemical Total	4.3E-05	--	5.0E-05	9E-05		1.7E+00	--	9.2E-01	3E+00
		Exposure Point Total					9E-05					3E+00
	Exposure Medium Total						9E-05					3E+00
Medium Total							9E-05					3E+00
Receptor Total							9E-05				Receptor HI Total	3E+00

Total Risk Across All Media =	9E-05
Total Hazard Across All Media =	3E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media =	2E-02
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	3E-01

TABLE 10.2c RME
RISK SUMMARY
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	3.3E-04		3.4E-04	7E-04	Developmental effects	5.1E+00		5.3E+00	1E+01
			ARSENIC	5.5E-07		5.6E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	2.8E-03		2.9E-03	6E-03
			HIGHLY CHLORINATED PCBs	3.9E-07		1.9E-06	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	2.3E-02		1.1E-01	1E-01
			BENZO(A)PYRENE	3.9E-07		1.7E-06	2E-06	--				
			Chemical Total	3.3E-04	--	3.4E-04	7E-04		5.2E+00	--	5.4E+00	1E+01
		Exposure Point Total					7E-04					1E+01
	Exposure Medium Total						7E-04					1E+01
Medium Total							7E-04					1E+01
Receptor Total							7E-04				Receptor HI Total	1E+01

Total Risk Across All Media =	7E-04
Total Hazard Across All Media =	1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media =	6E-03
Total Immune/Lymphocyte Effects HI Across All Media =	1E-01
Total Ocular Effects HI Across All Media =	1E-01

TABLE 10.2d RME
RISK SUMMARY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Southwest Off-Site/Outfall 006 Exosure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	3.7E-06		3.8E-06	7E-06	Developmental effects	5.7E-02		5.9E-02	1E-01
			ARSENIC	1.5E-06		1.5E-06	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	7.6E-03		7.8E-03	2E-02
			HIGHLY CHLORINATED PCBs	2.5E-06		1.2E-05	1E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.4E-01		6.9E-01	8E-01
			BENZO(A)PYRENE	2.0E-06		8.9E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	3.3E-07		1.5E-06	2E-06	--				
			DIBENZO(A,H)ANTHRACENE	6.2E-07		2.7E-06	3E-06	--				
			Chemical Total	1.1E-05	--	3.0E-05	4E-05		2.1E-01	--	7.6E-01	1E+00
		Exposure Point Total					4E-05					1E+00
	Exposure Medium Total						4E-05					1E+00
Medium Total							4E-05					1E+00
Receptor Total							4E-05				Receptor HI Total	1E+00

Total Risk Across All Media = 4E-05

Total Hazard Across All Media = 1E+00

TABLE 10.2e RME
RISK SUMMARY
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	State Fair Blvd/Northwest Off-Site/ Outfall 004	2,3,7,8-TCDD Equivalent	2.8E-06		2.9E-06	6E-06	Developmental effects	4.3E-02		4.5E-02	9E-02
		Exposure Area	Chemical Total	2.8E-06	--	2.9E-06	6E-06		4.3E-02	--	4.5E-02	9E-02
		Exposure Point Total					6E-06					9E-02
	Exposure Medium Total						6E-06					9E-02
Medium Total							6E-06					9E-02
Receptor Total							6E-06				Receptor HI Total	9E-02

Total Risk Across All Media = 6E-06

Total Hazard Across All Media = 9E-02

TABLE 10.2f RME
RISK SUMMARY
LAKESHORE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Lakeshore Area	ARSENIC	5.8E-07		6.0E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	3.0E-03		3.1E-03	6E-03
			HIGHLY CHLORINATED PCBs	2.6E-07		1.2E-06	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.5E-02		7.3E-02	9E-02
			BENZO(A)ANTHRACENE	2.8E-07		1.3E-06	2E-06	--				
			BENZO(A)PYRENE	2.3E-06		1.0E-05	1E-05	--				
			BENZO(B)FLUORANTHENE	3.1E-07		1.4E-06	2E-06	--				
			DIBENZO(A,H)ANTHRACENE	3.1E-07		1.4E-06	2E-06	--				
			Chemical Total	4.0E-06	--	1.6E-05	2E-05		1.8E-02	--	7.6E-02	9E-02
		Exposure Point Total					2E-05					9E-02
	Exposure Medium Total						2E-05					9E-02
Medium Total							2E-05					9E-02
Receptor Total							2E-05				Receptor HI Total	9E-02

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 9E-02

TABLE 10.2g RME
RISK SUMMARY
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Petroleum Storage Area	ARSENIC	3.6E-06		3.7E-06	7E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.9E-02		1.9E-02	4E-02
			BENZO(A)ANTHRACENE	1.9E-07		8.3E-07	1E-06	--				
			BENZO(A)PYRENE	1.8E-06		8.0E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	2.6E-07		1.1E-06	1E-06	--				
			DIBENZO(A,H)ANTHRACENE	4.4E-07		1.9E-06	2E-06	--				
			Chemical Total	6.3E-06	--	1.6E-05	2E-05		1.9E-02	--	1.9E-02	4E-02
		Exposure Point Total					2E-05					4E-02
	Exposure Medium Total						2E-05					4E-02
Medium Total							2E-05					4E-02
Receptor Total							2E-05				Receptor HI Total	4E-02

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 4E-02

TABLE 10.2h RME
RISK SUMMARY
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot-Spot Area	ARSENIC	7.2E-07		7.4E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS	3.8E-03		3.9E-03	8E-03
			HIGHLY CHLORINATED PCBs	8.0E-06		3.8E-05	5E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.6E-01		2.2E+00	3E+00
			BENZO(A)ANTHRACENE	3.5E-07		1.5E-06	2E-06	--				
			BENZO(A)PYRENE	2.0E-06		8.8E-06	1E-05	--				
			BENZO(B)FLUORANTHENE	4.6E-07		2.0E-06	2E-06	--				
			DIBENZO(A,H)ANTHRACENE	4.6E-07		2.1E-06	3E-06	--				
			Chemical Total	1.2E-05	--	5.3E-05	7E-05		4.7E-01	--	2.2E+00	3E+00
		Exposure Point Total					7E-05					3E+00
	Exposure Medium Total						7E-05					3E+00
Medium Total							7E-05					3E+00
Receptor Total							7E-05				Receptor HI Total	3E+00

Total Risk Across All Media =	7E-05
Total Hazard Across All Media =	3E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media =	8E-03
Total Immune/Lymphocyte Effects HI Across All Media =	3E+00
Total Ocular Effects HI Across All Media =	3E+00

TABLE 10.2i RME
RISK SUMMARY
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Trespasser
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Sediment (0-1 ft bgs)	Tributary 5A	ARSENIC	1.8E-06		1.8E-06	4E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	9.2E-03		9.4E-03	2E-02
			HIGHLY CHLORINATED PCBs	3.9E-07		1.9E-06	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	2.3E-02		1.1E-01	1E-01
			BENZO(A)PYRENE	1.2E-06		5.3E-06	6E-06	--				
			DIBENZO(A,H)ANTHRACENE	2.8E-07		1.3E-06	2E-06	--				
			Chemical Total	3.6E-06	--	1.0E-05	1E-05		3.2E-02	--	1.2E-01	2E-01
		Exposure Point Total					1E-05					2E-01
	Exposure Medium Total						1E-05					2E-01
Medium Total							1E-05					2E-01
Water	Surface Water	Tributary 5A	BIS(2-ETHYLHEXYL)PHTHALATE	2.6E-07		2.2E-05	2E-05	Increased relative liver weight (H)	2.1E-03		1.8E-01	2E-01
			PENTACHLOROPHENOL	1.5E-08		1.0E-05	1E-05	Liver (H) and kidney (R) pathology	9.9E-06		6.6E-03	7E-03
			Chemical Total	2.7E-07	--	3.2E-05	3E-05		2.2E-03	--	1.9E-01	2E-01
		Exposure Point Total					3E-05					2E-01
	Exposure Medium Total						3E-05					2E-01
Medium Total							3E-05					2E-01
Receptor Total							5E-05				Receptor HI Total	3E-01

Total Risk Across All Media = 5E-05

Total Hazard Across All Media = 3E-01

TABLE 10.3a RME
RISK SUMMARY
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Plant Area	2,3,7,8-TCDD Equivalent	4.4E-06		1.3E-06	6E-06	Developmental effects	8.2E-02		2.4E-02	1E-01
			ARSENIC	1.7E-06		5.1E-07	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.1E-02		3.2E-03	1E-02
			DIELDRIN	2.6E-06			3E-06	Hepatic (H)	9.0E-03			9E-03
			BENZO(A)PYRENE	3.7E-06		4.7E-06	8E-06	--				
			DIBENZO(A,H)ANTHRACENE	7.1E-07		9.2E-07	2E-06	--				
			Chemical Total	1.3E-05	--	7.4E-06	2E-05		1.0E-01	--	2.7E-02	1E-01
		Exposure Point Total					2E-05					1E-01
	Exposure Medium Total						2E-05					1E-01
Medium Total							2E-05					1E-01
Receptor Total							2E-05				Receptor HI Total	1E-01

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 1E-01

TABLE 10.3b RME
RISK SUMMARY
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	On-Site Ditches	2,3,7,8-TCDD Equivalent	4.9E-05		1.5E-05	6E-05	Developmental effects	9.1E-01		2.7E-01	1E+00
			ARSENIC	2.6E-06		7.7E-07	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.6E-02		4.8E-03	2E-02
			MERCURY					Autoimmune effects	1.4E+00			1E+00
			HIGHLY CHLORINATED PCBs	1.2E-06		1.7E-06	3E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	8.5E-02		1.2E-01	2E-01
			BENZO(A)PYRENE	6.3E-07		8.1E-07	1E-06	--				
			Chemical Total	5.3E-05	--	1.8E-05	7E-05		2.5E+00	--	3.9E-01	3E+00
		Exposure Point Total					7E-05					3E+00
	Exposure Medium Total						7E-05					3E+00
Medium Total							7E-05					3E+00
Receptor Total							7E-05				Receptor HI Total	3E+00

Total Risk Across All Media = 7E-05

Total Hazard Across All Media = 3E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 2E-02
Total Immune/Lymphocyte Effects HI Across All Media = 2E+00
Total Ocular Effects HI Across All Media = 2E-01

TABLE 10.3c RME
RISK SUMMARY
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Surveillance Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	4.1E-04		1.2E-04	5E-04	Developmental effects	7.6E+00		2.3E+00	1E+01
			HIGHLY CHLORINATED PCBs	4.8E-07		6.6E-07	1E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	3.3E-02		4.6E-02	8E-02
			BENZO(A)PYRENE	4.7E-07		6.1E-07	1E-06	--				
			Chemical Total	4.1E-04	--	1.2E-04	5E-04		7.6E+00	--	2.3E+00	1E+01
		Exposure Point Total					5E-04					1E+01
	Exposure Medium Total						5E-04					1E+01
Medium Total							5E-04					1E+01
Receptor Total							5E-04				Receptor HI Total	1E+01

Total Risk Across All Media = 5E-04

Total Hazard Across All Media = 1E+01

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Immune/Lymphocyte Effects HI Across All Media = 8E-02

Total Ocular Effects HI Across All Media = 8E-02

TABLE 10.4a RME
RISK SUMMARY
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Plant Area	2,3,7,8-TCDD Equivalent	1.3E-05		5.3E-06	2E-05	Developmental effects	2.5E-01		9.8E-02	3E-01
			ARSENIC	5.2E-06		2.1E-06	7E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	3.2E-02		1.3E-02	5E-02
			MERCURY					Autoimmune effects	1.2E+00			1E+00
			HIGHLY CHLORINATED PCBs	8.1E-07		1.5E-06	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	5.7E-02		1.1E-01	2E-01
			DELTA-BHC	1.6E-06			2E-06	--				
			DIELDRIN	7.8E-06			8E-06	Hepatic (H)	2.7E-02			3E-02
			BENZO(A)ANTHRACENE	8.7E-07		1.5E-06	2E-06	--				
			BENZO(A)PYRENE	1.1E-05		1.9E-05	3E-05	--				
			BENZO(B)FLUORANTHENE	1.2E-06		2.1E-06	3E-06	--				
			DIBENZO(A,H)ANTHRACENE	2.2E-06		3.7E-06	6E-06	--				
			HEXACHLOROBENZENE	1.5E-06		2.0E-06	3E-06	Hepatic (H)	3.3E-03		4.3E-03	8E-03
			INDENO(1,2,3-CD)PYRENE	9.8E-07		1.7E-06	3E-06	--				
			1,4-DICHLOROBENZENE	1.7E-06			2E-06	Liver	1.3E-02			1E-02
			Chemical Total	4.8E-05	--	3.9E-05	9E-05		1.5E+00	--	2.2E-01	2E+00
		Exposure Point Total					9E-05					2E+00
	Exposure Medium Total						9E-05					2E+00
Medium Total							9E-05					2E+00
Receptor Total							9E-05				Receptor HI Total	2E+00

Total Risk Across All Media =	9E-05
Total Hazard Across All Media =	2E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	5E-02
Total Nervous System Effects HI Across All Media =	5E-02
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	2E-01

TABLE 10.4b RME
RISK SUMMARY
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	On-Site Ditches	2,3,7,8-TCDD Equivalent	1.5E-04		5.9E-05	2E-04	Developmental effects	2.8E+00		1.1E+00	4E+00
			ARSENIC	7.9E-06		3.1E-06	1E-05	Hyperpigmentation (In); Vascular (V); PNS (N)	4.9E-02		1.9E-02	7E-02
			MERCURY					Autoimmune effects	4.4E+00			4E+00
			HIGHLY CHLORINATED PCBs	3.7E-06		6.8E-06	1E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	2.6E-01		4.8E-01	7E-01
			BENZO(A)PYRENE	1.9E-06		3.3E-06	5E-06	--				
			DIBENZO(A,H)ANTHRACENE	4.2E-07		7.2E-07	1E-06	--				
			Chemical Total	1.6E-04	--	7.3E-05	2E-04		7.4E+00	--	1.6E+00	9E+00
		Exposure Point Total					2E-04					9E+00
	Exposure Medium Total						2E-04					9E+00
Medium Total							2E-04					9E+00
Receptor Total							2E-04				Receptor HI Total	9E+00

Total Risk Across All Media = 2E-04

Total Hazard Across All Media = 9E+00

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 7E-02

Total Immune/Lymphocyte Effects HI Across All Media = 5E+00

Total Ocular Effects HI Across All Media = 7E-01

TABLE 10.4c RME
RISK SUMMARY
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	1.2E-03		4.9E-04	2E-03	Developmental effects	2.3E+01		9.1E+00	3E+01
			ARSENIC	2.0E-06		8.1E-07	3E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.3E-02		5.1E-03	2E-02
			HIGHLY CHLORINATED PCBs	1.4E-06		2.7E-06	4E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	1.0E-01		1.9E-01	3E-01
			BENZO(A)PYRENE	1.4E-06		2.5E-06	4E-06	--				
			Chemical Total	1.2E-03	--	4.9E-04	2E-03		2.3E+01	--	9.3E+00	3E+01
		Exposure Point Total					2E-03					3E+01
	Exposure Medium Total						2E-03					3E+01
Medium Total							2E-03					3E+01
Receptor Total							2E-03				Receptor HI Total	3E+01

Total Risk Across All Media = 2E-03

Total Hazard Across All Media = 3E+01

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 2E-02
Total Immune/Lymphocyte Effects HI Across All Media = 3E-01
Total Ocular Effects HI Across All Media = 3E-01
Total Other Effects HI Across All Media = 3E+01

TABLE 10.4d RME
RISK SUMMARY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA- REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	1.4E-05		5.4E-06	2E-05	Developmental effects	2.6E-01		1.0E-01	4E-01
			ARSENIC	5.4E-06		2.2E-06	8E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	3.4E-02		1.3E-02	5E-02
			MERCURY					Autoimmune effects	1.4E+00			1E+00
			HIGHLY CHLORINATED PCBs	9.2E-06		1.7E-05	3E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep ervthrocvtes	6.4E-01		1.2E+00	2E+00
			BENZO(A)ANTHRACENE	6.4E-07		1.1E-06	2E-06	--				
			BENZO(A)PYRENE	7.5E-06		1.3E-05	2E-05	--				
			BENZO(B)FLUORANTHENE	1.2E-06		2.1E-06	3E-06	--				
			DIBENZO(A,H)ANTHRACENE	2.3E-06		4.0E-06	6E-06	--				
			HEXACHLOROBENZENE	7.8E-07		1.0E-06	2E-06	Hepatic (H)	1.7E-03		2.3E-03	4E-03
			INDENO(1,2,3-CD)PYRENE	4.9E-07		8.4E-07	1E-06	--				
			Chemical Total	4.1E-05	--	4.6E-05	9E-05		2.3E+00	--	1.3E+00	4E+00
		Exposure Point Total					9E-05					4E+00
	Exposure Medium Total						9E-05					4E+00
Medium Total							9E-05					4E+00
Receptor Total							9E-05				Receptor HI Total	4E+00

Total Risk Across All Media =	9E-05
Total Hazard Across All Media =	4E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	4E-03
Total Nervous System Effects HI Across All Media =	5E-02
Total Immune/Lymphocyte Effects HI Across All Media =	3E+00
Total Ocular Effects HI Across All Media =	2E+00

TABLE 10.4e RME
RISK SUMMARY
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Petroleum Storage Area	ARSENIC	1.3E-05		5.3E-06	2E-05	Hyperpigmentation (In); Vascular (V); PNS (N)	8.3E-02		3.3E-02	1E-01
			BENZO(A)ANTHRACENE	7.0E-07		1.2E-06	2E-06	--				
			BENZO(A)PYRENE	6.7E-06		1.2E-05	2E-05	--				
			BENZO(B)FLUORANTHENE	9.6E-07		1.6E-06	3E-06	--				
			DIBENZO(A,H)ANTHRACENE	1.6E-06		2.8E-06	4E-06	--				
			INDENO(1,2,3-CD)PYRENE	5.9E-07		1.0E-06	2E-06	--				
			Chemical Total	2.4E-05	--	2.3E-05	5E-05		8.3E-02	--	3.3E-02	1E-01
		Exposure Point Total					5E-05					1E-01
	Exposure Medium Total						5E-05					1E-01
Medium Total							5E-05					1E-01
Receptor Total							5E-05				Receptor HI Total	1E-01

Total Risk Across All Media = 5E-05

Total Hazard Across All Media = 1E-01

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 1E-01

TABLE 10.4f RME
RISK SUMMARY
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Industrial Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	Chlorobenzene Hot - Spot Area	ARSENIC	2.7E-06		1.1E-06	4E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.7E-02		6.7E-03	2E-02
			HIGHLY CHLORINATED PCBs	3.0E-05		5.5E-05	8E-05	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	2.1E+00		3.8E+00	6E+00
			BENZO(A)ANTHRACENE	1.3E-06		2.2E-06	3E-06	--				
			BENZO(A)PYRENE	7.4E-06		1.3E-05	2E-05	--				
			BENZO(B)FLUORANTHENE	1.7E-06		2.9E-06	5E-06	--				
			DIBENZO(A,H)ANTHRACENE	1.7E-06		3.0E-06	5E-06	--				
			HEXACHLOROBENZENE	6.2E-07		8.1E-07	1E-06	Hepatic (H)	1.3E-03		1.8E-03	3E-03
			INDENO(1,2,3-CD)PYRENE	6.0E-07		1.0E-06	2E-06	--				
			Chemical Total	4.6E-05	--	7.9E-05	1E-04		2.1E+00	--	3.8E+00	6E+00
		Exposure Point Total					1E-04					6E+00
	Exposure Medium Total						1E-04					6E+00
Medium Total							1E-04					6E+00
Receptor Total							1E-04				Receptor HI Total	6E+00

Total Risk Across All Media = 1E-04

Total Hazard Across All Media = 6E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	3E-03
Total Nervous System Effects HI Across All Media =	2E-02
Total Immune/Lymphocyte Effects HI Across All Media =	6E+00
Total Ocular Effects HI Across All Media =	6E+00

TABLE 10.5a RME
RISK SUMMARY
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Plant Area	2,3,7,8-TCDD Equivalent	1.8E-06		1.7E-07	2E-06	Developmental effects	8.6E-01		7.7E-02	9E-01
			ARSENIC	6.8E-07	7.5E-07	6.1E-08	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.1E-01	2.4E-01	9.5E-03	4E-01
			CHROMIUM		1.5E-06		2E-06	Respiratory (P)	7.7E-03	8.9E-02		1E-01
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	3.1E-03	3.3E+00		3E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	1.4E+00	5.5E-01		2E+00
			NICKEL		5.9E-06		6E-06	Decreased body and organ weight (W) , Respiratory (P)	2.0E-01	1.8E+01		2E+01
			DIELDRIN	1.1E-06	1.2E-07		1E-06	Hepatic (H)	9.6E-02			1E-01
			BENZO(A)PYRENE	1.5E-06		5.7E-07	2E-06	--				
			1,4-DICHLOROBENZENE	1.6E-07	9.3E-06		9E-06	Liver	3.0E-02	7.1E-02		1E-01
			Chemical Total	5.2E-06	1.8E-05	8.0E-07	2E-05		2.7E+00	2.2E+01	8.7E-02	2E+01
		Exposure Point Total					2E-05					2E+01
	Exposure Medium Total						2E-05					2E+01
Medium Total							2E-05					2E+01
Receptor Total							2E-05				Receptor HI Total	2E+01

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 2E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media = 2E-01
Total Nervous System Effects HI Across All Media = 6E+00
Total Nasal/Respiratory Effects HI Across All Media = 2E+01

TABLE 10.5b RME
RISK SUMMARY
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	On-Site Ditches	2,3,7,8-TCDD Equivalent	2.1E-05		1.9E-06	2E-05	Developmental effects	9.7E+00		8.8E-01	1E+01
			ARSENIC	1.1E-06	1.2E-06	9.9E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.7E-01	4.0E-01	1.5E-02	6E-01
			CHROMIUM		1.6E-05		2E-05	Respiratory (P)	8.3E-02	9.6E-01		1E+00
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	4.0E-03	4.3E+00		4E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	2.1E+01	8.0E+00		3E+01
			NICKEL		5.6E-07		6E-07	Decreased body and organ weight (W) , Respiratory (P)	1.9E-02	1.7E+00		2E+00
			1,4-DICHLOROBENZENE	4.3E-08	2.4E-06		2E-06	Liver	7.9E-03	1.9E-02		3E-02
			Chemical Total	2.2E-05	2.1E-05	2.0E-06	4E-05		3.1E+01	1.5E+01	8.9E-01	5E+01
		Exposure Point Total					4E-05					5E+01
	Exposure Medium Total						4E-05					5E+01
Medium Total							4E-05					5E+01
Receptor Total							4E-05				Receptor HI Total	5E+01

Total Risk Across All Media = 4E-05

Total Hazard Across All Media = 5E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media = 3E-02
Total Nervous System Effects HI Across All Media = 3E+01
Total Nasal/Respiratory Effects HI Across All Media = 3E+00

TABLE 10.5c RME
RISK SUMMARY
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	7.0E-04		6.3E-05	8E-04	Developmental effects	3.3E+02		2.9E+01	4E+02
			CHROMIUM		1.2E-06		1E-06	Respiratory (P)	5.8E-03	6.7E-02		7E-02
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	3.1E-03	3.4E+00		3E+00
			Chemical Total	7.0E-04	1.2E-06	6.3E-05	8E-04		3.3E+02	3.4E+00	2.9E+01	4E+02
		Exposure Point Total					8E-04					4E+02
	Exposure Medium Total						8E-04					4E+02
Medium Total							8E-04					4E+02
Receptor Total							8E-04				Receptor HI Total	4E+02

Total Risk Across All Media = 8E-04

Total Hazard Across All Media = 4E+02

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 3E+00

Total Nasal/Respiratory Effects HI Across All Media = 7E-02

TABLE 10.5d RME
RISK SUMMARY
SOUTHWEST OFF-SITE/OUTFALL 006 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Southwest Off-Site/Outfall 006 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Southwest Off-Site/ Outfall 006 Exposure Area	2,3,7,8-TCDD Equivalent	1.9E-06		1.7E-07	2E-06	Developmental effects	9.0E-01		8.1E-02	1E+00
			ARSENIC	7.6E-07	8.5E-07	6.9E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.2E-01	2.8E-01	1.1E-02	4E-01
			CHROMIUM		1.6E-05		2E-05	Respiratory (P)	7.9E-02	9.1E-01		1E+00
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	2.7E-03	3.0E+00		3E+00
			MERCURY					Autoimmune effects, PNS (N); CNS (N)	8.1E+00	3.1E+00		1E+01
			HIGHLY CHLORINATED PCBs	1.3E-06	1.4E-07	5.4E-07	2E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep	2.3E+00		9.5E-01	3E+00
			BENZO(A)PYRENE	1.1E-06		4.1E-07	2E-06	--				
			BENZENE	7.7E-06	1.4E-04		1E-04	Reduced lymphocyte count	2.5E+00	4.2E+01		4E+01
			XYLENES, TOTAL					Decreased body weight (W), increased mortality (M), Impaired motor coordination (decreased rotarod performance)	1.1E-02	8.6E+00		9E+00
			Chemical Total	1.3E-05	1.6E-04	1.2E-06	2E-04		1.4E+01	5.8E+01	1.0E+00	7E+01
		Exposure Point Total					2E-04					7E+01
	Exposure Medium Total						2E-04					7E+01
Medium Total							2E-04					7E+01
Receptor Total							2E-04				Receptor HI Total	7E+01

Total Risk Across All Media = 2E-04

Total Hazard Across All Media = 7E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media =	2E+01
Total Immune/Lymphocyte Effects HI Across All Media =	4E+01
Total Nasal/Respiratory Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	3E+00

TABLE 10.5e RME
RISK SUMMARY
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Petroleum Storage Area	ARSENIC	1.1E-06	1.2E-06	9.6E-08	2E-06	Hyperpigmentation (In); Vascular (V); PNS (N), Development, cardiovascular, nervous system	1.7E-01	3.8E-01	1.5E-02	6E-01
			CHROMIUM		1.8E-06		2E-06	Respiratory (P)	8.9E-03	1.0E-01		1E-01
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	4.1E-03	4.5E+00		4E+00
			Chemical Total	1.1E-06	3.0E-06	9.6E-08	4E-06		1.8E-01	4.9E+00	1.5E-02	5E+00
		Exposure Point Total					4E-06					5E+00
	Exposure Medium Total						4E-06					5E+00
Medium Total							4E-06					5E+00
Water	Shallow Groundwater (0 - 10 ft bgs)	Petroleum Storage Area	BENZENE	2.7E-07		3.5E-06	4E-06	Reduced lymphocyte count	8.5E-02		1.1E+00	1E+00
			Chemical Total	2.7E-07	--	3.5E-06	4E-06		8.5E-02	--	1.1E+00	1E+00
		Exposure Point Total					4E-06					1E+00
	Exposure Medium Total						4E-06					1E+00
Medium Total							4E-06					1E+00
Receptor Total							8E-06				Receptor HI Total	6E+00

Total Risk Across All Media = 8E-06

Total Hazard Across All Media = 6E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 5E+00
Total Immune/Lymphocyte Effects HI Across All Media = 1E+00
Total Nasal/Respiratory Effects HI Across All Media = 1E-01

TABLE 10.5f RME
RISK SUMMARY
CHLORBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Construction Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Chlorobenzene Hot-Spot Area	CHROMIUM		1.9E-06		2E-06	Respiratory (P)	9.6E-03	1.1E-01		1E-01
			MANGANESE					CNS (N) , Neurobehavioral changes (N, O)	3.5E-03	3.8E+00		4E+00
			HIGHLY CHLORINATED PCBs	2.3E-06	2.5E-07	9.6E-07	3E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.0E+00		1.7E+00	6E+00
			BENZO(A)PYRENE	9.7E-07		3.8E-07	1E-06	--				
			1,4-DICHLOROBENZENE	1.7E-07	9.7E-06		1E-05	Liver	3.1E-02	7.4E-02		1E-01
			Chemical Total	3.4E-06	1.2E-05	1.3E-06	2E-05		4.0E+00	4.0E+00	1.7E+00	1E+01
		Exposure Point Total					2E-05					1E+01
	Exposure Medium Total						2E-05					1E+01
Medium Total							2E-05					1E+01
Water	Shallow Groundwater (0 - 10 ft bgs)	Chlorobenzene Hot-Spot Area	CHROMIUM					Respiratory (P)	1.8E-02		1.2E+00	1E+00
			HEXACHLOROBENZENE	5.4E-09		1.1E-06	1E-06	Hepatic (H)	2.9E-04		6.1E-02	6E-02
			BENZENE	3.0E-07		4.0E-06	4E-06	Reduced lymphocyte count	9.7E-02		1.3E+00	1E+00
			Chemical Total	3.1E-07	--	5.1E-06	5E-06		1.1E-01	--	2.6E+00	3E+00
		Exposure Point Total					5E-06					3E+00
	Exposure Medium Total						5E-06					3E+00
Medium Total							5E-06					3E+00
Receptor Total							2E-05				Receptor HI Total	1E+01

Total Risk Across All Media =	2E-05
Total Hazard Across All Media =	1E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	2E-01
Total Nervous System Effects HI Across All Media =	4E+00
Total Immune/Lymphocyte Effects HI Across All Media =	1E+00
Total Nasal/Respiratory Effects HI Across All Media =	1E+00
Total Ocular Effects HI Across All Media =	6E+00

TABLE 10.6 RME
RISK SUMMARY
STATE FAIR BLVD/ NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Transient Trespasser
Exposure Area:	State Fair Blvd/Northwest Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface Soils (0-2 ft)	State Fair Blvd/ Northwest Off-Site/Outfall 004	None	--	--	--	--	--	--	--	--	--
		Exposure Area	Chemical Total	--	--	--	0E+00		--	--	--	0E+00
		Exposure Point Total					0E+00					0E+00
Medium Total							0E+00					0E+00
Receptor Total							0E+00				Receptor HI Total	0E+00

Total Risk Across All Media = 0E+00

Total Hazard Across All Media = 0E+00

TABLE 10.7a RME
RISK SUMMARY
PLANT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Plant Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils (0 - 20 ft)	Plant Area	MERCURY					Autoimmune effects	3.2E+00			3E+00
			BENZO(A)PYRENE	6.5E-07		7.6E-07	1E-06	--				
			Chemical Total	6.5E-07	--	7.6E-07	1E-06		3.2E+00	--	--	3E+00
		Exposure Point Total					1E-06					3E+00
	Exposure Medium Total						1E-06					3E+00
Medium Total							1E-06					3E+00
Groundwater	Intermediate Groundwater	Plant Area	INDENO(1,2,3-CD)PYRENE	1.8E-09		1.8E-06	2E-06	--				
			BENZENE	1.2E-07		1.5E-06	2E-06	Reduced lymphocyte count	3.7E-02		4.9E-01	5E-01
			Chemical Total	1.2E-07	--	3.4E-06	3E-06		3.7E-02	--	4.9E-01	5E-01
		Exposure Point Total					3E-06					5E-01
	Exposure Medium Total						3E-06					5E-01
Medium Total							3E-06					5E-01
Receptor Total							5E-06				Receptor HI Total	4E+00

Total Risk Across All Media = 5E-06

Total Hazard Across All Media = 4E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Immune/Lymphocyte Effects HI Across All Media = 4E+00

TABLE 10.7b RME
RISK SUMMARY
ON-SITE DITCHES - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	On-Site Ditches
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils (0 - 20 ft)	On-Site Ditches	2,3,7,8-TCDD Equivalent	1.6E-05		4.2E-06	2E-05	Developmental effects	7.3E+00		2.0E+00	9E+00
			ARSENIC	8.3E-07		2.2E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.3E-01		3.5E-02	2E-01
			MERCURY					Autoimmune effects	1.5E+01			2E+01
			HIGHLY CHLORINATED PCBs	2.7E-07		3.4E-07	6E-07	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	4.8E-01		6.0E-01	1E+00
			Chemical Total	1.7E-05	--	4.8E-06	2E-05		2.3E+01	--	2.6E+00	3E+01
		Exposure Point Total					2E-05					3E+01
	Exposure Medium Total						2E-05					3E+01
Medium Total							2E-05					3E+01
Receptor Total							2E-05				Receptor HI Total	3E+01

Total Risk Across All Media = 2E-05

Total Hazard Across All Media = 3E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 2E-01
Total Immune/Lymphocyte Effects HI Across All Media = 2E+01
Total Ocular Effects HI Across All Media = 1E+00

TABLE 10.7c RME
RISK SUMMARY
FORMER CHLORINATION BUILDING - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Former Chlorination Building
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Intermediate Soils (0 - 20 ft)	Former Chlorination Building	2,3,7,8-TCDD Equivalent	5.2E-04		1.4E-04	7E-04	Developmental effects	2.4E+02		6.6E+01	3E+02
			Chemical Total	5.2E-04	--	1.4E-04	7E-04		2.4E+02	--	6.6E+01	3E+02
		Exposure Point Total					7E-04					3E+02
	Exposure Medium Total						7E-04					3E+02
Medium Total							7E-04					3E+02
Receptor Total							7E-04				Receptor HI Total	3E+02

Total Risk Across All Media = 7E-04

Total Hazard Across All Media = 3E+02

TABLE 10.7 dRME
RISK SUMMARY
STATE FAIR BLVD/NORTHWEST OFF-SITE/OUTFALL 004 EXPOSURE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	State Fair Blvd/Northwest
	Off-Site/Outfall 004 Exposure Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	State Fair Blvd/ Northwest	2,3,7,8-TCDD Equivalent	1.1E-06		3.0E-07	1E-06	Developmental effects	5.1E-01		1.4E-01	6E-01
		Off-Site/Outfall 004 Exposure Area	Chemical Total	1.1E-06	--	3.0E-07	1E-06		5.1E-01	--	1.4E-01	6E-01
		Exposure Point Total					1E-06					6E-01
	Exposure Medium Total						1E-06					6E-01
Medium Total							1E-06					6E-01
Receptor Total							1E-06				Receptor HI Total	6E-01

Total Risk Across All Media = 1E-06

Total Hazard Across All Media = 6E-01

TABLE 10.7e RME
RISK SUMMARY
LAKESHORE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Lakeshore Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Lakeshore Area	BENZO(A)PYRENE	9.0E-07		1.1E-06	2E-06	--				
			Chemical Total	9.0E-07	--	1.1E-06	2E-06		--	--	--	0E+00
		Exposure Point Total					2E-06					0E+00
	Exposure Medium Total						2E-06					0E+00
Medium Total							2E-06					0E+00
Groundwater	Shallow Groundwater	Lakeshore Area	1,4-DICHLOROBENZENE	8.2E-08		3.1E-06	3E-06	Liver	1.5E-02		5.8E-01	6E-01
			BENZENE	2.1E-06		2.7E-05	3E-05	Reduced lymphocyte count	6.6E-01		8.6E+00	9E+00
			CHLOROBENZENE					Histopathologic changes in liver	1.1E-01		2.8E+00	3E+00
			Chemical Total	2.2E-06	--	3.0E-05	3E-05		7.9E-01	--	1.2E+01	1E+01
		Exposure Point Total					3E-05					1E+01
	Exposure Medium Total						3E-05					1E+01
Medium Total							3E-05					1E+01
Receptor Total							3E-05				Receptor HI Total	1E+01

Total Risk Across All Media =	3E-05
Total Hazard Across All Media =	1E+01
Total Liver HI Across All Media =	4E+00
Total Immune/Lymphocyte Effects HI Across All Media =	9E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

TABLE 10.7f RME
RISK SUMMARY
PETROLEUM STORAGE AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Petroleum Storage Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Petroleum Storage Area	ARSENIC	8.0E-07		2.2E-07	1E-06	Hyperpigmentation (In); Vascular (V); PNS (N)	1.2E-01		3.4E-02	2E-01
			Chemical Total	8.0E-07	--	2.2E-07	1E-06		1.2E-01	--	3.4E-02	2E-01
		Exposure Point Total					1E-06					2E-01
	Exposure Medium Total						1E-06					2E-01
Medium Total							1E-06					2E-01
Groundwater	Shallow Groundwater	Petroleum Storage Area	BENZENE	2.0E-07		2.6E-06	3E-06	Reduced lymphocyte count	6.4E-02		8.3E-01	9E-01
			Chemical Total	2.0E-07	--	2.6E-06	3E-06		6.4E-02	--	8.3E-01	9E-01
		Exposure Point Total					3E-06					9E-01
	Exposure Medium Total						3E-06					9E-01
Medium Total							3E-06					9E-01
Receptor Total							4E-06				Receptor HI Total	1E+00

Total Risk Across All Media = 4E-06

Total Hazard Across All Media = 1E+00

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Nervous System Effects HI Across All Media = 2E-01
Total Immune/Lymphocyte Effects HI Across All Media = 9E-01

TABLE 10.7g RME
RISK SUMMARY
CHLOROBENZENE HOT-SPOT AREA - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Utility Worker
Exposure Area:	Chlorobenzene Hot-Spot Area
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Upper Soils (0-10 ft)	Chlorobenzene Hot-Spot Area	HIGHLY CHLORINATED PCBs	1.7E-06		2.1E-06	4E-06	Ocular exudate (OC), inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	3.0E+00		3.8E+00	7E+00
			BENZO(A)PYRENE	7.3E-07		8.5E-07	2E-06	--				
			Chemical Total	2.4E-06	--	3.0E-06	5E-06		3.0E+00	--	3.8E+00	7E+00
		Exposure Point Total					5E-06					7E+00
	Exposure Medium Total						5E-06					7E+00
Medium Total							5E-06					7E+00
Groundwater	Shallow Groundwater	Chlorobenzene Hot-Spot Area	BENZENE	2.3E-07		3.0E-06	3E-06	Reduced lymphocyte count	7.3E-02		9.5E-01	1E+00
			Chemical Total	2.3E-07	--	3.0E-06	3E-06		7.3E-02	--	9.5E-01	1E+00
		Exposure Point Total					3E-06					1E+00
	Exposure Medium Total						3E-06					1E+00
Medium Total							3E-06					1E+00
Receptor Total							9E-06				Receptor HI Total	8E+00

Total Risk Across All Media = 9E-06

Total Hazard Across All Media = 8E+00

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Immune/Lymphocyte Effects HI Across All Media = 8E+00

Total Ocular Effects HI Across All Media = 7E+00

TABLE 10.7h RME
RISK SUMMARY
TRIBUTARY 5A - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Current/Future
Receptor Population:	Utility Worker
Exposure Area:	Tributary 5A
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Sediment	Upper Sediment (0-10 ft bgs)	Tributary 5A	CHROMIUM					None Reported (O)	4.0E+00			4E+00
			VANADIUM					Decreased hair cystine	1.0E+00			1E+00
			BENZO(A)PYRENE	4.6E-07		5.4E-07	1E-06	--				
			Chemical Total	4.6E-07	--	5.4E-07	1E-06		5.0E+00	--	0.0E+00	5E+00
		Exposure Point Total					1E-06					5E+00
	Exposure Medium Total						1E-06					5E+00
Medium Total							1E-06					5E+00
Water	Surface Water	Tributary 5A	BIS(2-ETHYLHEXYL)PHTHALATE	1.5E-08		1.1E-06	1E-06	Increased relative liver weight (H)	3.8E-03		2.7E-01	3E-01
			Chemical Total	1.5E-08	--	1.1E-06	1E-06		3.8E-03	--	2.7E-01	3E-01
		Exposure Point Total					1E-06					3E-01
	Exposure Medium Total						1E-06					3E-01
Medium Total							1E-06					3E-01
Receptor Total							2E-06				Receptor HI Total	5E+00

Total Risk Across All Media = 2E-06

Total Hazard Across All Media = 5E+00

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media = 3E-01

TABLE 10.8 RME
RISK SUMMARY
POTABLE WATER - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	ARSENIC	2.2E-03			2.2E-03	Hyperpigmentation (In); Vascular (V); PNS (N)	1.1E+01			1.1E+01
			CHROMIUM					None Reported (O)	3.5E+00			3.5E+00
			IRON					Gastrointestinal effects	2.4E+00			2.4E+00
			MERCURY					Autoimmune effects	1.8E+00			1.8E+00
			VANADIUM					Decreased hair cystine	1.8E+00			1.8E+00
			BENZO(B)FLUORANTHENE	4.3E-05			4.3E-05	--				
			BENZO(K)FLUORANTHENE	1.7E-06			1.7E-06	--				
			BIS(2-ETHYLHEXYL)PHTHALATE	6.4E-06			6.4E-06	Increased relative liver weight (H)	5.3E-02			5.3E-02
			HEXACHLOROBENZENE	3.8E-05			3.8E-05	Hepatic (H)	6.8E-02			6.8E-02
			INDENO(1,2,3-CD)PYRENE	1.7E-05			1.7E-05	--				
			1,1,2,2-TETRACHLOROETHANE	2.3E-06			2.3E-06	--				
			1,2,4-TRICHLOROBENZENE	4.8E-06			4.8E-06	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	3.1E-01			3.1E-01
			1,2-DICHLOROETHANE	3.2E-06			3.2E-06	Cardiac arrhythmia, bronchitis, central nervous system depression, and injury to the liver, kidneys, and gastrointestinal tract	4.1E-03			4.1E-03
			1,4-DICHLOROBENZENE	3.5E-04			3.5E-04	Liver	2.2E+00			2.2E+00
			BENZENE	1.1E-02			1.1E-02	Reduced lymphocyte count	1.2E+02			1.2E+02
			CHLOROBENZENE					Histopathologic changes in liver	2.3E+01			2.3E+01
			METHYLENE CHLORIDE	6.5E-06			6.5E-06	Liver toxicity (H)	3.4E-02			3.4E-02
			TETRACHLOROETHENE	2.5E-05			2.5E-05	Hepatotoxicity in mice (H), weight gain in rats	1.1E-02			1.1E-02
			TOLUENE					Increased kidney weight (R)	5.0E+00			5.0E+00
			Chemical Total	1.4E-02	--	--	1.4E-02		1.7E+02	--	--	1.7E+02
		Exposure Point Total					1.4E-02					1.7E+02
	Exposure Medium Total						1.4E-02					1.7E+02
Medium Total							1.4E-02					1.7E+02
Receptor Total							1.4E-02				Receptor HI Total	1.7E+02

Total Risk Across All Media = 1.4E-02

Total Hazard Across All Media = 1.7E+02

Notes:

Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.

Total Liver HI Across All Media =	2.6E+01
Total Kidney HI Across All Media =	5.0E+00
Total Nervous System Effects HI Across All Media =	1.1E+01
Total Immune/Lymphocyte Effects HI Across All Media =	1.2E+02
Total Nasal/Respiratory Effects HI Across All Media =	4.1E-03
Total Other Effects HI Across All Media =	8.0E+00

TABLE 10.9 RME
RISK SUMMARY
POTABLE WATER - REASONABLE MAXIMUM EXPOSURE
HONEYWELL, WILLIS AVENUE CHLOROBENZENE SITE, GEDDES, NEW YORK

Scenario Timeframe:	Future
Receptor Population:	Resident
Exposure Area:	Potable Water
Receptor Age:	Child (Age 0-6 Years)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Site Wide Groundwater (All Depths)	Potable Water	ALUMINUM					Neurotoxicology	1.8E+00			2E+00
			ARSENIC	1.0E-03			1E-03	Hyperpigmentation (In); Vascular (V); PNS (N)	2.6E+01			3E+01
			CHROMIUM					None Reported (O)	8.1E+00			8E+00
			IRON					Gastrointestinal effects	5.6E+00			6E+00
			MANGANESE					CNS (N)	1.3E+00			1E+00
			MERCURY					Autoimmune effects	4.3E+00			4E+00
			VANADIUM					Decreased hair cystine	4.2E+00			4E+00
			BENZO(B)FLUORANTHENE	1.7E-04			2E-04	--				
			BENZO(K)FLUORANTHENE	6.6E-06			7E-06	--				
			BIS(2-ETHYLHEXYL)PHTHALATE	3.0E-06			3E-06	Increased relative liver weight (H)	1.2E-01			1E-01
			CHRYSENE	1.3E-06			1E-06	--				
			HEXACHLOROBENZENE	1.8E-05			2E-05	Hepatic (H)	1.6E-01			2E-01
			INDENO(1,2,3-CD)PYRENE	6.6E-05			7E-05	--				
			1,1,2,2-TETRACHLOROETHANE	1.1E-06			1E-06	--				
			1,2,4-TRICHLOROBENZENE	2.3E-06			2E-06	Increased adrenal weights; vacuolization of zona fasciculata in the cortex	7.3E-01			7E-01
			1,2-DICHLOROBENZENE					No adverse effects observed (O)	1.5E+00			1E+00
			1,2-DICHLOROETHANE	1.5E-06			1E-06	Cardiac arrhythmia, bronchitis, central nervous system depression, and injury to the liver, kidneys, and gastrointestinal tract	9.6E-03			1E-02
			1,4-DICHLOROBENZENE	1.7E-04			2E-04	Liver	5.1E+00			5E+00
			BENZENE	5.3E-03			5E-03	Reduced lymphocyte count	2.8E+02			3E+02
			CHLOROBENZENE					Histopathologic changes in liver	5.4E+01			5E+01
			METHYLENE CHLORIDE	3.0E-06			3E-06	Liver toxicity (H)	7.9E-02			8E-02
			TETRACHLOROETHENE	1.2E-05			1E-05	Hepatotoxicity in mice (H), weight gain in rats	2.6E-02			3E-02
			TOLUENE					Increased kidney weight (R)	1.2E+01			1E+01
			Chemical Total	6.7E-03	--	--	7E-03		4.0E+02	--	--	4E+02
		Exposure Point Total					7E-03					4E+02
	Exposure Medium Total						7E-03					4E+02
Medium Total							7E-03					4E+02
Receptor Total							7E-03				Receptor HI Total	4E+02

Total Risk Across All Media =	7E-03
Total Hazard Across All Media =	4E+02
Total Liver HI Across All Media =	6E+01
Total Kidney HI Across All Media =	1E+01
Total Nervous System Effects HI Across All Media =	3E+01
Total Immune/Lymphocyte Effects HI Across All Media =	3E+02
Total Nasal/Respiratory Effects HI Across All Media =	1E-02
Total Other Effects HI Across All Media =	2E+01

Notes:
Summation of individual target organ hazard indices, as presented, may not equal the Total Hazard Across All Media because some compounds affect multiple tissues.